CONFERENCE PROCEEDINGS

International Conference
on Innovation in Open and Distance Learning
(INNODEL) Presents

Emerging Technology for Open and Distance Education: Opportunity, Agility, and Adaptability

**NOVEMBER
28th – 29th, 2022**

SUPPORTING PARTNERS ACKNOWLEDGEMENT

INTRODUCTION

The 2022 INNODLE becomes possible with the support from various institutions including, the Bank Mandiri, Gramedia Group, Bank BRI, PT Telkom Indonesia, Accer and the following partners: BUKA Project European Union co-founded by Erasmus +; The Indonesian Association of Open and Distance Learning Professions (APJJI); The Moodle, EON Reality Singapore, and Microsoft Indonesia. The 2022 INNODEL is attended by presenters from various countries from Asia and Africa including India, Pakistan, Malaysia, Philippines, Nigeria and Indonesia.

The INNODEL promotes the dissemination of innovation in ODL to open the opportunities for making ODL more effective and inclusive. The INNODEL is created for serving the forum for educators, practitioners, policymakers, and educational technology providers to share their common interests. It is undeniable that ODL whatever the format will become a major tool for human capacity building due to its quality, flexibility, and interoperability to enable facilitating the new digital learning ecosystem.

The International Conference on Innovation in Open and Distance Learning has brought those intriguing issues in online learning and provides a forum of sharing, discussion, and consultation to nurture innovation in open and distance learning through the following topics:

1.   Emerging Technologies in Education - EDUVERSE

2.   E-content Management and Development

3.   Technology in Teaching and Learning

4.   Pedagogical Innovations

5.   New Trends in Research and Innovation in ODL

6.   University-Industry Cooperation for Lifelong Learning

The conference proceeding serves to collect the submitted paper that already been edited by the editoral team.

2022 INNODEL Chair,

Prof. Daryono, S.H., M.A., Ph.D.

CONTENT

EDUTECH: A SOLUTION AND CHALLENGE OF INDONESIAN EDUCATION IN THE ERA OF THE INDUSTRIAL REVOLUTION 4.0. AND SOCIETY 5.0

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Abstract

Indonesia is entering the era of the industrial revolution 4.0 and Society 5.0. In the world of education, for example, significantly higher education, this has been done through education technology or termed edutech. During the covid-19 pandemic, almost all educational activities finally chose to use edutech because they had to adapt to the conditions that engulfed people worldwide. This research was conducted by examining library materials or secondary data, known as library research. In order to get answers or solutions to the problems formulated in this research, the approach used is positivism, interpretive and critical approaches. The nature of the research used in this research is descriptive-prescriptive and uses content analysis. The results of this study examine how the advantages and disadvantages can be elaborated so that it brings many good things that can improve the education system in Indonesia. Although edutech has weaknesses and shortcomings, proper management can minimize the adverse effects. It also depends on the educational institution that uses technology and the synergy of the students. It is necessary to create a good balance between the use of technology and real-world experience to minimize the adverse effects of edutech.

Keywords: Edutech; Solution and Challenge; Industrial Revolution 4.0; Society 5.0; Indonesia.

1 INTRODUCTION

Sustainable growth with collaboration between universities, industry, and the government to become a system that strengthens each other and the engine of the nation's growth. Universities are no longer stand-alone but producers of knowledge and innovation and centers of excellence. Then the results can be collaborated with industry needs and developed together. Creating a unique, collaborative, competitive academic culture in higher education is essential to Indonesia's human development. Universities also have the task of developing human resources who can reason critically, actively, innovatively, with national insight, and an entrepreneurial mindset. Lecturers are also the driving force as an inspiration, partner, friend, and teacher for students to distribute learning-based outcome curriculum.

The general education system has remained the same for hundreds of years. However, the influence of technology can change everything quickly, especially in the era of the industrial revolution 4.0 and society 5.0. This collaboration between education and technology is referred to as Education Technology or better known as Edutech.(Najdawi & Stanley, 2021) In the era of the COVID-19 pandemic, everyone is forced to keep their distance and avoid crowds. Therefore, any activities outside the home that require large crowds have been stopped, including university teaching and learning activities. Teaching and learning activities in universities are then transformed into online

forms using several long-distance communication technologies with the edutech concept. This is done so that the teaching staff can organize teaching and learning activities without the need to face to face with students. The role of edutech is enormous here as a solution during emergency conditions such as the COVID-19 pandemic that is hitting and dealing with world developments in the era of the industrial revolution 4.0 and society 5.0.(Wibowo, 2021).

The edutech sector is experiencing an upward trend in Indonesia. A population of 55 million people also drives this. Today's students have started to be literate with technology. Moreover, the COVID-19 pandemic forces everyone to keep their distance and avoid crowds. Thus, teaching and learning activities are transformed online using several distance communication technologies.(Sevima, 2022) Inevitably, students are closer to using computers, laptops, or gadgets. So it is not surprising that users' access to the internet is increasing day by day. Indonesia's internet users reach 74% of the total population. So naturally, this is an excellent opportunity for the edutech sector.(Xendit, 2022).

2 METHODOLOGY

Research is essentially an activity that seeks the truth of science, where research is born from doubts or curiosity about a problem.(Fernando, Utami, et al., 2021) Edutech writing: a solution and challenge of Indonesian education in the era of the industrial revolution 4.0. Moreover, society 5.0 is carried out by researching library materials or secondary data, which can be called normative research or library research, which is carried out by collecting primary, secondary, and tertiary legal materials.(Fernando, Pratiwi, et al., 2021) In this study, an analysis will be made using several approaches, namely: the concept approach, analytical approach, historical approach, and futuristic approach, using descriptive and prescriptive properties.(Fernando, 2020a) After that, the materials that have been collected will be processed along with an analysis that strengthens the results of this study.(Bambang Waluyo, 1991) This study uses content analysis.(Fernando, 2020).

3 FINDINGS AND DISCUSSION

3.1 Edutech: A New Style Education System in The Era of Revolution 4.0 and Society 5.0

The COVID-19 pandemic has brought significant changes in all sectors of human life. This pandemic has hardest hit the tourism sector. However, other sectors are no exception. On the other hand, several sectors are taking advantage of this condition as an opportunity to grow and develop various life-supporting innovations. One is the education sector, where technology is developed as a digital learning solution.(Kompasiana, 2022)

Edutech is a combination of two words, namely education and technology. Edutech is a modern education system that refers to the use of hardware and software designed to improve classroom learning activities and educational outcomes in the era of the industrial revolution 4.0 and society 5.0. Edutech is still in its early stages of development but has shown promise as a method of adapting curriculum to student proficiency levels by introducing and reinforcing new content at a pace that students can handle.(Cen et al., 2020) In addition to the educational experience, edutech or educational technology is based on theoretical knowledge from various disciplines such as communication, education, psychology, sociology, artificial intelligence, and computer science.(Sevima, 2022)

Edutech can be a controversial topic. Since most education systems are highly systematic, there is concern that edutech is an attempt to eliminate specific class assignments to reduce budgets. The creators of edutech emphasize the potential for improving software and technology, thereby helping lecturers' performance as formal teaching staff. With time constraints, it is difficult for a lecturer to teach according to the curriculum, catch up with lower-level students, and keep the upper class engaged in their work. By automating ability assessments and adjusting the difficulty of teaching and learning activities, edutech can provide better results for individual students and the class as a whole in the era of the industrial revolution 4.0 and society 5.0.(Rassolkin et al., 2020)

The Open University became a pioneer in Indonesia in conducting distance education through the edutech mechanism before it was popular as it is now. Edutech has even become a way where education can reach anyone and anywhere without having to meet face to face. Despite the uneven distribution of development, especially in educational infrastructure and Indonesia's geographical conditions, edutech can be developed to overcome existing problems. In addition, during the covid-19 pandemic, almost all educational activities finally chose to use edutech because they had to adapt to the conditions that were engulfing people worldwide. However, edutech is also not without gaps. Many challenges and things must be studied, such as whether the continuous application of edutech will have a good effect on students, because it is feared that social interaction with edutech will decrease, lazy human behavior and many other effects domino for the application of this edutech.

There are two ways of implementing technology in the classroom. The first is the introduction of hardware into the classroom. Second, teaching and learning activities rely more on software capabilities so that coordination in the classroom can be better and utilize all available hardware. The use of the software is one example of edutech. Much of the software is cloud-based and is

used in educational research to establish basic algorithms for how slowly or fast to advance student competence across different teaching and learning activities.

Types of edutech (Education Technology) that exist and develop in Indonesia: (Ibnu, 2021)

a   E-Learning;

The first type of edutech is e-learning. E-learning is a platform that can present learning materials online or online with various interactive content, live tutoring, and video on demand. For Indonesia, including being used by the Open University, this service is also the most widely used by the general public. Apart from a large number of e-learning startup companies in Indonesia, it turns out that this type of platform has also been around for a long time, starting with Zenius in 2004.

b   Learning Management System (LMS);

The next type of edutech is a learning management system. LMS can assist teachers in planning their learning activities. Such a system can be used by institutions, individuals, and several universities in Indonesia.

c   Software as a Services (SaaS);

In addition to the two types above, there is also a type of edutech that provides software provision services or what is familiarly called SaaS. Generally, many SaaS targets elementary, junior high, and high school levels by digitizing business processes, such as administration, attendance, etc. They will generally work with conventional educational institutions or institutions that want to change the digital world.

d   Massive Open Online Course (MOOC)

MOOC is a distance teaching method with a larger scale scope, accessible and can be accessed by anyone, anywhere, and anytime. This type of edutech will later provide various university-level courses to obtain certification from various well-known universities in Indonesia. There are many edutech startups of this type, such as Udacity, Coursera, edx, Duolingo, and Khan Academy.

In Indonesia itself, edutech is starting to develop. Sourced from Daily Social, the development of edutech startups began to be seen around the 2015s. This development is accompanied by equal access to information technology in all corners of Indonesia. In addition, the Pre-Employment Card also opens the view that education does not have to be carried out face-to-face. With the proper methods and systems, access to technology-based education can help improve the quality of

education in Indonesia. Quoting from Liputan 6, there are around 44 edtech in Indonesia that is still operating today. This amount is also accompanied by a significant level of funding for each of these startups. This is certainly a good signal for the development of educational technology, both in terms of business and job opportunities.(Perdana, 2020).

Remote teaching and learning activities through the edutech mechanism are indeed more fun to do. Packed with modern technology, classroom learning which used to be done conventionally, has become a more modern and fun way for students to follow. In addition, learning that uses technology is also beneficial for students and lecturers to interact more easily. This process will help students and lecturers to know the critical role of each. So that enthusiasm for each lesson can feel more fun and interesting to apply. In addition, the learning carried out using Edutech is very effective. Educators and lecturers do not need to spend hours conducting discussions or teaching and learning activities. Teaching and learning activities will be much more effective with existing technology.(Sevima, 2022).

3.2 Edutech as Education Budget Efficiency Effort in Indonesia

Indonesia is heading to its golden age in 2045. As the nation grows, there are also many challenges that the Indonesian nation will face. Thus, adaptation and transformation are needed to prepare the Indonesian people to welcome Indonesia Gold 2045, one of which is the key to education.(Dwi Rustandi, 2020) The traditional education system is inherently inefficient. Worldwide, the education and training industry combined has spent more than US$4 trillion, representing a significant increase of 84 percent since 2000. Nonetheless, literacy rates in Indonesia remain stagnant, while it is estimated that around 85 percent of every rupiah is spent as a budget. Education has been spent on building schools and paying for teaching staff.(Bhardwaj, Riaz; Yarrow, Noah; Cali, 2020)

Therefore, the relationship between increased education budgets and educational performance is perceived to be less efficient, and budget reductions related to traditional education delivery are an obvious opportunity for Edutech. This is especially true for conducting e-learning methods, which can deliver one-to-many students on a minimal budget basis. Examples of teaching models or courses through teleconference applications that are currently used, such as Zoom Cloud Meeting and Google Meet.

However, cost efficiency is not only the domain of the e-learning world. Reliable broadband services and other technologies such as the Cloud have facilitated policies such as "bring your

device" in schools, allowing students to use their equipment. As a result, less budget is spent providing established hardware for schools.

The dutch-based education system is the most urgent alternative for democratizing education and improving education quality by resolving education polarization in the era of the industrial revolution 4.0 and society 5.0. The importance of Edutech lies not only in its power to lower budgets and engage students in new and innovative ways. It is also all about how it can equalize standards and allow access for all students to achieve democratization in the field of education.(Lee & Choi, 2021)

Online platforms, smartphone applications, and new learning formats have massively increased access to education and improved the teaching and learning process. In contrast, online and cloud technologies have presented attractive standardization possibilities for learning content. Now, every campus in the area can receive the same standards and levels of learning content as the City area.

By saving on education or training budgets, more money can be allocated to other elements of education, such as learning apps that provide customizable lesson plans or innovative digital content such as engaging video materials that will enhance student competence. Multi-media degradation, gamification, informal learning, and peer-to-peer learning make educational content more immersive, so edutech is designed to attract students and keep them engaged until the activity ends.

Edutech also creates stronger connections between what happens in the classroom and what goes on outside the classroom (at home, on the go, and so on), making lecturer-supported digital educational resources available around the clock, such as assignments and exam preparation materials, to create a structured circuit in the student learning experience. Edutech is also changing how students consume education in the same way that Cloud technology has changed how we consume music and television. With minimal risk, it can be said that the successful development of these tools will impact every aspect of our future. Accessible and effective solutions for excellence in classroom education can empower students and faculty to focus more on learning tasks. They can do more with the instructional technology at their disposal, improve the learning process and the overall quality of education available to young people worldwide, equipping them with better facilities for the future. With increasingly sophisticated edutech tools, teachers can better manage the curriculum and facilitate student engagement in the classroom. It all aims to prepare and produce successful academic graduates by providing them with all the instructional

materials needed to excel outside the classroom. We must ensure they have quality educational facilities to build a brighter future for all living beings on this earth. The next generation will face many unexpected challenges, so the current generation must ensure they do not lack the support to overcome them. For example, the video learning format has been proven to accelerate the learning process and is an attractive format for students.

3.3 Obstacles in Implementing Edutech (Indonesia)

Indonesia Gold 2045 is the government's vision to build a developed country that is sovereign, just, and prosperous. With superior Human Resources and mastering knowledge and technology, Indonesia will be known as one of the world's economic powers. Right at the age of the 100th Republic of Indonesia, Indonesia is expected to have national resilience as well as a stable and authoritative government. However, it is still miserable that this excellent vision is still in the form of an opinion where there is no real work or work to prove the existence of a golden Indonesia in 2045. The extensive homework in realizing this dream is the youth, as the next generation and nation. Even today's conditions are very worrying, where young people are mostly just busy with their respective smartphones and trapped in their individualistic nature that has been firmly entrenched in their minds. The future generation of Indonesia, or the golden generation of 2045, is the main foundation to build the Indonesian nation into a great, advanced, glorious, and dignified nation. Those who have good character and integrity as an Indonesian nation and are competent in their fields, those who quickly adapt to changes and can use advances in digital technology, are the golden generation of 2045. Therefore, education plays a vital role in saving and preparing the next generation of the nation that will later continue the milestone of Indonesia's leadership.(Wartaguru, 2022)

Currently, in Indonesia itself, edutech has begun to develop rapidly. Even based on the results of research by the Indonesian government in 2021, the number of education technology in Indonesia has reached around 210 edutech startups. This means that the existence of this edutech is in great demand by the people in Indonesia and certainly has a positive impact on the development of education in the country. Various edutech platforms in the country utilize this media to present various learning materials, campus academic systems, and other educational needs.(Sevima, 2022)

However, behind that, many obstacles occur in the Edutech system if we look further into the future, where all courses have the potential to be managed by software. Today, many people use analytics to assess student competencies across various curriculum sectors, enabling students to progress more quickly in some areas while spending more time strengthening their weaknesses.

When each student works on the customized curriculum, the lecturer acts as a facilitator and problem solver with the insights that have been provided by edutech-based software to be able to see how much the student's strengths and weaknesses are.

In practice, edutech is still in the early stages of development. There are various design challenges for edutech. The biggest hurdle is adapting to the different learning styles in each class. Currently, edutech is usually delivered via a laptop or tablet, so it is expected to produce a maximum learning experience. Critics have noted that this learning style can put students with hearing and kinesthetic impairments, for example, at a disadvantage. As with other areas of new technology development, edutech will be used more and more and more feedback will be obtained.

However, edutech will face other social obstacles. The community hopes lecturers create a social environment that allows group learning and other dynamics not currently within the scope of edutech. The future classrooms may rely heavily on edutech to do the heavy lifting, but many educators still see value in a group set apart from purely academic goals.

Some obstacles that occur, of course, must always be faced and overcome in various ways. However, the obstacles that occur to students are not far from signal problems or inadequate internet networks in some areas because not all places have smooth internet conditions. This sometimes prevents students from understanding the material delivered by lecturers because of the signal constraints, such as when doing online learning. However, suddenly the lecturer's voice is cut off, or even the application stops when the lecturer is teaching.

Although edutech has its weaknesses and shortcomings, proper management can minimize the adverse effects that arise. It also depends on the educational institution that uses technology and the synergy of the students. It is necessary to create a good balance between the use of technology and real-world experience so that the adverse effects of edutech can be minimized. Offline activities are not eliminated. They even need to be structured as a form of collaboration and an excellent strategy to create skilled students who can compete professionally as the goals of Indonesia's sustainable development goals (SDGs) in 2030 and Indonesia gold in 2045.

4 CONCLUSION

Edutech is a modern education system that refers to the use of hardware and software designed to improve classroom learning activities and educational outcomes in the era of the industrial revolution 4.0 and society 5.0. Edutech has the potential to provide better results for individual students and the class as a whole in the era of the industrial revolution 4.0 and society 5.0 in Indonesia. Indonesia will reach its golden age in 2045. As the nation grows, there will be many

challenges that the Indonesian nation will face. Thus, there is a need for adaptation and transformation in preparing Indonesian people to welcome Indonesia Gold 2045, one of which is with the key to Education through edutech, which will save the education budget, and the existing budget can also be used for other needs to strengthen the education sector. Obstacles that occur in the edutech system if we look further into the future where all courses have the potential to be managed by software. In practice, edutech is still in the early stages of development. There are various design challenges for edutech. The biggest hurdle is adapting to the different learning styles in each class. Edutech will face another social obstacle. The community hopes lecturers create a social environment that allows group learning and other dynamics not currently within the scope of edutech. Not to mention technical obstacles such as inadequate signal or internet network in some areas because not all places have smooth internet conditions. Although edutech has its weaknesses and shortcomings, proper management can minimize the adverse effects that arise. It also depends on the educational institution that uses technology and the synergy of the students. It is necessary to create a good balance between the use of technology and real-world experience so that the adverse effects of edutech can be minimized. Offline activities are not eliminated. They even need to be structured as a form of collaboration and an excellent strategy to create skilled students who can compete professionally as the goals of Indonesia's sustainable development goals (SDGs) in 2030 and Indonesia gold in 2045.

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25

GIS-BASED VIRTUAL SHORT COURSE TO STRENGTHEN URBAN AND REGIONAL PLANNING STUDIO PRACTICE STUDY

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Abstract

Department of Urban and Regional Planning in Open University (DURP OU) have practical studies, namely Process of Planning, Urban Planning and Regional Planning Studios. This course aims to create student competencies in the preparation of planning products such as detailed spatial plans and regional spatial plans. Consists of various aspects studied in this course, namely environmental, socio-cultural, population, infrastructure, and institutional aspects. All aspects of it can be visualized in the form of thematic maps or products based on geospatial technology. In improving the skills that are used for some analysis in the planning studio, students are expected to master gis-based tools. DURP OU lecturers have initiated the availability of skill development by holding a short course Geographic Information System (GIS)-Based for each semester. In this research, refers to quantitative research design. A total of 61 selected students were involved in this study. All of these students have taken a GIS-based virtual short course. The data collected through online surveys is by using a google form device. The analysis carried out was by the Pearson correlation method between post-test variables as theoretical studies and map products as a practical study and Multi Criteria Analysis (MCA) of GIS operating skills carried out by students. They were enthusiastic enough that a pearson correlation value of 0,943 was obtained with the strengthening of skills between theoretical and practical studies. In this study, the percentage was also found to be 24,59% at level 1, 54,10% at level 2, and 21,31% at level 3. So that students are able to produce informative thematic map products. In the future, lecturers will continue to develop material not only GIS for basic but also GIS for advanced and other planning analysis methods.

Keywords: DURP OU, short course, GIS, Pearson Correlation, Multi Criteria Analysis.

1 INTRODUCTION

The Covid-19 pandemic has changed the way of learning at every level of education in Indonesia, from elementary to tertiary level (Azzahra, 2020). Almost all educational institutions are migrating conventional systems to distance learning systems. Distance learning is distance learning guided by facilitators by utilizing information technology media (Schneider & Council, 2021). Distance learning allows learners to study at home without having to physically go to class. With the help of electronic media such as PCs/smartphones and internet networks, learning can continue using online learning applications. Distance learning has benefits including reducing the operational costs of education because there are no face-to-face meetings (BERG, 2020). In addition, it is able to encourage the interest in learning e-learning participants to play an active role in participating in learning. The question is, how to run an online learning system in the Urban and Regional Planning Study Program, which requires more field data collection and group work? The Urban and Regional Planning Study Program or URP is a study program under the Faculty of Science and Technology that focuses on analyzing/formulating the potential and problems of regional and urban development. The learning process is aimed at producing scholars who are visionary,

creative, innovative, able to view conflict positively, and able to work in teams and as a team. There are many challenges in running each course with an online system, especially the main lecture activities in this study program, namely studio practice courses. The challenges of distance learning of DURP OU are increasingly complex because students spread across all corners of the country have not all received good internet network service facilities. The distribution of DURP OU body students can be seen in Figure 1.
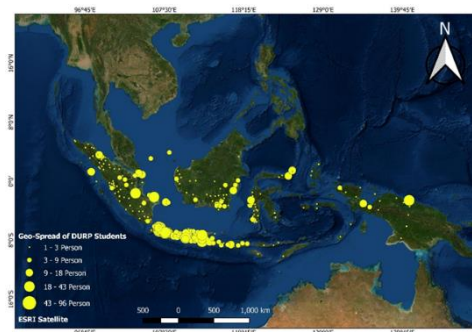
Figure 1. Geo-Spread of DURP OU Body Students.

The studio practice study in Department of Urban and Regional Planning in the Open University at Indonesia is a course that aims to provide an integrated introduction to the geospatial planning process, study more specific location-based materials and build the skills needed for studios and further professional practice. The studio curriculum is designed to equip students with regional problem-solving skills and spatial planning processes as a solution to spatial problems in an area. This course requires studies from various aspects, both Geospatial and A-Geospatial. It can be said that the studio practice course consisting of the Process of Planning, Urban Planning and Regional Planning Studio is the estuary of all courses studied in DURP OU. Therefore, to support the process of implementing studio courses, all students in the open university urban and regional planning study program must be able to master the basic concepts of mapping, spatial analysis and including the use of Geographic Information Systems (GIS) applications (Buchori, 2007).

GIS has a very important role in urban and regional planning (Buchori, 2011). Arranging the space of a region requires the support of accurate and up-to-date data and information. GIS can help describe the condition of a region . Changes in the condition of the territory in the area to be compiled, need to be well understood because the quality of the spatial plan is largely determined by understanding the physical condition of the planning area. Unfortunately, not all DURP OU students know and understand the use of every tool in GIS.

The importance of increasing understanding and skills in Geospatial and A-Geospatial analysis by using the Geographic Information System (GIS) application, especially in terms of the basic concepts of mapping, Geospatial Information/Data, and GIS operations, it is necessary to have a short course of ArcGIS application for DURP OU students. The short course aims to assist and provide assistance to students of DURP OU in the concept and use of applications based on Geographic Information Systems as a basis for analyzing spatial information in the case of Urban and Regional Planning Studios. Thus, students can apply it to studio practice courses so that the expected output can be achieved. The short course GIS based of the DURP OU has been running for 4 series since it was rolled out in the middle of 2021. This training on the use of ArcGIS Application contains in-depth materials and practices such as basic explanations of mapping concepts, Geographic Information System concepts, arcgis application installation, geospatial data surfing, data input in ArcGIS software, data management, and layouting.
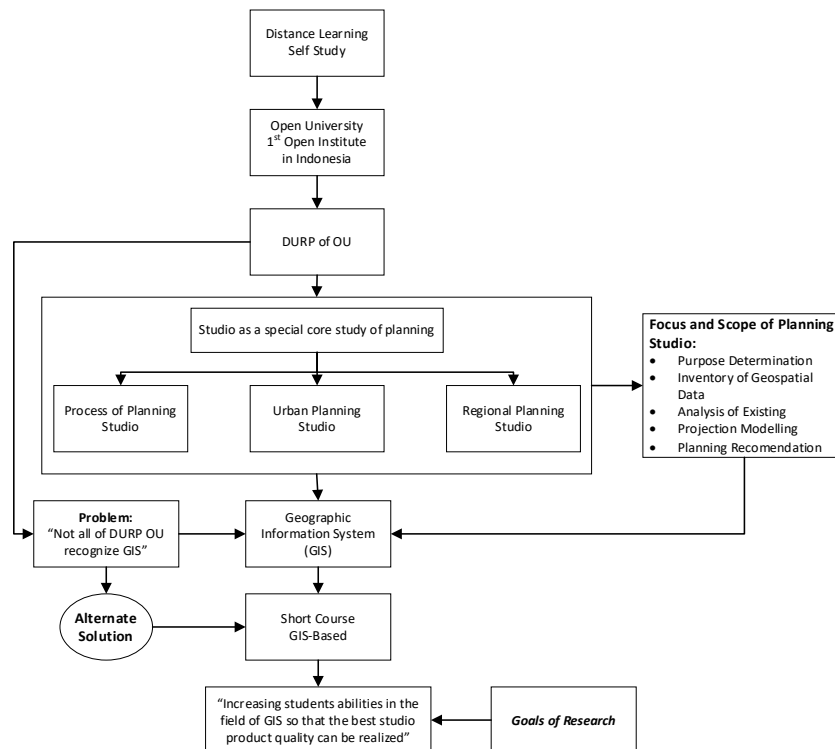
Figure 2. Goals of Research Process.

Figure 2. In the era of advancing globally, education has been integrated by technology as a support. The concept that is increasingly in the spotlight today is Distance Learning (Traxler, 2018). This can be used as a goal for students to have an attitude of independence in the learning process. The Open University (OU) in Indonesia, became a pioneer as an institute that has a distance learning program (Suprapto & Mursid, 2017). Because OU, which was founded in 1984, has the vision of becoming a world-quality of ODL (Open and Distance Learning) university and

its mission is to provide access to higher education for all corners of Indonesia and continue to develop distance learning systems by utilizing the latest technology.

In 2010, OU established a study program, namely DURP. This Department has practical courses that are divided into three, namely the process of planning, urban planning and regional planning studios. Focus and scope in the all of planning studio, namely purpose determination, inventory of Geospatial Data, Analysis of Existing, Projection modelling, and planning recommendation (Yeh, 2005). It is desirable that students who take this course can operate software such as ArcGIS, QGIS or the like.

However, the problem is that not all DURP OU students know and study GIS, therefore this Department initiated to organize a GIS-based short course. The purpose of this study is to connect the correlation of the results of the shortcourse, namely post-test and map products, so as to improve student competence in producing the best and quality planning products.

2   METHODOLOGY
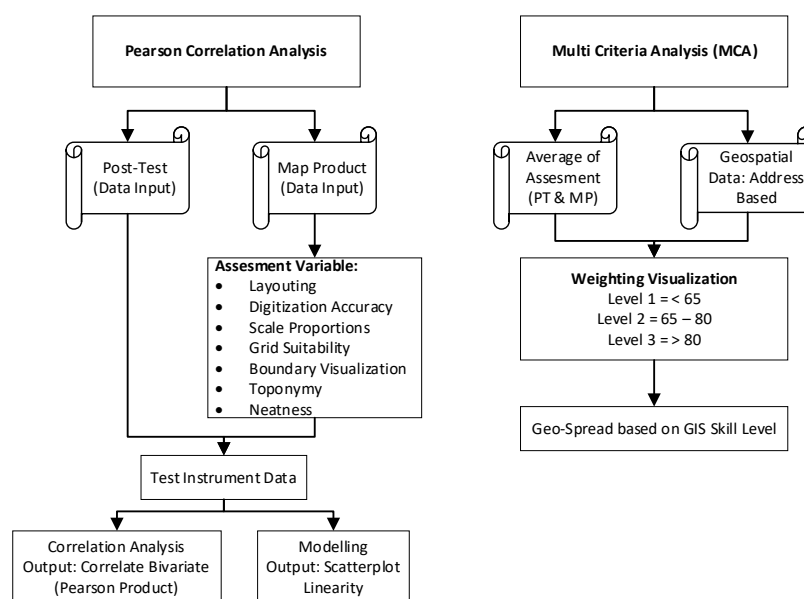
Figure 3. Method of Reaserch.

In Figure 3. describes related diagrams of the analysis method. This research refers to a descriptive quantitative design that seeks various types of data, namely using secondary data from the web that presents data openly and primary data taken based on the results of questionnaires from google forms. The following analysis was used in this study.

2.1   Pearson Correlation

At this stage, researchers use statistics-based software, namely "IBM SPSS Statistics 22" (Purwanto et al., 2020). Which serves to determine the correlation between two different variables. In this study, the Post-Test Value was used as a theoretical variable and the map product as a practice variable. It is worth underlining, for this method using correlate bivariate (Pearson Product) (Zamariola et al., 2018). Thus resulting in linearity between these variables.

The data used in determining pearson correlation is a sample of respondents who have tried to fill out the questionnaire provided by utilizing the google form (Iqbal et al., 2018). Because the application developed by Google is considered quite flexible, especially in terms of providing products uploaded by respondents both in pdf, jpeg/jpg, ppt, doc, or other formats.

2.2 Multi Criteria Analysis (MCA)

Multi Criteria Analysis (MCA) is the concept of a decision-making method that can be visualized both spatially and A-spatially with weighting of the criteria determined by the researcher (Velasquez & Hester, 2013). The criteria referred to in this study are the level of student expertise which is calculated based on the average obtained from the product map with variables such as Layouting, Digitization Accuracy, Scale Proportions, Grid Suitability, Boundary Visualization, Toponymy and Neatness (Okada et al., 2008). It is adapted to modern cartographic elements with the latest technology. Then it is overlayed with geospatial data from the domicile of address-based respondents into a map layout containing visualizations of sample distribution throughout Indonesia and categorized based on the average of the product and post-test maps.

3 FINDINGS AND DISCUSSION

Several findings have been identified in this study. Analyses on the method have been carried out to answer the stated objectives. Therefore, the following are the findings obtained by researchers.

3.1 Linearity
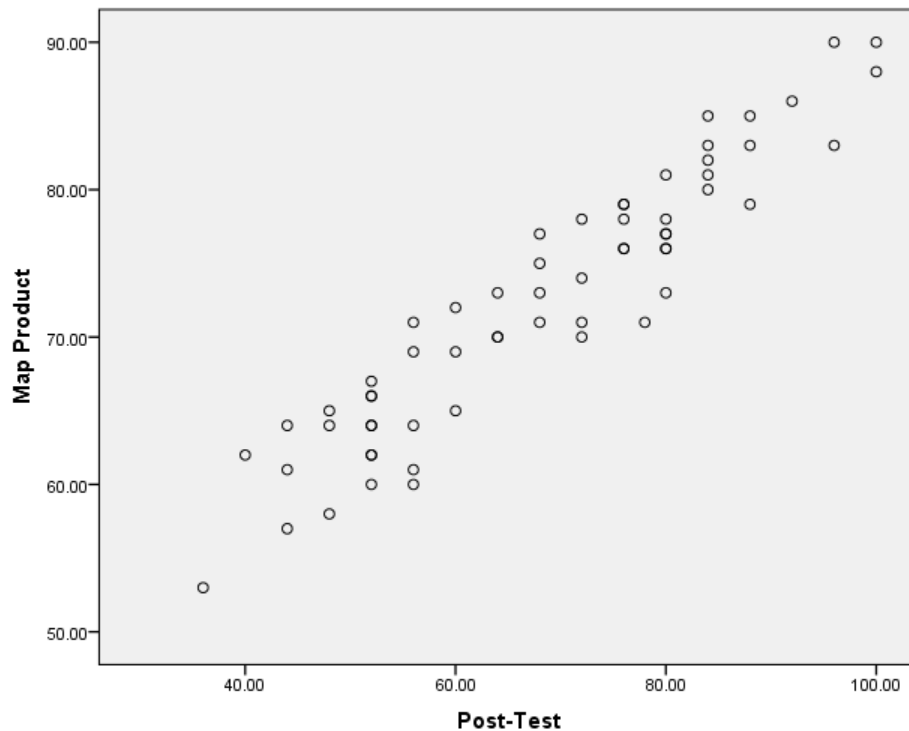
Figure 4. Scatter Plot of Linearity.

Figure 4. shows a scatter plot that aims to visualize the results of both variables, namely Post-Test as a dependent variable where the data has an influence while the product map as an independent variable where the data is the result in a correlation (Statistics, 2018). According to (Schober et al., 2018) the data shown in scatter plot. It literally forms a pattern of straight lines that means that between the two variables can be fulfilled linearity.

Table 1. Pearson Correlation Coefficients Interpretation (Schober et al., 2018).

Type	Range	Class
A. Pearson Correlation	0.00 – 0.10	No Correlation
B. Pearson Correlation	0.11 – 0.40	Weak
C. Pearson Correlation	0.41 – 0.70	Moderate
D. Pearson Correlation	0.71 – 0.90	Strong
E. Pearson Correlation	0.91 – 1.00	Perfect

Table 1. shows the interpretation of conformity to pearson correlation. In this case, the researcher tested the attachment of the post-test and product map, which was 0,943. From Table 1. It can be categorized into class perfect so that this correlation is very strong and mutually influential.

3.2 Weighting Visualization
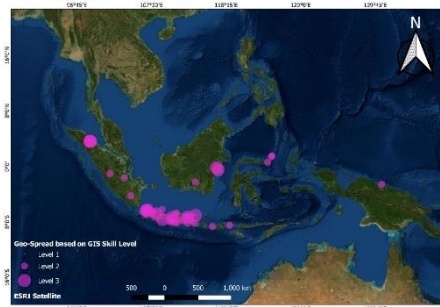
Figure 5. Geo-Spread based on GIS Skill Level.

Figure 5. visualize the distribution of respondents who are willing to fill out the questionnaire from the location-based google form application at each respondent's domicile. Then it is processed with average data from the post-test and map product variables. From these average results, it can give rise to a weighting (Odu, 2019). In the weighting, researchers gave categories based on average values, namely <65 as level 1, 65-80 as level 2, and ≥80 as level 3. Then it is overlaid with the ESRI Satellite product basemap by utilizing QGIS software version 3.22.4.
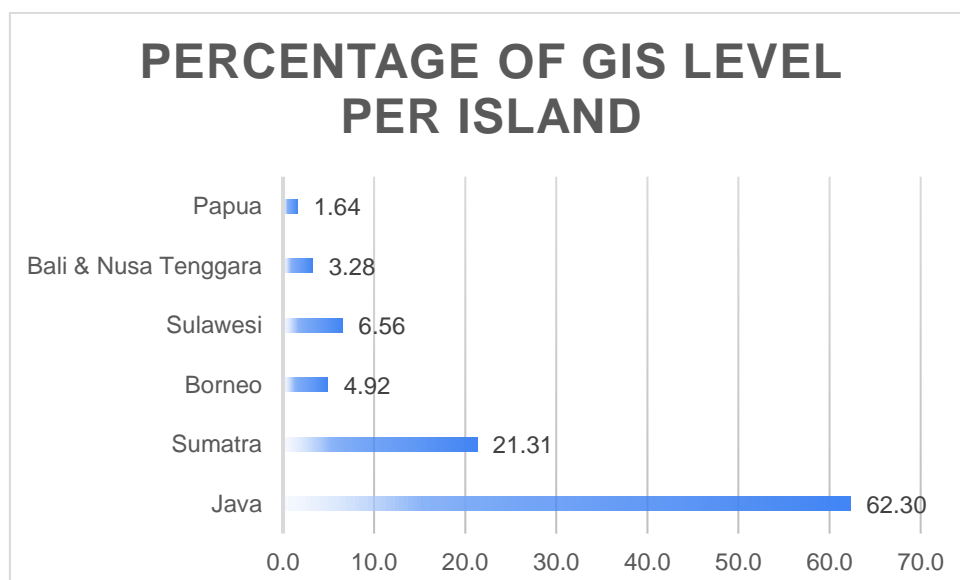
Figure 6. Percentage of Level per Island.

From the visualization of "Geo-Spread based on GIS Skill Level" there is a result of Figure 6. What is astonishing is that it is located on the island of Java, which is with a value of 62.30%. The

island of Java is already known on a national and even international scale as the most populous island in Indonesia (Firman, 2017). This represents that the island has many advantages, especially in terms of intellectuals embedded by its people. While on the island of Papua although it has been named the second largest island in the world which has an area of 785,753 km2 (Putu Eka Widiastuti & Kamaluddin, 2020), in this study only had one respondent or 1.64% worth only.

Table 2. Percentage of Students GIS Level.

Category	Range	n	%
A. Level 1	< 65	15	24.59
B. Level 2	65 - 80	33	54.10
C. Level 3	≥ 80	13	21.31

For Table 2. Is the result of an analysis presented on a macro scale. In essence, it has been divided into 3 levels. The first level has a value of 24.59% consisting of 15 respondents, the second level is worth 54.10% consisting of 33 respondents, and level 3 is worth 21.31% consisting of a sample of 13 respondents. In Table 2. Shows that level 2 as the majority in the study.
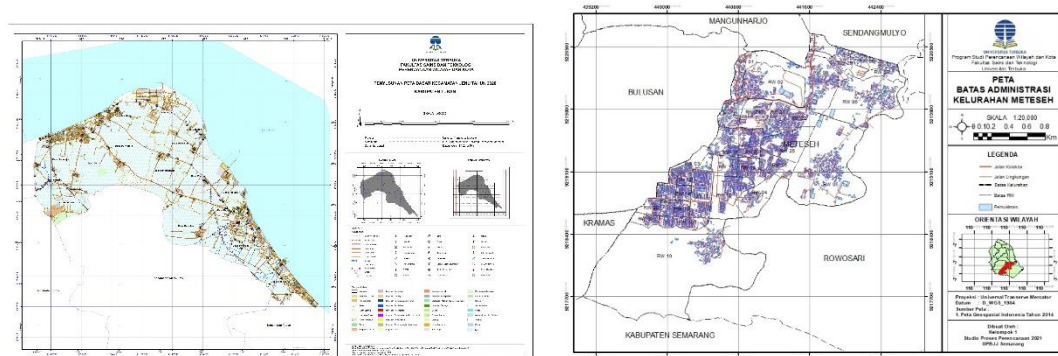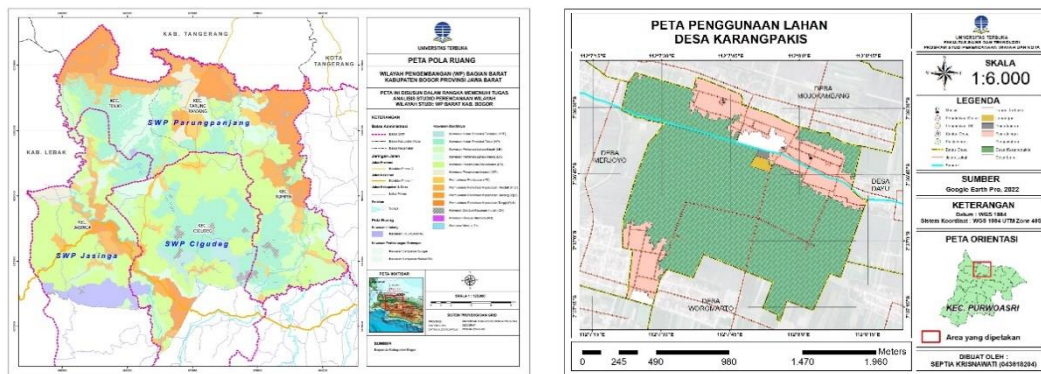
Figure 7. Best Student Map Products.

Based on Figure 7. DURP OU students who are willing to send their best product folders, have complete modern cartographic components. In theory, cartography is the science of mapping where a map is required to be visualized informatively and communicatively by utilizing the latest technology (Reddy et al., 2022). Neatness and art are also contained in the product. So that the map can be used in all aspects of the global (De Feudis et al., 2021). For example, the Land Use Map can be used for monitoring and evaluating the ability and suitability of agricultural land. This is an example of the physical and environmental aspects which are one of the aspects that students must master, especially in the planning studio practice course.

4   CONCLUSION

A series of results from several analyses can be concluded that DURP OU students have diverse competitiveness in terms of GIS operations. In this study, perfect linearity has been visualized against influencing factors, namely theory and practice, and the mappedness of GIS-based skills by students located in the middle category, namely with an average score of 72.46. So that students also have competence in continuing to increase their potential in the field of geospatial analysis which is implemented both in planning studio practice courses and in professional competition in the global world. A series of results from several analyses can be concluded that DURP OU students have diverse competitiveness in terms of GIS operations. In this study, perfect linearity has been visualized against influencing factors, namely theory and practice, and the mappedness of GIS-based skills by students located in the middle category, namely with an average score of 72.46. So that students also have competence in continuing to increase their potential in the field of geospatial analysis which is implemented both in planning studio practice courses and in professional competition in the global world.

In the future, lecturer of the department of urban and regional planning at an open university will continue to develop material not only gis for basic but also advanced GIS and for other planning

analysis methods. Such as the creation of contour maps/3D map products, mapping using product results by UAVs (Unmaned Aerial Vehicles) either photogrammetric fields or hydrographic surveys, Remote Sensing Surveys (Eg: Analysis of Normalized Difference Vegetation Index/NDVI, Analysis of Normalized Difference Water Index/NDWI, Analysis of Normalized Difference Built-up Index/NDBI, Analysis of Remote Sensing using Google Earth Engine or Other Software GIS Based, Function Change Analysis using Scoring Method), etc.he conclusion needs to be concise and coherent.

ACKNOWLEDGEMENTS

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CULTIVATION AND PROMOTION STRATEGY OF OPEN UNIVERSITY IN THE ISLAND REGION OF INDONESIA: MIXED-METHOD RESEARCH

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Abstract

Customer satisfaction is essential for the running and development of an institution. Thus, many institutions use various strategies to maintain and increase customer satisfaction, including socialization and promotion. However, studies that describe customer satisfaction, especially on open university's students Eastern Indonesia, are still very minimal. This mixed-method study aims to analyze the socialization and promotion strategies carried out by Universitas Terbuka (UT) regional offices in Ternate. The quantitative approach used an exploratory survey method, while the qualitative data were collected through observation and interview. Both methods were collected through four stages and methods, including primary data observation from socialization and promotion activities carried out by the UT Ternate regional office, academic activities, and non-academic activities for students. Data were collected from students registered from 2016 to 2020, namely 326 people spread across 10 city districts in North Maluku. The study results show that: (1) the promotion strategy, service quality, and customer value carried out by the UT Ternate regional office have a positive and significant influence on student satisfaction; and (2) the promotion strategy and service quality have a positive and significant impact on customer value at UT Ternate regional office; (3) it is essential to select media and content and maintain networks/partners as a promotional strategy that deserves attention; and (4) the service quality to students' academic achievement.

Keywords: promotion strategy, service quality, customer value, student satisfaction

1 INTRODUCTION

Universitas Terbuka is the 45th state university which was inaugurated in 1984. As the only state university that implements open and distance education (PTJJ), UT has 39 technical implementing units in the regions (UPBJJ-UT) and 1 Center for Overseas Student Management. The purpose of the opening of the regional offices is to provide wider access to the public for higher education, for those in cities, islands, and even Frontier, Outermost, and Disadvantaged areas (3T). In this case, UT implements an open education without any restrictions on age, year of graduation, and location/area of residence to become a student. The concept of distance can be interpreted that the learning process does not have to be carried out face-to-face. However, UT provides other learning modes such as learning through online Moodle/tutorials, webinars, coursework, and Take-Home Exam (THE). Currently, the UT Ternate regional office has 1946 students, which are still far from the target set by UT Center, namely 5000 registered students (Universitas Terbuka, 2021). UT results in numbers that are evaluated every semester make every regional office feel the need to design strategies in socializing and promoting to prospective students, as well as improving the quality of service to students.

For the last five years, the UT Ternate regional office has taken various strategies to meet the student achievement targets as set by the UT Center. The following is a recapitulation of tips on

socialization and promotion through various media, approaches to the community, and visits to certain figures or institutions.

Table 1. Socialization and Promotion Activities at the Ternate UPBJJ-UT Office

No	Activities	Media	Frequency					
			2015	2016	2017	2018	2019	2020
A	**Advertising**							
1	Newspaper ads	Newspaper (month)	0	0	0	12	12	9
2	Online media ads	2 online news links (month)	0	0	0	0	5	3
3	Radio ads	2 Radios (month)	0	1	0	0	0	3
4	Cable TV ads	Cable TV (times)	0	0	0	1	0	0
5	Flyer distribution	Flyers (3000-5000)	500	2000	3000	3000	3000	4000
6	Semi-permanent Billboard installation	Billboard (pieces)	8	10	0	0	0	0
7	Banner installation	Banner (pieces)	50	20	20	21	20	20
8	Billboard installation	Billboard (month)	0	0	0	2	0	2
9	Videotron installation	Videotron (month)	0	0	0	3	0	2
B	**Public Relationship**							
10	Exhibition	Event (times)	0	1	0	0	0	0
11	Social media (FB)	FB account (month)	0	0	12	12	12	9
12	Social media (Instagram)	IG account (month)	0	0	0	0	12	9
13	Social media (Twitter)	Twitter account (month)	0	0	0	0	0	9
14	Social media (YouTube)	Channel (month)	0	0	0	0	12	9
15	Website	Website links (month)	12	12	12	12	12	9
16	WhatsApp	WhatsApp (month)	0	0	0	12	12	9
17	SMS Blast	Telkomsel (times)	2	2	4	4	4	4
C	**Personal Selling**							
18	Visits and face-to-face meetings with high school students	Face to face and audience (times)	29	26	30	25	20	10
19	Visits and face-to-face meetings with local government	Face to face and audience (times)	10	10	5	15	10	12

20	Visits and face-to-face meetings with institution	Face to face and audience (times)	10	10	5	10	10	10
D	**Sales Promotion**		-	-	-	-	-	-
E	**Direct Marketing**		-	-	-	-	-	-

Source: UPBJJ-UT Ternate Office (2020)

Table 1 shows that the lowest frequency of socialization and promotion carried out by the UT Regional Office in Ternate is the printed media including flyers and banners. In addition, visits and face-to-face meetings with high school students include socialization and promotion with a frequency that stays in personal selling. However, according to the data collected by the Administration, the highest student enrollment is through information received from friends (53.15%) and family (21.31%).

Therefore, the UT regional office in Ternate requires a better design of socialization, promotion, and service strategies. It is expected that the strategies planned and implemented can be achieved, as realized in the higher number of new student admission. In this case, author is conducting research entitled "Socialization and Promotion Strategy for Open University in the Archipelago Region."

2 METHODOLOGY

This mixed-method research (Harrison, Reilly, & Creswell, 2020) was conducted for 9 months from March 2021 to November 2021 at the UT regional office Ternate. Quantitative data were obtained using a questionnaire with a Likert scale (Mirahmadizadeh, Delam, Seif, & Bahrami, 2022) with an explanatory survey approach (Wipulanusat, Panuwatwanich, Stewart, & Sunkpho, 2020). This study uses two independent variables, promotion strategy (X1) and service quality (X2), and two dependent variables, customer value (Y1) and student satisfaction (Y2), as shown in Diagram 2. The structural equations can be made with the following equations:

$$Y1 = P_{y1x1} \, X1 + P_{y1x2} \, X2 + \varepsilon1$$

$$Y2 = P_{y2x2} \, X1 + P_{y2x2} \, X2 + \varepsilon2$$

The qualitative data in this study were obtained using the FGD method (O. Nyumba, Wilson, Derrick, & Mukherjee, 2018) and direct observation of the activities organized by the UT regional office Ternate, including socialization, promotion, and academic and non-academic service activities. The population in this study were students registered from 2016 to 2021, i.e., 1768 people.

Meanwhile, for qualitative data collection, the researcher selected 20 students as FGD informants. They come from different year admission and regency/city. The FGD took place in 4 stages, namely in the cities of Ternate, East Halmahera, West Halmahera, and Taliabu Island. Furthermore, for the analysis of the two data, the researcher conducted several statistical tests including: (1) Structural Equation Test to determine the effect of independent variables on the dependent variable, (2) Correlation coefficient test (R2) to determine the value of the strength of the relationship between/both variables, (3) F test to find out the independent variables simultaneously affecting the dependent variable, (4) t-test to find out the influence of each independent variable, namely promotion strategy, service quality, and customer value partially or individually affecting the dependent variable, i.e., student satisfaction. The data obtained from interviews/FGDs were then transcribed and coded (Miles, Huberman, & Saldaña, 2018). The next analysis stage of this qualitative data is to make a categorization (Belgrave & Seide, 2019) after being presented as a research result.

3   FINDINGS AND DISCUSSION

3.1   Hypothesis test

The results of testing the three hypotheses considering the calculated t value is greater than t table, and the significance value is less than alpha (α) 0.05, are as follows:

1. Promotion strategy (X1) has a positive and significant effect on Student Satisfaction (Y)
2. Service Quality (X2) has a positive and significant effect on Student Satisfaction (Y)
3. Customer Value (M) has a positive and significant effect on Student Satisfaction (Y)

The study results indicate that indicators with a good level of validity and reliability are able to make a positive contribution to the independent and dependent variables. In other words, the implementation of indicators/instruments is able to form a construct of student satisfaction related to: (1) provision of information through printed media such as flyers, leaflets, posters, and catalogs; (2) interest in information on UT in attractive flyers, leaflets, posters, and catalogs; (3) UT information contained in flyers, leaflets, posters, and catalogs is able to encourage students to register for lectures at UT; and (4) the consistency of UT information in flyers, leaflets, posters, and catalogs in accordance with the reality that students feel when registering for UT, so as to increase student satisfaction. The study results are also in line with the results of research conducted by Fisher et al. (2019) showing that promotional strategies positively affect customer satisfaction. Therefore, it can be concluded that the promotion strategy at UPBJJ-UT in Ternate as a whole is able to provide satisfaction to students.

In addition, the test result of hypothesis 2 show that the services provided by UT Ternate have an impact on student satisfaction. This is related to the indicators of constructing these results including: (1) ease of students in accessing and connecting with UT Ternate staff, (2) fast responses from UT Ternate staff to complaints and problems faced by students related to academics, (3) the information provided can be understood because it is clear and structured, adapted to the needs of students, (4) provision of service time in accordance with student expectations, and (5) the accuracy of UT Ternate staff in receiving and verifying student documents.

The hypothesis test of customer value variable shows that the students' emotional attachment to the UT is represented by UT Ternate. This attachment has hope to be maintained and enhanced. This statement is supported by the following indicators: (1) the decision to study at UT is the best choice, (2) the implications of academic services/lectures in the form of flexible and advanced study assistance, and (3) the structure of the UT recruitment system, lectures, and evaluation of learning. This presentation shows that the overall customer value of UT Ternate can provide satisfaction to students.

3.2 Simultaneous Testing

The F test was conducted to determine the significance level of the influence of the Promotion Strategy (X1), Service Quality (X2), and Customer Value (M) variables on Student Satisfaction (Y) together. This test is carried out by comparing the F_c value with the value in the F table, with the following conditions: If $F_{count} > F_{table}$, then H_0 is rejected; and if $F_{count} < F_{table}$, then H_1 is rejected. The results of the F test can be seen in the following table.

Table 3.2.1 Result of Simultaneous Hypothesis Testing ANOVA

	Model	*Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*
1	Regression	36084.796	3	12028.265	420.676	.000[b]
	Residual	9092.487	318	28.593		
	Total	45177.283	321			

a. Dependent Variable: Y

b. Predictors: (Constant), M, X1, X2

Table 3.2.1 shows the calculated F value of 420.676 at a significant level of 0.000. By using a 95% confidence level, = 5%, df1 (number of variables – 1) or 4 -1 = 3, df2 (n-k-1) or 322 – 3 – 1 = 318, so that the results obtained are F_{table} = 2.633. The calculation results show that the value of F_{count} is greater than F_{table} (420,676 > 2,633) at a significance level of 0.000 less than the alpha value (0.05), which means that Promotion Strategy (X1), Service Quality (X2), and Customer Value (M) simultaneously positive and significant effect on student satisfaction at the UPBJJ-UT Office.

Table 3.3.2 Model Summary

Model	*R*	*R Square*	*Adjusted RSquare*	*Std. Error of the Estimate*
1	.894[a]	.799	.797	5.34722

Source: Data processed in 2021.

Table 3.3.2 (model summary) shows R value is 0.894 or 89.94%, which means that there is a positive relationship between Promotion Strategy (X1), Service Quality (X2), and Customer Value (M) variables with Student Satisfaction (M). The relationship between these variables is in the strong category, as Sugiyono (2007) argues that the score ranges from 0.60 to 0.79 means a strong relationship of 89.94%. Meanwhile, the value of determination R^2 (R squared) is 0.799, which means that the percentage contribution of the variables of Promotion Strategy (X1), Service Quality (X2), and Customer Value (M) to student satisfaction at the UPBJJ-UT Office is 79.90%; while the remaining 20.10% is influenced by other variables not examined in this study.

3.3 Findings and Discussion of Qualitative Data

Qualitative data analysis is focused on the results of data categorization regarding promotion strategies and service quality that have been implemented by UPBJJ-UT Ternate affecting customer value and student satisfaction. Through interviews with 16 students from several regencies and cities, it is known that UT Ternate has carried out a series of promotions and services that are recognized as according to student expectations. The following are some detailed

presentations dealing with this matter.

3.3.1 Selection of appropriate content on promotional media is a consideration that deserves attention

The choice of information material to be presented in the media should be considered carefully. This is an effort to generate public interest to read and find out more details about the information. In the end, the consequence of this stage is the community's decision to choose the product offered (Olanrewaju, Hossain, Whiteside, & Mercieca, 2020). The presence of content about the UT study program in printed and online media has attracted the attention of the public. The reason is that prospective students try to correlate the study program with the work they are currently doing. It is expected that the knowledge and experience gained in lectures can support their main tasks in institutions or companies.

> P.1.Q1.2 At that time, I planned to study in Bali, but an earthquake hit. Thus, I was recommended to study at UT since UT offers translation study in English literature. In addition, I am also interested in distance learning.

Information about the academic administration system (Wicaksono & Mariono, 2021) and the advantages if prospective students choose to study at UT can also be important points to be displayed in the media. According to several articles, there are various considerations for a consumer to choose a product, one of which is usually their reference for choosing is the positive side of the product or what benefits are caused when consuming the product (Hamilton, Mittal, Shah, Thompson, & Griskevicius, 2019). The jargon most often echoed by UT related to its education system is that students can attend lectures in remote mode, both online and offline and can still carry out activities at their respective workplaces. Elements like this are able to attract prospective students with working status.

> P8.Q1.3 Because the system makes it easier for students, the semester packages have been explained, and the course composition has been arranged, so that it is neater. On the one hand, we work so we are enough with what we are given. For example, we are given a task, so we just need to make assignments, just follow the command. In addition, it is also included with the book, so we don't need to look for books anymore.

Another consideration for prospective students in choosing a place to study is the accreditation of institutions and study programs. This point is important because it is related to the guarantee of the quality of lectures that will be presented by the UT and the quality of graduates after completing their studies. Regarding this quality assurance, it will be a recommendation for government institutions or companies that want to accept workers from the UT. As a complement in providing substance, the inclusion of the university's website address is considered to help prospective students to get to know the educational institution in more detail. In addition, prospective students are also able to get other explanations that are not presented in promotional media. These two reasons confirm that the placement of the UT website address is another important material that should be included in the promotional media.

3.3.2 Excellent Service of Ternate UPBJJ-UT Staff as the Front Guard of Institutional Image

When students have decided to join UT, the next crucial task to do is to provide care and assistance to them. This guidance can be represented by various activities such as providing the information needed when they ask questions, assisting in technical matters related to academics, finding solutions to lecture problems faced by students, etc. (Pandapotan & Andayani, 2019; Yosephine, 2018). In addition, the best quality of assistance is also an essential matter to create student satisfaction in studying at UT.

> P9.Q2.1 UT Ternate officers are easy to contact. I have contacted Pak Anfas several times, and he responds quickly. UT Ternate officers are very friendly and polite in serving us. Yes, UT Ternate officers are very fast and responsive in serving us. Their UT Ternate service staff provide the right service for what we need.

Excellent service is in line with the opening quote delivered by Damon Richards, an expert in customer service which states that "Customers don't care how smart you are, until they know how much you care for them." It can be understood that the attention and care of UT staff is needed to be able to provide satisfaction to students in academic services. In line with the reality that occurred at UPBJJ-UT Ternate, several informants admitted that UT staff served the students with a friendly, polite, and solution-oriented not only during working hours but also when the staff was at home. If a problem that occurs needs to be resolved immediately, the UT staff does not hesitate to help at midnight or at dawn.

3.3.3 Pokjar (UT Managers in Regencies/Cities) Provide the Best Service

Study Groups (POKJAR) is the division of the domicile area of prospective students and UT students. Because the coverage area of North Maluku is very wide, UPPBJJ-UT Ternate sorts out study groups based on Regency and City. In one POKJAR, the UT team will choose one manager from an individual or group as a partner. The main tasks and functions in accordance with the guidelines are to promote, recruit, and treat students from registration to graduation(Kristanti, 2018). Thus, POKJAR management is an extension of UT in the regions. It needs the best service from POKJAR to students so that there is synchronization of UT staff.

> P10.Q2.2 Their service officer is easy to contact, as well as the management of the
> Malifut Study Group. UT Ternate service officers are very good at providing
> services to us and according to what we need.

The presence of POKJAR administrators answers the challenges of distance education with a very wide area coverage and diverse distribution of students. They cannot come to the UPBJJ office all the time to take care of academic administration and other stuffs. So that fast, responsive, and wholehearted service from POKJAR management as UT representatives in regencies/cities is so needed to satisfy the students. This excellent service is of course influenced by the quality of human resources from POKJAR management who are capable as well as the facilities and infrastructure provided by UT (Rahmaddian, Koesanto, & Surapto, 2019).

> P6.Q3.2 Yesterday, we collected the requirements to Pak Ahmadi. Later, Pak
> Ahmadi might send it to UT, we don't know. It's just that all of us from Bacan, we
> all give it to Pak Ahmad, and Pak Ahmad will take care of it. No, we give all the
> requirements as Pak Ahmadi said, and we love this.

3.3.4 Miscellaneous of Registration as Part of the Academic Administration System is the Initial Milestone of UT Services

Registration is the beginning of UT's services to students at the beginning of lectures and semester. At this stage, some student data will be inputted by UT staff including personal data, latest education and accompanying documents, selected study programs, semester packages related to

learning modes, and other stuffs. If UT staffs do not provide complete and directed information, students will be confused when the lecture begins. However, if the staff is thorough, detailed and nurturing during the registration process, they can minimize student anxiety when facing lectures because they think they have received the complete information needed.

> P12.Q3.4 There are no mistakes because we are always assisted by the Pokjar management and staff from UT Ternate during registration process. It was very smooth, because the first registration was directly directed by the Pokjar, from filling out forms to paying tuition fees.

In addition, the facilities and infrastructure that support registration affect student satisfaction. Payment for student billing can make transactions in various ways (offline or online) through various banks that have collaborated with UT. These two things, of course, make it easier for students to fulfill their obligations to UT. If only the billing payment system could only be implemented at the UT office, it would certainly make it difficult for students in the regions.

3.3.5 Various Learning Evaluations Before and During the Pandemic

At UT, learning evaluation before the pandemic was carried out face-to-face at a location determined by the POKJAR management. The school or office chosen is usually located in an easily accessible location and has facilities following the standards set by UT. The quality assurance in this place is guaranteed so that students feel comfortable while taking the exam. However, the reality is that there are exam locations that do not meet the given standards, so a gradual evaluation is needed.

> P2.Q6.8 There was a new set time for my learning system since the first time I took college. However, starting from the second semester, I started reading at night. Sometimes in the office, if there is no work. That's where I spend my time studying. In my opinion, it elevated my knowledge. It helped me a lot in my exams.

Regarding the schedule and test results, students will be informed as set in the academic calendar that has been determined through the UT page. And simultaneously, the staff in each UPBJJ-UT will distribute it through a WhatsApp group to reach students who less monitor information on the UT website. In addition, the exam schedule has also been stated on the billing (proof of payment) for lectures obtained by students after registering at the beginning of the semester.

> P6.Q6.1 For information, the exam went very smoothly, sir. We didn't ask it again, sir. Indeed, the Halsel pokjar has already informed long ago before the D-day. We just need to monitor the group, what information is given by the tutor. For results, we always communicate with the Pokjar. For self-access, when the scores are already published, we can ask for the link. They tell us to open a page and the score is available there. Thus, we usually access it ourselves, sir. We don't feel any difficulty. It's just that on the D Day, a lot of people have access, so it's a bit slow.

The exams use multiple choice questions with the code of the question script adjusted to the course code. To avoid cheating during the exam, UT arranges in one room to enter student data from different study programs and question texts. The students sit at one table and another, there are different questions so that it can minimize seeing other students' answers.

> P14.Q6.7 For final test, the order must be improved, especially when the final test is at the location in the East Halmahera Regency. The exams are sometimes too demanding for the examinees, so my suggestion is that it should be more orderly or more closely monitored. Thus, the exam can be orderly, safe, and smooth.

When the pandemic stroke, several lecture activities at UT had some adjustments, including learning evaluations. The exam, which was previously conducted face-to-face and with multiple-choice questions, turned into an online exam or commonly known as a take home exam (THE) equipped with description questions. Students are asked to download and upload answers at the specified time and the implementation may be at home or in a place that does not create a crowd. Many parties claim that this type of exam is a solution for evaluating learning during the pandemic. In addition, if students can take advantage of this moment of description, they are able to get satisfactory academic achievements compared to multiple choice questions.

> P13.Q6.4 For exams, face-to-face meetings are short, i.e., 90 minutes or per course. During the pandemic, it was a take-home exam, if I'm not mistaken. It was scheduled for 12 hours, so we are more flexible to work on. Moreover, we work in the office, so maybe we finish working at the office at night and then we work. Wecan still get it.

3.3.6 Student Satisfaction with UT is a Combination of Wholehearted Service and Customer Value

Student satisfaction is the estuary of UT's efforts, such as promotional strategies, providing services in various aspects related to academics, study assistance, and exams. In addition, UT sometimes hold regular events that help maintain the presence of students at UT such as seminars, training, scientific meetings and art and sports competitions. Some of these activities are recognized as a forum for students to accelerate their knowledge, insight, and networking. The culmination of student satisfaction with various programs and activities organized by UT is their enthusiasm to share knowledge and make them useful in society.

> Q3.Q8.7 Yes, especially in the school environment where I work. And that I learned from the module and then I applied it to teaching and learning activities in the classroom. Yes, I am very proud to be a UT student. Because UT can compete with other campuses.

In addition to devoting oneself to the community for the knowledge and experience that has been gained during studying at UT, they hope that UT will continue to guard and guide them to be able to graduate on time and have satisfactory grades.

4 CONCLUSIONS

The analysis results show that the UT regional office in Ternate has carried out various promotion strategies and services to students. This turned out to have an influence on increasing customer satisfaction and value, in this case UT students.

The first hypothesis test shows that UT Ternate provides information on a number of printed and online media. Furthermore, it was found that there was consistency of information obtained by students on promotional media, regarding the registration process to lectures in the field. These two findings are reinforced by the results of qualitative data analysis, i.e., the need for careful selection of content on promotional media. The content should be related to the advantages of UT as distance education, what benefits are obtained when studying at UT, as well as other materials that are able to attract the attention of the public/prospective students.

The second hypothesis test shows that students are satisfied with the services provided by UT Ternate, including the ease, speed, and accuracy of UT staff in providing consultation on academic services. The results of this analysis are in line with the findings of the interview data, namely, the excellent service of UT staff and partners (Pokjar management in the regency/city) as the front line to represent the portrait of UT as an educational institution. This good relationship has implications for the growth of emotional bonds between students and UT Ternate. Another service is the provision of varied learning modes, providing students with a number of alternative lecture methods that can be adapted to their time and activities.

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THE DEVELOPMENT OF COMMUNICATION LITERACY MODEL FOR ENGLISH LEARNING (ENGLISH FOR HOUSEKEEPING STUDY)

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Abstract

Technologies and social media have become very useful as platform for the society to access everything such a source for entertainment, old or new information also a source for learning. The existence of human beings constantly coexists with the process of interaction among people worldwide, it is necessary to learn a common language known as English. Especially for students to reach to the international scale for their future study or better job. This study attempted to develop video-based English teaching material for tourism students at Gunadarma University, find out the feedback on the product and students' comprehension. This study was conducted by using a mixed method and R&D method by Borg and Gall in developing the learning video. This study produced an English teaching material in animated video which could be accessed online through YouTube. The product was evaluated by experts in media and material also by 30 tourism students at Gunadarma University 2021/2022. This study showed the result from experts that for display quality was 88,00%, media quality was 90,00% and for lesson quality was 91,82%. Then, the result by the students showed, the display quality percentage was 79,99% while for quality of material presentation was 79,50%. That showed the video learning was considered as Good and almost reached Excellent. This study concluded using a video-based program to learn English was beneficial since it enabled students to acquire the necessary specific topic more entertaining as they can enjoy learning English anytime adjusting to their own ways in learning English.

Keywords: Developing, Video learning, Teaching material, YouTube, English learning, Research and Development, Housekeeping.

1 INTRODUCTION

In the present time, English has the central role to take control the people's life in the academic, business or other aspects. As David Crystal (2003) said in his book English as a Global Language that a language can be made the official language of a country, to be used as a medium of communication in such domains as the law court, government, the media and the educational system which it is the essential role that English best illustrates (p.4).

Internet and smartphones facilitate the humankinds to access different types of social media platforms, where they allow users to have conversations, share and receive information. Social media such as YouTube has become a very useful platform for the society to access everything such a source for entertainment, old or new information also a source for learning. Social media platforms can help not only students but the whole community in learning different topics and subjects, such as English. According to a report from Pew Internet & American Life states that 69% of US Internet users watch or download videos and 14% have posted videos. (Purcell, 2010) points out that with the presence of social media such YouTube platform, varieties of videos with different categories or themes are now widely available and very popular among internet users.

Technology and social media can be used to encourage the learning process, support communication arrangements, assess learning activities, manage resources and create learning materials (Che Ku Nuraini, Faaizah, & Naim, 2014). Learning from social media platforms are way more interesting and fun. As well as for the teachers, using technology and social media platforms are another effective and interesting ways in teaching English. Especially YouTube which constantly steals the learners' attention as they find the provided courses there more interactive, interesting, fun and enjoyable. As Latha in (Thanavathi, 2020) stated regarding YouTube as an education platform saying "it has the power to transform a potentially dull or complicated subject matter into an overall exciting and engaging online learning experience" (p.4). It shows how YouTube as the educational platform is always the "all time fave" learning reference for students to expand their comprehension related to the subject matter that the teachers or instructors use to convey the materials. Brophy (2003) also postulated "video allows one to enter the world of the classroom without having to be in the position of teaching in-the-moment" (p.13) Which shows how a video which is one of a form of instructional media can be very useful in learning whereas it can be accessed any time outside the formal situation in classroom that provides students to learn independently. Besides, this also shows how a video provides students who miss the class or specific part of the materials to replay and see how much or what they missed. In addition, the role of video in teacher education is considered as a teaching and learning in new ways. A video-based teaching material offers teachers the opportunity to engage in a unique set of practices. Little in (Brophy, 2003) suggested how "Through video, teachers can gain access to different classrooms and to a wide variety of instructional strategies, curricula, and classroom cultures." (p.14).

The researcher discovered problem within the housekeeping tourism program at Gunadarma University regarding English learning. The researcher finds out that English has not been applied in teaching-learning activity. The essential part of English in teaching material for the tourism students aims for a better and bright job or study as the main goal to achieve. Hence, they need to adhere to the global world that enforces the society to use English as a means to communicate. The researcher believes that the use of social media platform such as You Tube for the tourism students to learn is way more effective and fun in learning-teaching progress.

Therefore, it concludes that this study aims to develop a video-based English teaching material for Tourism students at Gunadarma University, then find out the feedback given on a video-based English teaching material according to experts and Tourism student at Gunadarma University, as

well as to find out the tourism students' comprehension after they watched the video-based English teaching material.

2   METHODOLOGY

The design of this research is Research and Development, using the ADDIE model (Analyze-Design-Develop- Implement-Evaluate). This research is focused on the development and utilization of instructional video that is uploaded on YouTube by English Department student for the Tourism Students at Gunadarma University who are currently learning English. The population of this study are students who are taking tourism program at Gunadarma University. The data of the population are the students who are taking English major. A descriptive analysis is done to interpret the collected data, to be further presented narratively in the discussion of research results. The main objective of this research to develop a beneficial product which is a video-based English learning program that is specifically created for tourism students in Gunadarma University for learning several basic expressions and responses in hotel housekeeping to be used in a conversation between the housekeeper or the hotel staff and the guest in a hotel.

3   FINDINGS AND DISCUSSION

3.1   Production Progress

This section presents the entire development process in the making of the videos. The product is available in video format. The researcher goes through a number of steps during the pre-production, production, and post-production stages of creating this video learning program.

3.1.1   Pre-Production

The researcher chooses one topic out of tourism and hotel housekeeping materials to be presented in the video learning program. This video involves a conversation video between a hotel front-desk and a complaining guest in a hotel which depicts Handling a Complex Complaint material. Subsequently, continue to the step where the researcher creates scripts for the video scenarios in order to make it as a guide in the production of the video learning program. The script which the researcher uses as a guidance in the making of the video contains two main aspects, there are audio and visual aspects. The first aspect, which is audio contains all the audios such as background music, sound effects and the transcription of the audio that the speaker says, while the second aspect is video that involves animations or texts that show up in the video learning program.

3.1.2   Production

The next stage, the researcher comes to the production of video learning program based on the script that has been designated and approved in the previous stage. In making the product, the researcher decides to utilize PowToon as a tool for designing the animations that are presented in the video. Somehow PowToon also has the premium account that allows the user to access to unlimited premium exports, access all contents even to build our own characters which the price is cheaper than other software. In addition, PowToon is way simple and easy to use for a beginner in an animation making video. Therefore, the researcher decides to pay for limited premium account that is being sold and shared by the seller, so the researcher is able to access all unlimited templates and creates professional contents without the watermark when the final video is being downloaded.
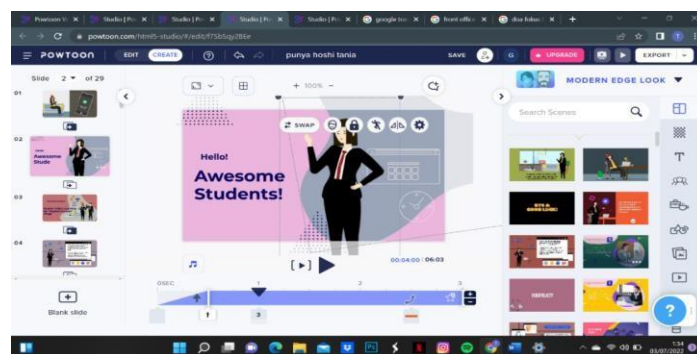
Figure.1. Animated Video Making Using PowToon Premium Account

3.1.3   Post-Production

In this stage of the video production, the researcher focuses on inserting the audio aspect such as narration, sound effects, also the background music into the video. This process utilizes the software Adobe Premiere Pro 2020 as the video editing tool. The researcher simply imports the downloaded video from the PowToon and add the audio files to Adobe Premiere Pro 2020 by clicking the "File" button then click on "import" as it redirects the user to the files that are wanted to be imported.

3.2   Data Analysis

The researcher moves to the data analysis as surveys are conducted and distributed for 4 experts in media and material (English and Housekeeping) as well as 30 students who currently taking tourism program in Gunadarma University academic year on third grade 2021/2022. The survey

consists of different aspects which are display, media and lesson quality aspects that experts must answer in order to determine whether the product is suitable to be employed as a video-learning. Meanwhile the survey for tourism students contains display and material presentation quality which to find out the feedback of the product by students, also comprehension evaluation which consists of 10 multiple choice questions to find out the comprehending regarding the topic or the material given in a video learning as it is also part of the survey made for tourism students. The result of the survey will be converted into percentage based on certain criteria score as follow:

Table 1. Score Criteria.

Percentage	Value
0% - 19,99%	Very Poor
20% - 39,99%	Poor
40% - 59,99%	Fair / Average
60% - 79,99%	Good
80% – 100%	Excellent

Source: Criteria by Arikunto in *Penelitian Suatu Pendekatan Praktik* (2006)

The score in survey is given by the range starts from Very Poor to Excellent using Likert Scale to measure opinions and perception about the aspects. The respondents will be required to select 1, 2, 3, 4 or 5 in accordance objectively. The numbers represent the values as (1) Very Poor (2) Poor (3) Fair/Average (4) Good and (5) Excellent.

3.2.1 Experts Display Quality Evaluation

The researcher has done the evaluation by distributing survey to 4 experts to check the eligibility of the product. It can be accumulated into percentage by using formulation below:

$$P = \frac{x}{Xi} \text{ x } 100\%$$

P = Percentage

X = Total answer score (Excellent + Good + Fair + Poor + Very Poor)

Xi = Total ideal score (Total questions x total participants x ideal score)
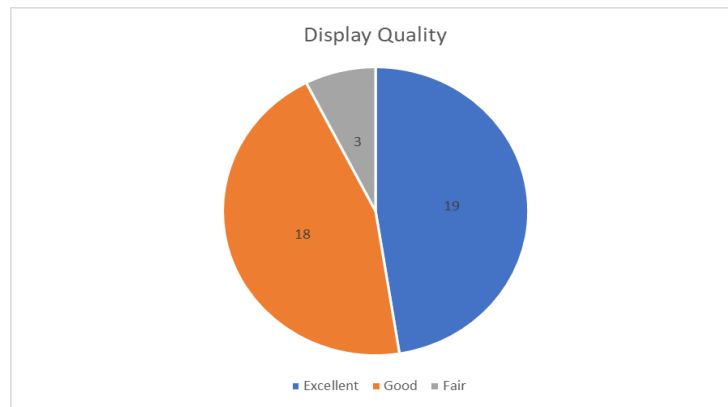
Graphic Chart 1. Display Quality

This part of survey contains of 10 questions regarding to display quality aspects of the product with the highest score is 5 for excellent (E) and the lowest score is 1 for very poor (VP). If the ideal score is when the participants answer 5 for each question, then the total of ideal score (*Xi*) is 10 times 4 times 5 which equals **200**. Based on the data above, the highest amount of total score for display quality aspect is (E) or Excellent with 19. Meanwhile, the total percentage of all 10 aspects is 88%. The score difference with Good score criteria is only 1 point apart that has 18 score. According to the score criteria in table 4.2, the total percentage with 88% means the experts consider that the display quality of the product is excellent to be carried out.

3.2.2 Experts Media Quality Evaluation
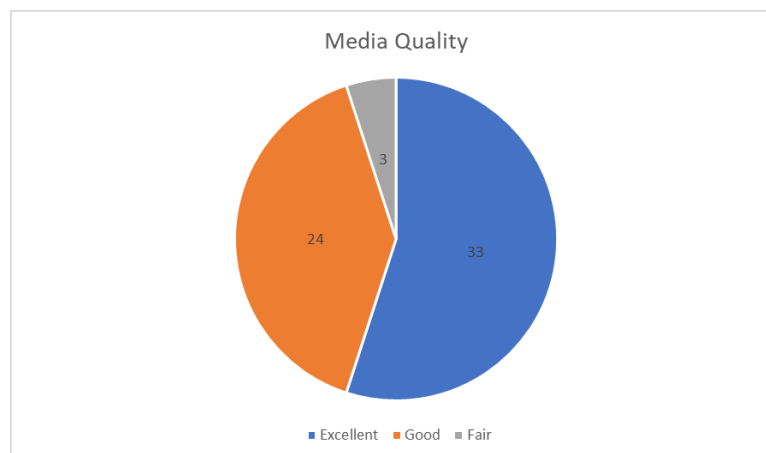
Graphic Chart 2. Media Quality

This part of survey contains of 15 questions regarding to media quality aspects of the product with the highest score is 5 for excellent (E) and the lowest score is 1 for very poor (VP). If the ideal score is when the participants answer 5 for each question, then the total of ideal score (*Xi*) is 15 times 4 times 5 which equals **300**. Based on the data above, the highest amount of total score for media quality aspect is (E) or Excellent with 33 total score. As the total percentage of

all 15 aspects is 90%, it can be concluded that the media quality is considered as excellent by the experts.

3.2.3   Experts Lesson Quality Evaluation
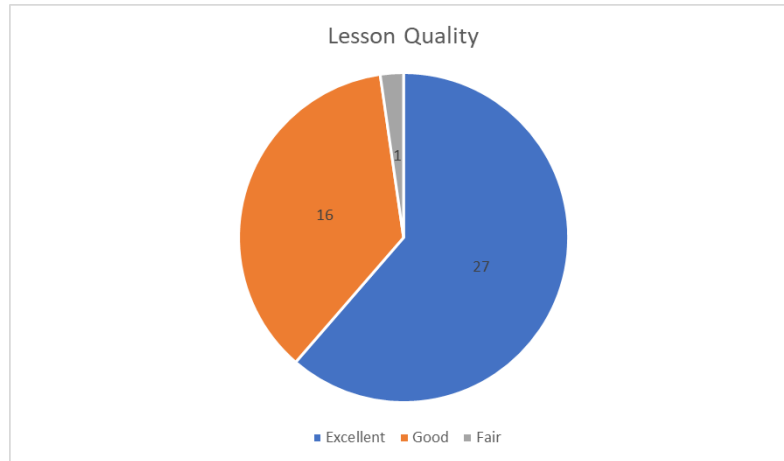
Graphic Chart 3. Lesson Quality

This part of survey contains of 11 questions regarding to lesson quality aspects of the product with the highest score is 5 for excellent (E) and the lowest score is 1 for very poor (VP). If the ideal score is when the participants answer 5 for each question, then the total of ideal score (*Xi*) is 11 times 4 times 5 which equals **220**. Based on the data above, the highest amount of total score for lesson quality aspect is (E) or Excellent with 27 total score and for the total percentage from all 11 aspects is 91,82%. Therefore, this lesson aspect is considered as excellent as well.

3.2.4 Students Display Quality Survey
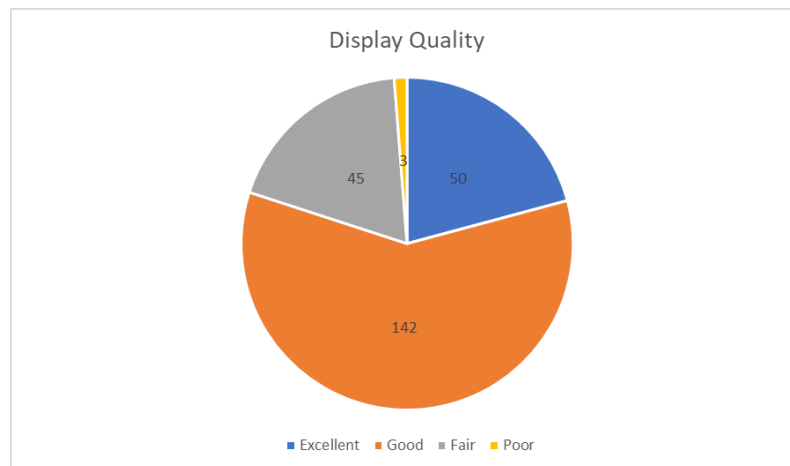
Graphic Chart 4. Student Display Quality

This survey contains of 8 questions regarding to display quality aspects of the product with the hi ghest score is 5 for excellent (E) and the lowest score is 1 for very poor (VP). If the ideal score is when the participants answer 5 for each question, then the total of ideal score (*Xi*) is 8 times 30 times 5 which equals **1200.** According to the data above, the most voted value by the respondents is (G) or good with 142 total score. The highest percentage is video visual clarity with 82,67% and obtained 20 voter for (G) or Good, then followed by presentation of the text can be read and easily understood with 82% that also obtained 21 voter for (G) Good. Therefore, it can be concluded that the video visual clarity including the presentation of the text can be read and easily understood are the most voted as good and stand out aspects of the video. Moreover, The total percentage for display quality aspect is 79,9%. It means the video learning is considered good or excellent enough since the total score is close and almost reaches the excellent score criteria in displaying the quality of the video as the video clarity also the presentation of text can be read and easily understood affects how the learners become more interested watching and learning from the video program.

3.2.5   Students Material Presentation Quality Survey

Graphic Chart 5. Student Material Presentation Quality
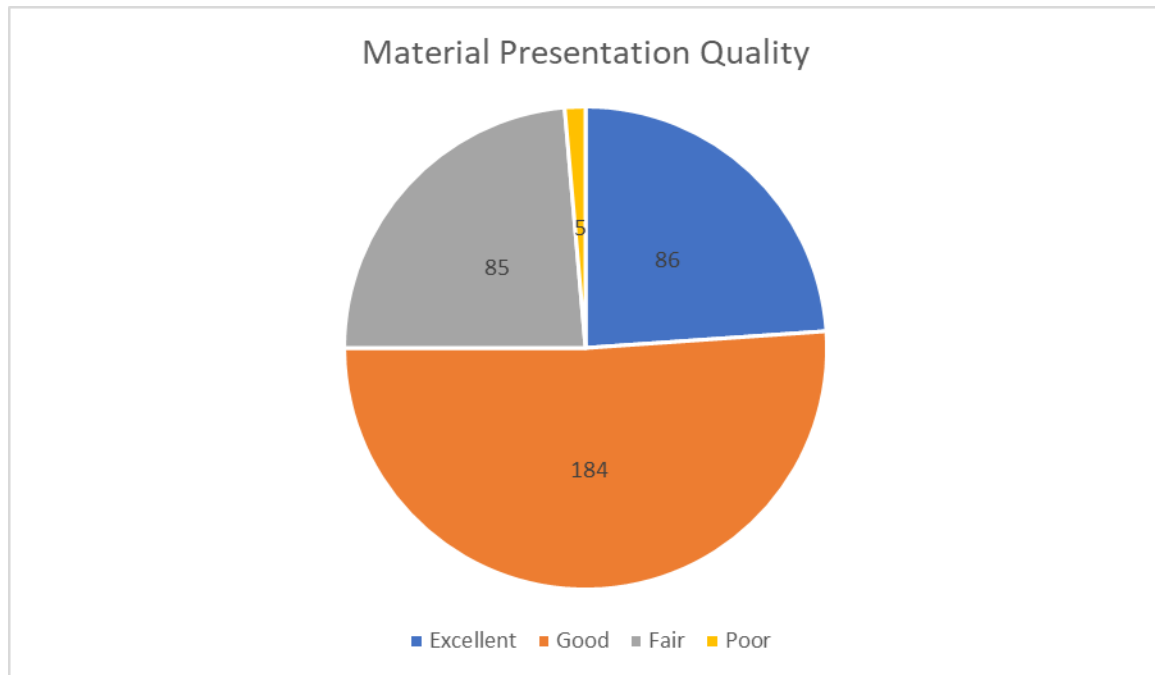
This survey contains of 12 questions regarding to material presentation quality of the product with the highest score is 5 for excellent (E) and the lowest score is 1 for very poor (VP). If the ideal score is when the participants answer 5 for each question, then the total of ideal score (*Xi*) is 12 times 30 times 5 which equals **1800.**

According to the data above, the most voted value by the respondents is (G) or good with 184 total score. Then the Excellent(E) value obtained 85 total score. The total percentage which shows reaching 79,50% which based on the score criteria means the value is Good. The percentage of the score is near the Excellent criteria.

3.2.6   Students Comprehension Evaluation
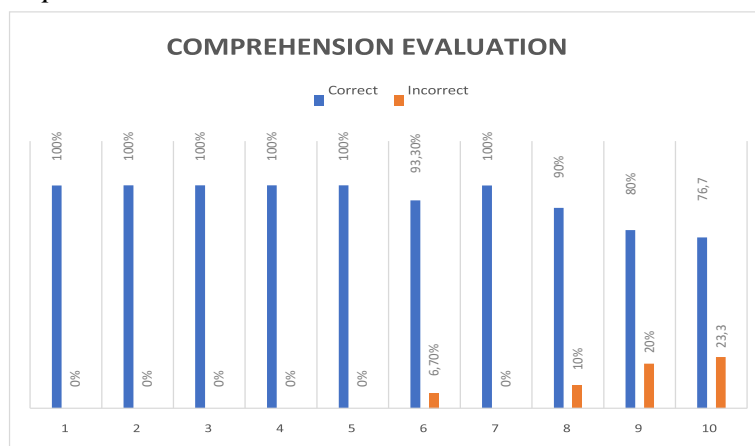
Figure 2. The Result Chart of Comprehension Evaluation

The comprehension evaluation consists of 10 multiple choice questions regarding the topic in the video-based learning program including comprehension in question number 1-5, vocabulary test in question number 6-8, and grammar test in question number 9-10. Based on the data above, the highest percentage question answered correctly by the participant is question number 1 to 5 and question number 7 with 100% and the highest incorrect percentage reaches 23,3%. The lowest percentage question answered correctly is question number 10 with the 76,7%. The second lowest percentage answered correctly is for the question number 9 which is 80% and the third is question number 6 with 93,30%. This shows how the questions number 1 to 5 and question number 7 are considered easy, since the questions are about the main materials of the topic given. Meanwhile for question number 6, 8, 9, and 10 are not about the materials yet about the comprehension of the English vocabulary and grammar regarding the topic. This shows how most of students are lacking in comprehending the vocabulary also the English grammar that they do not find familiar also difficult for the students to answer.

4   CONCLUSION

In developing a video based English teaching material for Tourism students they are pre-production, production and post production stage. The video contains of introduction, brief explanation, the instructions, a brief common case regarding Handling a Complex Complaint, evaluation, main materials, practice pronunciation and the last part is closing. The video learning program should be evaluated by the experts to know whether it is eligible to be utilized as a teaching material. The evaluation consists of three different aspects. There are display quality, media quality and lesson quality. The result reveales for display quality is 88,00%, media quality is 90,00% and for lesson quality is 91,82%. According to the interpretation of score criteria table,

the result scores interval between 80%-100% are considered as Excellent. The second survey by tourism students consists of two aspects, there are display quality and quality of material presentation and the comprehension questions for students' evaluation. The result of the survey shows, the display quality percentage is 79,99% while for quality of material presentation is 79,50%. The survey also shows that the video learning is considered as Good and almost reaches Excellent based on the interval of score criteria.Whereas, the results of the comprehension questions provided to the students demonstrates that the low percentage of correct answers primarily relates to questions of vocabulary and grammar. In conclusion, using a video-based learning program to learn English is very beneficial since it enables students to acquire the necessary housekeeping topic more entertaining, quickly, and they can enjoy learning English with specific materials anytime as it provides the unlimited amount of time that allows students to access the video learning at any moment adjusting to their own ways and conveniences in learning English.

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STRATEGIES AND POLICIES OF THE GOVERNMENT OF INDONESIA IN THE EDUCATION SECTOR DURING THE COVID-19 PANDEMIC CRISIS

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Abstract

The purpose of writing an article entitled Strategy and Policy of the Indonesian Government in the Education Sector in the Crisis Period of the Covid-19 Pandemic is to find out how the Indonesian government's strategies and policies in the field of education are facing the Covid-19 Pandemic. In the field of education, a student no longer has to be present in the classroom to get an education and the teaching and learning process can be done anywhere. Online learning has become the new prima donna where many schools and universities are forced to carry out learning using telecommunication networks and internet access. This is due to the development of technology and communication that does not recognize space and time. The method used in writing this article is descriptive analysis, where this article tries to interpret and describe the existing data and the existing situation so that it can describe the characteristics and relationships between objects. In the end, the strategies and policies implemented by the Government of Indonesia during this pandemic are new and have never been implemented before. This policy or what the Indonesian government calls the Freedom to Learn follows the Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 3 of 2020 concerning National Standards for Higher Education, in Article 18 it is stated that the fulfillment of the study period and burden for undergraduate or applied undergraduate students can be carried out: 1) follow the entire learning process in the study program at the university according to the period and study load, and 2) follow the learning process in the study program to fulfill some of the time and learning load and the rest following the learning process outside the study program.

Keywords: Indonesian Education; Freedom to Learn; Distance Education; Distance Learning.

1   INTRODUCTION

The year 2020 is a turning point for the world of education where when people are more or more often using the face-to-face education system, they are faced with the choice of continuing the existing system with the consequences of contracting the Coronavirus Disease 2019 (or Covid-19) which is spreading or switching to education. remotely relying on information systems skills. For most people, of course, this is a compulsion considering their skills in using information system facilities are still very limited and internet access has not been able to reach remote areas.

After observing the coronavirus pandemic situation, the WHO advised maintaining social distancing as the first prevention step (Jena, 2020b). Each country then implements policies to prevent the spread of the 2019 Coronavirus Disease. Most of the countries affected by Covid-19 then take state lockouts and prohibit community mobilization between countries. This lockdown,

then, has an impact on people's lives, be it from the economic, social, or political sectors, and of course, also has an impact on education. In the field of education, many schools and universities were closed, and the teaching and learning process shifted from a face-to-face model in the classroom to a digital model with the help of advances in information technology.

This sudden change then caused many problems that occurred in the field. Starting from the limitations of the internet network that cannot reach all corners of the country, there are still many people who are not familiar with technological advances, to the results of student evaluations whose accuracy is doubtful, which is an obstacle that must be faced both by educators and by students. This is coupled with psychological problems where students who are used to learning face-to-face with their teachers or with their friends now must be "forced" to interact in the network. Thus, COVID-19 has created many challenges and opportunities for educational institutions to strengthen their technical knowledge and infrastructure (Jena, 2020a).

This sudden change then, makes many schools and universities experience challenges in using information technology that will be used in the teaching and learning process. E-schools with different teaching modes have appeared in the public field of vision, and web-based instruction has become a very common phenomenon (Xiaoju & Xin, 2018). Teachers, be they teachers, lecturers, or tutors, are required to be able to master various applications and keep up with the development of information technology. On the other hand, students are also very dependent on their parents to be able to help carry out the assigned tasks.

School closures due to Coronavirus have raised new issues such as how to transition to online learning at home. Additionally, school closures also increase the pressure on students, teachers, and parents, especially those with limited digital skills, education, and resources for continued education (Milian Prof. et al., 2020). It increases the burden on parents to not only struggle to provide for the home but also to perform the supervision task of protecting that their children learn from home (Onyema, 2020).

Indonesia as one of the countries affected by the Covid-19 pandemic is the same as other countries. However, if other countries have implemented lockdown measures to prevent the spread of the virus, Indonesia has implemented other policies. Since the first case was discovered in Indonesia on March 2, 2020, the government has immediately imposed social distancing or social distancing and physical distancing or physical restrictions. At that time, the President of Indonesia, Joko Widodo, directly urged people to worship from home, work from home, and study from home. The appeal was issued as an effort to break the chain of the spread of the Covid-19 virus, but it

does not mean that it also cuts off social interactions that occur in the community. The Indonesian government also made a breakthrough in the field of education with the launch of the concept of *Merdeka Belajar* (Freedom to Learn).

2 METHODOLOGY

The method used in writing this article is descriptive. Namely, this article tries to interpret and describe the existing data and the conditions that have occurred since the Covid-19 pandemic was first detected until now. Indonesia, as one of the countries that have not implemented lockdown measures, uses other measures to prevent the spread of the virus so that the economy and education can continue to run even during a pandemic. By using the data and facts found, then processed and interpreted to provide the information needed in writing articles.

3 FINDINGS AND DISCUSSION

The Covid-19 pandemic that has occurred since the beginning of 2020 has harmed all aspects of human life. But it cannot be denied that this pandemic has raised the prestige of Distance Education and has become the new prima donna in the world of education. *Freedom to Learn,* launched by the Indonesian Ministry of Education, Culture, Research, and Technology, is an embodiment of the autonomy of the learner theory which was launched by Michael Moore in Hills & Keegan in his writing entitled Theory of transactional distance. Learner autonomy is the extent to which in the teaching/learning relationship it is the learner rather than the teacher who determines the goals, the learning experiences, and the evaluation decisions of the learning program (Hills & Keegan, 1994).

Autonomy refers to the extent to which the learner decides on certain factors, such as "what to learn, how to learn, and how much to learn (Moore & Anderson, 2003). Moore suggests that adult learners tend to set their own learning goals and pursue goal achievement. The autonomy of learners is then very similar to the *Freedom to Learn* policy implemented by the Government of Indonesia. *Freedom to Learn* provides freedom in learning, which can be anywhere, anytime, and even from any source. Especially in the current pandemic condition, like it or not. Like it or not, we must apply learning methods with various learning sources, one of which is learning through digital technology.

The Freedom to Learn policy has been launched into special programs which start at the end of 2019 until October 2022. There have been 22 programs. Each of these programs has a different target object, so it is hoped that education in Indonesia will not be disrupted by COVID-19.

Table 1. Caption for the table.

No.	Episode	Launch Date	Program
1	*Freedom to Learn 1*	December 10, 2019	National Assessment, USBN, RPP, and PPDB
2	*Freedom to Learn 2*	January 24, 2020	Independent Campus
3	*Freedom to Learn 3*	February 10, 2020	Distribution and Use of BOS Funds
4	*Freedom to Learn 4*	March 2, 2020	Driving Organization Program
5	*Freedom to Learn 5*	July 3, 2020	Motivator Teacher Program
6	*Freedom to Learn 6*	November 3, 2020	Transformation of Government Funds for Higher Education
7	*Freedom to Learn 7*	February 1, 2021	Motivator School Program
8	*Freedom to Learn 8*	March 17, 2021	Center of Excellence Vocational High School
9	*Freedom to Learn 9*	March 26, 2021	Independent Lecture KIP
10	*Freedom to Learn 10*	April 22, 2021	LPDP Scholarship Program Expansion
11	*Freedom to Learn 11*	May 25, 2021	Vocational Independence Campus
12	*Freedom to Learn 12*	August 26, 2021	Safe School Shopping Program with School Procurement Information System (SIPlah)
13	*Freedom to Learn 13*	September 3, 2021	Cultured Freedom with Indonesian Channels
14	*Freedom to Learn 14*	November 12, 2021	Free Campus from Sexual Violence
15	*Freedom to Learn 15*	February 11, 2022	Independent Curriculum and Independent Teaching Platform
16	*Freedom to Learn 16*	February 15, 2022	Acceleration and Increasing Funding of PAUD and Equality Education
17	*Freedom to Learn 17*	February 22, 2022	Regional Language Revitalization
18	*Freedom to Learn 18*	March 23, 2022	Freedom of Culture with Indonesiana Funds
19	*Freedom to Learn 19*	April 1, 2022	Indonesian Education Report
20	*Freedom to Learn 20*	June 3, 2022	Practical Teaching
21	*Freedom to Learn 21*	June 21, 2022	College Endowment
22	*Freedom to Learn 22*	June 3, 2022	Transformation of State University Entrance Selection

The learning arrangement with a chaotic approach is intended so that students can be safe, comfortable, and easy to learn. Learners as learning subjects – learner control, play an important role in the learning arrangement. The initiative of children as learners to learn –the will to learn- will die when faced with many rules that have nothing to do with the learning process, as has been explained in regular learning above. In addition to freedom, to bring up the will to learn is an attitude of realness – namely, the awareness that the child as a student has strengths and weaknesses; courage as well as anxiety; can be angry, can also be happy. Therefore, the curriculum and teaching materials for teacher education are designed as pedagogical vehicles to develop the ability to understand students, the ability to master educational learning, personality abilities as teachers, and the ability to master teaching materials in the field of study in the school curriculum, the ability to understand deeply the concepts and methodologies of the discipline. the science that overshadows the substance of the curriculum, and the social abilities of teachers as members of society (Setijadi, 2005).

In the *Freedom to Learn* program, the teacher will appear as the driving force. Here, the key to *Freedom to Learn* is the human being. Well, if humans are the key, then a sense of independence must always be attached. If the sense of independence is not attached, it is necessary to "learn to be independent". *Freedom to Learn* also needs to be strengthened before starting independent learning. Once purpose and freedom in design issues are resolved, then dimensions related to technology, support, review, or evaluation become critical aspects of discourse and decision-making (Rogers et al., 2009). The availability of technological devices for students and teachers, internet access, and the ability of teachers and students to navigate distance learning are key factors in sustaining effective educational efforts during the pandemic (Milian Prof. et al., 2020).

3.1 Freedom to Learn – Independent Campus

The *Freedom to Learn* Policy – *Independent Campus,* launched by the Minister of Education and Culture, is a framework to prepare students to become strong scholars, relevant to the needs of the times, and ready to become leaders with a high national spirit. In the regulation of the Minister of Education, Culture, Research, and Technology, No. 3 of 2020 gives students the right to study 3 semesters outside their study program. Through this program, there are wide opportunities for students to enrich and improve their insight and competence in the real world following their passions and ideals. (Dirjen Pendidikan Tinggi, 2020).

Freedom to Learn – Independent Campus according to the Minister of Education, Culture, Research and Technology of the Republic of Indonesia departs the desire that educational output

produces better quality and no longer produces students who are only good at memorizing, but also have sharp analytical skills, reasoning, and comprehensive understanding in learning to develop themselves. *Freedom to Learn* is a form of learning in higher education that is autonomous and flexible to create a learning culture that is innovative, unfettered, and follows student needs. (Dirjen Pendidikan Tinggi, 2020). *Freedom to Learn* is a natural learning process to achieve independence. It is necessary to learn to be independent first, because there may still be things that shackle the sense of independence, the feeling of not being independent, and narrow the space for independence. The essence of *Freedom to Learn* is to explore the greatest potential of teachers and students to innovate and improve the quality of learning independently. Independent is not only following the educational bureaucratic process but truly educational innovation.

The main points of the *Freedom to Learn – Independence Campus* policy is, *first*, the opening of new study programs regulated in the regulation of the Minister of Education, Culture, Research and Technology No. 7 of 2020 on the Establishment, Amendment, Dissolution of State Universities, and the Establishment, Amendment, Revocation of Permits for Private Universities, as well as regulation of the Minister of Education, Culture, Research and Technology No. 5 of 2020 on Accreditation of Study Programs and Universities. Autonomy for Universities accredited A and B to open new study programs that are not in the fields of health and education. Additionally, new study programs are automatically granted C accreditation and study programs can be submitted if there is cooperation with strategic partners.

Second, the higher education accreditation system is regulated in the regulation of the Minister of Education, Culture, Research and Technology No. 5 of 2020 on Accreditation of Study Programs and Universities. Colleges with B and C accreditation can apply for an increase in accreditation at any time. The government can also review the accreditation status of universities or study programs if there are indications of a decline in the quality of the university or study program.

Third, the University's legal entities are regulated in the regulation of the Minister of Education, Culture, Research, and Technology No. 4 of 2020 on Changes in State Universities to State Universities as Legal Entities and the regulation of the Minister of Education, Culture, Research and Technology No. 6 of 2020 on Acceptance of Undergraduates at State Universities. The government also facilitates the requirements for changing the status of higher education institutions to legal institutions in the absence of minimum accreditation, and submissions for changes can be made at any time.

Fourth, the right to study for three semesters outside the study program as regulated in the regulation of the Minister of Education, Culture, Research and Technology No. 3 of 2020 on National Higher Education Standards. The university is obliged to give students the right to take credits outside the university for 2 semesters and take credits in different study programs at the same university for 1 semester. The goal is that students can learn new knowledge outside the study program taken. Additionally, it is also hoped that graduates will be more prepared to face the conditions of employment after college.

The purpose of this independent campus is to improve the competence of graduates, both soft skills, and hard skills, to be more prepared and relevant to the needs of the times, and to prepare graduates as future leaders of the nation with excellent personalities. One of the keys to the success of implementing the *Freedom to Learn – Independence Campus* Policy is to make the learning process in higher education more autonomous and flexible (Yusuf & Arfiansyah, 2021)

Following the principle of continuity, assessment in the implementation of the *Freedom to Learn – Independence Campus* policy, the program "right to learn three semesters outside the study program" is carried out during the activity (process assessment) and at the end of the activity in the form of a learning activity report (outcome assessment). Assessment in the process is done using observation (personality and social) as the main technique. While the assessment of the results is carried out at the end of the program implementation using reports made by students. The assessment is carried out by assistants from Third Parties related to activities taken by students and assistant lecturers in Higher Education.

Additionally, universities are required to create a system in the form of an online survey about students' experiences and assessments of the quality of the independent learning program that they undergo for one semester outside the study program. This can be used to get feedback from students as an evaluation tool for universities in developing their next program.

4 CONCLUSION

Apart from the Covid-19 pandemic, distance learning is the mission of the Indonesian government in realizing learning independence. The Independent Learning System of the *Freedom to Learn* is very supportive to improve the competence of graduates, both soft skills and hard skills, preparing students to be more prepared and relevant to the needs of the times, preparing graduates as future leaders of the nation with superior and personality. So that the existence of an independent campus can provide flexibility for students to choose aspects of their development following the partner collaboration that has been designed by the student's home program. This program is expected to

provide new experiences for students to choose programs according to their characteristics and interests, encourage student motivation, and make them alumni who are useful for life and the surrounding community.

With globalization and reform, there has been a change in the educational paradigm. First, is the paradigm of a teaching-oriented educational process where the teacher is more of an information center, shifting to a learning-oriented educational process where students become the source (student center). Second, the paradigm of the traditional educational process, which is oriented towards classical approaches, and formats in the classroom, shifts to more flexible learning models, such as distance education. Third, the quality of education is a priority (meaning quality is international). Fourth, the growing popularity of lifelong education and the increased melting of the boundaries between education in school and outside school.

This paradigm shift makes the campus an institution to produce learning (Barr & Tagg, 1995) This shift frees the institution from various series of difficulties related to implementing teaching because the mission of the institution is to produce learning that is followed by all students through their best efforts. The learning paradigm provides opportunities for students to set the boundaries of learning and their success, while the teaching paradigm seeks to achieve success on what has been determined by the institution by developing certain teaching methods.

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ARTSTEP APPLICATION AS AN EFFECTIVE PRACTICAL LEARNING ALTERNATIVE FOR STUDENTS DIPLOMA IV ARCHIVES

(*A CASE STUDY OF THE USE OF ARTSTEP APPLICATIONS FOR DIPLOMA IV ARCHIVAL SCIENCE STUDENTS IN THE PUBLICATION PRACTICE COURSE AND ARCHIVE EXHIBITION*)

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Abstract

The Archives Diploma IV Study Program is a study program that produces graduates who are ready to work, especially in the field of archives including manual and electronic archive management. Diploma study programs have a percentage in the curriculum of 60% practical and 40% theory. As a distance education university – the Open University (Universitas Terbuka) archiving science diploma study program must be able to equip its students to apply archival science practices according to the diploma program curriculum standards. The purpose of this study is to equip students to be able to apply publication management and archive exhibitions as subjects that have practical substance by using artstep applications for publications and virtual archive exhibitions. The methodology in this descriptive study is a questionnaire given to users who access the virtual exhibition held. Furthermore, the data collected is classified according to the problems encountered. Regarding the application design at the virtual exhibition, the prototype design for the virtual archive exhibition application using the artstep application. Other data sources in the form of documents related to research objectives. Of the 4 (four) virtual exhibitions held using the artstep application, it shows that the artstep application is very helpful for students in carrying out publication management and archive exhibitions virtually and can also be applied to offline exhibitions.

Keywords: teaching innovation virtual archive exhibition, distance education

1 INTRODUCTION

The Open University (Universitas Terbuka) as a distance education university to date has more than 40 study programs and postgraduate program. With this distance concept, the Open University (Universitas Terbuka) has flexibility in the process of teaching and learning activities. This means that the learning system or lectures are not carried out with a routine schedule in a face-to-face format between lecturers as teachers and students in one place. But students in their learning activities can take advantage of existing media to study and master the subjects they are studying. Media as a tool in learning activities at open universities include: printed or popular teaching materials called modules, non-printed teaching materials include learning materials in format, audio, video, CAI, dry lab, virtual lab.

The Archives Diploma IV Study Program is a study program at the Open University which has a curriculum component of 60% practice and 40% theory. With the remote system, it is quite difficult for Archives D-IV students to practice for the following reasons:

1. Not all of the practice locations are easily accessible by students.

2. There is a schedule for the practice time because in carrying out the practice students are accompanied by an instructor.

For these two reasons, students need to be assisted with facilities that make it easier for them to carry out archiving work practices

Of the 35 courses contained in the Archives D-IV study program, there are 24 courses with practical content. One of these subjects is Archives Publication and Exhibition. In this course, students are expected to be able to apply management in archive exhibitions as well as procedures for publishing exhibitions.

Formulation of the problem

What are the effective procedures that can help students in doing archival work practices, especially for publications and archive exhibitions?

2 METHODOLOGY

Descriptive research with the theme "Artstep Application as an Effective Practical Learning Alternative For Students Diploma IV Archives (A Case Study of the Use of Artstep Applications for Diploma IV Archival Science Students in the Publication Practice Course and Archive Exhibition). This research methodology uses an instrument in the form of a questionnaire. given to visitors to the virtual archive exhibition, especially for students, After the data is collected then the data is classified then the data is processed, from the processed data it is interpreted as an answer to the problem being studied. As a source of other data as supporting data in the form of documents related to research objectives.

For the artstep application, the method used is to design a prototype of a virtual exhibition template. Special prototype exhibition virtual archive prototype development focus on the design needs of the user / user. The characteristics of the prototype that focus on the design of user needs are:

1.Understanding the user and their needs

2. in the early and final stages involving the user/user

The advantages of using a prototype are:

1. Well-established communication between developers and users

2. Developers can work better in determining user needs

3. Implementation becomes easier because the user knows what to expect.

The methodology used to design a virtual exhibition prototype that involves users will obtain a virtual archive exhibition prototype that is able to display a complete virtual exhibition, chronologically according to events and comfortable to enjoy.

3 FINDINGS AND DISCUSSION

3.1 Curriculum Structure of Diploma IV Archive Program

Diploma study program is a level of study at a university which is equivalent to a bachelor's program. Based on the KKNI – the Indonesian National Qualifications Framework, as a reference for the higher education curriculum in preparing the curriculum. the diploma program occupies level 7 of 9 levels at the overall level of strata / levels in higher education. Regarding the position of the diploma level according to the structure of the KKNI, it is described as follows:

Table

ARRANGEMENT AND EQUALITY OF QUALIFICATIONS
TYPES AND PROGRAMS OF HIGHER EDUCATION

				Level Kualification
Doctor	Doctor	Specialis II	←	9
Master	Applied Master	Specialis I		8
		Profession		7
		Diploma IV	**Focus on developing and enhancing job-specific skills**	6
		Diploma III		5
		Diploma II		4
		Diploma I		3

Based on the existing levels in the KKNI standard, it shows that the diploma program is at level 7 with the output of graduates focusing on the development and improvement of specific work skills, meaning that diploma IV graduates must have the ability of practitioners who have an expert level. If it is related to the curriculum of the archival science diploma IV study program, students must have the ability of practitioners in archive management.

3.2   Substance of Publication and Archive Exhibition Course

Publication and archive exhibition subjects for general instructional purposes equip students with management skills in archival exhibitions as well as in terms of the substance of the exhibition material. There are several things to consider when selecting archival exhibition materials.

1. The archives to be displayed in the exhibition must be in chronological order or based on events that occurred or are a series of history.

2. The archives displayed must be original, authentic and intact so as to give the impression that the archive exhibition held is managed in a planned and accountable manner.

3. The archives on display are arranged according to the chronology of events.

By paying attention to the important components in organizing archive exhibitions

Then the archive exhibition can be carried out as expected, as an activity of disseminating static archive information to the public, especially to students so that archives are a useful source of information as a legacy of information to future generations.

There are 4 types of exhibitions that can be held

1. Thematic exhibitions: for example the exhibition about the Pioneer of the Open University (Universitas Terbuka) Prof. Setijadi

2. Commemorative exhibitions: for example the Open University Anniversary exhibition, (Dies Natalis Universitas Terbuka) National Archives Day commemoration

3. Institutional exhibitions: for example the 38 Years Exhibition of the Establishment of the Open University (Universitas Terbuka) and other institutional exhibitions.

4. Functional exhibitions: for example Exhibitions that also provide information in the form of archive preservation and restoration services

By knowing the types of exhibitions, students can choose and determine which types of exhibitions are chosen to be held in archive exhibitions.

In the archive display in the exhibition room, an archive description is needed that mentions the events that occurred, where, when, and also by whom the pictures were taken. However, sometimes the archive description is incomplete, considering that the archive has been around for a long time, the historical witness is no longer there, so the description included contains information about the events that occurred.

3.3   Necessary Components In Archive Publications and Exhibitions

In the preparation of publications and archive exhibitions, components are needed to support the smoothness and beauty of presenting archive exhibitions virtually.

The required components are

a. Themes or events to be featured in archive publications and exhibitions. Before the exhibition is held, publication or socialization of the archive exhibition is carried out. There are several forms of publication in the form of leaflets, pamphlets, booklets. Some archive exhibitions use publications in the form of magazines. So regarding the publication of this archive exhibition, the type of publication can be chosen according to the archive exhibition being held. This publication is distributed to the public so that the public knows that an archive exhibition is held in a certain place, or on a certain web page.

b. Identifying materials for exhibitions, in this case is choosing archives that will be displayed at archive exhibition activities. The selection of this archive must be appropriate, because an exhibition is an illustration of a series of events that occurred. So the exhibition does not only display valuable archives but does not have a series of events or a series of history regarding a particular theme or event.

c. Identify archival frames so that archive exhibitions are seen as interesting. Archive frames, especially in the use of artstep applications, have many choices, so they can be selected according to the harmonization of events illustrated in the archive.

By paying attention to the components that need to be fulfilled in organizing an archive exhibition, the display at the exhibition will be seen as attractive, with a series of important events that need to be informed to the public.

3.4   Archive Description

Archive description, is a series of information that describes the event, time, and the characters involved in the event. Description. It is important to do a description of this archive at an archive

exhibition, because it is from this description that the existence of the archive will be explained. The archives used in the archive exhibition are archives that have static values. Static archives are records that have gone through the assessment process, and have permanent information on the records retention schedule (JRA) and have historical value, or unique value.

In the preparation of the archive description, there are at least 6 groups of information listed in this static archive. According to the ISAD (G) standard (General International Standard Archival Description), namely

1. The group that declares the identity of the archive (identity treatment area) includes:
    a. reference code (refrence code (s)) or location;
    b. title of the archive unit described (title);
    c. the date of the archive described (dates of creation of the material) ;archive description level (level of description): item, file, series, subseries, subfons, fonds;
    d. the size or number of archives described (extent of the unit of description, qualities bulk od size).

2. The group of information related to the archive context (contect area) which consists of:
    a. the name of the entity or individual of the archive described (name of creator) the name/creator of the archive;
    b. individual or administrative biography of the institution or agency that makes the archive description unit (administration/biographical history);
    c. accumulation of dates from the archives described by containing the oldest to the youngest dates/years (dates accumulation of the unit of the description);
    d. history of change of ownership of archives containing records of changes in ownership of archives (custodial history).

3. The group structure and content of the archive (content and structure) includes:
    a. The scope of the content or abstraction of the archive description unit (scope and content/abstract) to identify the problems included in it so as to make it easier for users to search archives on matters that are relevant to what is needed
    b. Information on assessment, destruction, and Archives/JRA Retention Schedules.
    c. Information relating to the probability that will occur in the file described.
    d. Archive management system.

4. Requirements for archives to be accessible (condition of access and use area) include:
    a. Official status (legal status);
    b. Access conditions (access conditions);

    c.   Conditions if archives are reproduced for other parties (copyright/conditions governing reproduction);

    d.   Information about the major languages recorded in the archives (language of material);

    e.   Information relating to the described physical characteristics of the archive (physical characteristics);

    f.   Tools to find the desired archive or access / archival terms (finding aids).

5.   In relation to the archive material (allied material area), it includes:

    a.   The location of the original archive is stored (location of originals);

    b.   Information about archival copies, both in the same media or in other media (the existence of copies);

    c.   Cross-point to show a relationship between the archives described/files stored;

    d.   Information relating to the existence of other storage places;

    e.   Notes for publishers/publications that use archives as a source of information.

6.   Information relating to special information notes that have not been accommodated in the previous note or description (note).

Static archives are not only in textual form, but there are also special forms of static archives, such as static archives in the form of films. Therefore, at archive exhibitions, video and audio archives can also be exhibited in addition to textual archives.

3.5   Archive Metadata

Metadata is structured data that describes the data. In principle, metadata is information contained in a document which contains an explanation of the document.

The archive metadata is:

a.   Data that describes the context, content and structure of archives and their management over time.

b.   Structured or semi-structured information that enables the creation, management and use of records across time and across domains.

Records management metadata can be used to identify, authenticate and contextualize records with the people, processes and systems that create, manage, maintain and use them.

3.6 Artstep Application Structure For Archives Publication and Exhibition For Archival Practice (Archive Publications and Exhibitions)

For virtual archive exhibitions, you can use the artstep application, this application is open source, meaning applications that can be developed as needed. The artstep application also does not pay or is free so that anyone can do archive exhibitions using this artstep application.

The following are examples of exhibitions and archive publications using the artstep application.
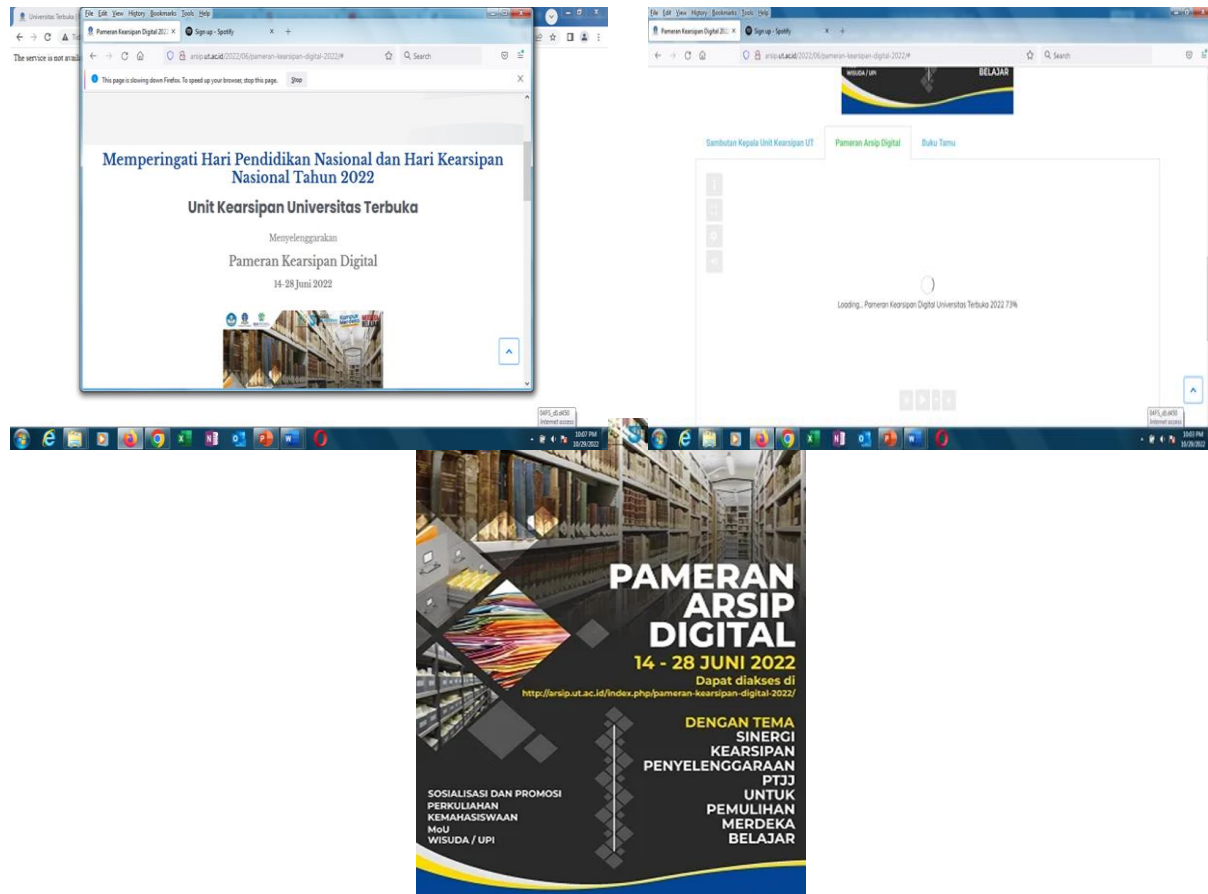
In the display of publications and archives exhibitions listed, planning has been carried out on the event side which will be informed in the form of archive listings. Likewise, the user interface

design at the exhibition can be designed as desired. For walls / partitions between exhibition themes, it can be equipped with a catalog containing the series of events displayed.

Students can practice archival work, especially on archive publications and exhibitions.

The first stage, students determine the theme of the archive exhibition.

The second stage is to identify the appropriate archives to support the theme of the exhibition. The supporting archives for the exhibition can be in the form of textual, video, audio, microfische archives and archives in other formats that support the theme of the exhibition.

Stage 3, each partition in this artstep application can be filled with catalog entries.

Stage 4, to make it more interesting to determine the type of archival frame and accompanying music to enjoy the virtual archive exhibition.

It is necessary to pay attention to the number of archives listed because the more files that are listed with various types, there can be a delay in accessing this virtual exhibition material. For that, choose an interesting theme, with support for archives with complete descriptions, and don't include a lot of video archives.

To complete or perfect this archive publication and exhibition, please provide a brief description of the organization of archive publications and exhibitions. And include for a virtual guestbook that serves to get suggestions for anyone, a member of the public who has access to this virtual archive exhibition.

The following are some of the responses obtained from the virtual guest book at the archive exhibition some time ago.

The following are excerpts from the answers given by visitors to the virtual archive exhibition

"This virtual archive exhibition is very useful for increasing insight, and can be visited at any time"

(student access 1)

"Through publications and virtual archive exhibitions I can learn about how to do exhibitions"

(student access 2)

"This virtual archive exhibition uses an open source artstep application so that everyone can create virtual exhibitions easily and cheaply"

(student access 4)

"With the facility / wall that can be filled with catalogs according to exhibitions, the display on the exhibition frame, which can be specially designed is very effective as a means of practice for publications and archive exhibitions "

(student access 5)

4   CONCLUSION

As students of the Diploma IV Archives study program, students are required to have good abilities in the field of archival science practice. The application of artstep applications as archival work practices for practical archive publications and exhibitions really helps students in understanding, applying management concepts in archive publications and exhibitions, and students can apply virtual archive exhibitions directly. With the practice of this virtual archive exhibition, students can find out the shortcomings and suggestions of exhibition visitors. Because the facilities in the open source artstep application are quite complete, it is recommended that students can practice archive exhibitions.

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STATIS UNTUK PENYELENGGARAAN SISTEM INFORMASI KEARSIPAN NASIONAL (SIKN)

https://arsipdanperpustakaan.jogjakota.go.id/news.php?berita_id=131 (akses 28 Oktober 2022, 21.16 wib)

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TECHNOLOGICAL INNOVATIONS IN DISTANCE LEARNING IN AUGMENTED REALITY-BASED OPTICAL COURSES

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Abstract

The use of technology can be the best solution in increasing the understanding of abstract eye optic system materials, especially in distance learning at the Open University. The purpose of this study is to describe the need for Augmented Reality (AR) technology in supporting the improvement of the quality of distance learning in eye optic system materials and; describes the initial design of AR technology on the material of the eye optic system. This type of research is descriptive and qualitative. In exploring the initial needs of AR technology, this research involved 18 UT Physics Education study program students. The research instrument includes a questionnaire on students' misconceptions and needs for AR technology in eye optic system materials. The data were analyzed descriptively and qualitatively. The results of the data analysis showed that 90% of students experienced misconceptions about the material of the eye optic system. Further analysis was carried out on several aspects, including as many as 69% of students agreed that the material of the eye optics system could not be studied without visualization media; as many as 67% of students think that the material of the optical system of the eye is complex and challenging to understand. Based on these findings, as many as 81% of students agree and need AR technology to support the improvement of understanding of eye optic system material. Therefore, AR-based learning media developed with unity technology is designed and equipped with visualizations that can help the advancement of student material understanding of the eye optics system material.

Keyword: Learning Innovation, Distance Learning, Augmented Reality

1 INTRODUCTION

1.1 Technology and Distance Learning

Learning is the main thing in education whose implementation is carried out continuously [1]. With the Covid-19 pandemic, the education system has undergone significant changes. Learning that isclosely related to the face-to-face system is turning into distance learning. Distance learning is a learning system without face-to-face activities directly between educators and students, but is carried out online which is supported by the use of technology [2].

Distance learning is enforced at all levels of education, as is higher education. Remote lectures are carried out with an online system. Teknologi became the fulcrum in this long-distance lecture. Technology can facilitate all needs in the teaching and learning process [3]. Technology makes it easy for educators and students to do distance learning. Various platforms are provided with the intention of facilitating the implementation of distance learning, including making it easier for educators to assess students even though it is not carried out face-to-face / in person, the use of technology can help students in obtaining subject matter. Technology also plays a role in increasing the creativity of educators and students, educators can innovate in the delivery of learning materials by utilizing various social media sites, applications, platforms, and students can take advantage of various social media sites, applications, platforms in fulfilling the tasks given.

Technology can provide benefits in supporting the success of online learning in the midst of a pandemic like today [4].

The use of technology allows for a more efficient way of developing aspects of student thinking than is achieved when using traditional teaching practices [5]. The use of information and communication technology in distance learning has a positive impact on the learning process, students and educators. Information technology and telecommunications can remove the constraints of space and time and are cheaper and easier, despite the challenges of cost, infrastructure readiness, community readiness, and supporting regulations [6].

Distance learning meansthat educators and students are not in one place. To facilitate learning, technology is used as a medium. Learning media is everything that is used to channel messages in the form of teaching materials to stimulate students' attention, interest, and thinking to learn [7]. Media is used to channel messages and encourage the learning process to students; The media can also be said to be props [8]. Several types of media that can be used in learning activities, namely print media such as images or charts and electronic media [9]. Media that have been used in distance learning include interactive games, PPT, quiziz, google sites, microsoft sway, android-based learning media etc. Platform that can help implement online learning such aserti e-learing, Google Clasroom, Edmodo, Moodle, Learning houses, and even platforms in the form of video conferences have become more and more including Google meet, Zoom, and Visco Webex.

1.2 Technology in Physics Learning

Physics is one of the branches of Natural Sciences (IPA) that contributes to the development of advanced technology and the concept of living in harmony with nature. As a science that studies natural phenomena, physics also provides a good lesson for humans to live in harmony based on the laws of nature. The management of natural resources and the environment and the reduction of the impact of natural disasters will not run optimally without a good understanding of physics. The process of learning physics, often faced with material that is abstract and outside the daily student experience . So that the material becomes difficult to teach by educators and also difficult for students to understand. Visualization is one of the ways that educators can describe something abstract [10].

Various technologies are used as physics learning media. Learning media is a means to visualize the learning process that is often also used in physics learning [11]. The use of technology, especially in physics learning, can be done using the *Learning Management System* (LMS), the use of sensors in smartphones, the use of various webs for quizzes, and interesting *games* can be done so that physics learning becomes fun even though it is carried out at home [12]. Distance

learning will be effective if it meets essential components such as discursive, adaptive, interactive and reflective integrated with the environment or meets the components of the digital learning ecosystem, all of which are combined to bring out positive feelings by accommodating learning styles, flexibility and learning experiences [13]. By utilizing the right media, it is hoped that distance learning will be effective.

1.3 Topics of Subject Systems in Optics Lectures

Eye system/optical material is one oftheimportant materials in physics learning. Various media are developed as learning media for eye system materials. As amultimedia-based con to h media for optical tool materials made by combining animation, sound, text, images and videos whose appearance consists of optical tool materials, practice questions, evaluations, videos, figures, and games. Media is presented offline and inserted into a CD or flasdisk so that it can be used at any time without having to take into account internet access. The animated display on the media is presented in a three-dimensional visual manner, which is in the form of imitations of optical tools so that students can better understand the concept because the animation resembles the original shape of optical tools and is expected to attract students to learn concepts a lat optik [10].

Edmodo's web-interactive-based learning media was also developed as an eye system learning medium. In his research Ari sudibjo, 2013 showed that interactive web media can help students to improve student learning outcomes in cognitive aspects [14]. Other research bydeveloping contextual-based knowledge enrichment books as a learning medium on optical materials. equips students with more meaningful knowledge, flexibly applicable (transferred) from one problem to another and from one context to another [15]. Learning mediafor the existing eye system is less efficient so it is still needed to develop other media to support the learning of the eye system. Eye system material requires visualization of images of parts and optical tools, to make it easier to understand by applying 3D animation.

Augmented Reality or in Indonesian called augmented reality is a technology that combines two-dimensional and or three-dimensional virtual objects into a three-dimensional real environment and then projects the virtual objects in real time [16]. This opinion is reinforced that Augmented Reality is a technology in the form of an application by combining the real world and the virtual world into three dimensions that are projected at the same time and can be displayed on an Android camera [17] . This three-dimensional Augmented Reality display is a virtual image that is accurately superimposed on a real environment [18] Augmented Reality in 3D form can be displayed through a smartphone camera. So that Augmented Reality technology can be applied using a mobile phone that uses the Android operating system. The use of the Android system

strongly supports the strategy on the learning process to be used in today's digital era [19]. Besides being able to be applied using mobile phones for learning media, Augmented Reality can also be developed again in the form of entertainment media, social media, medical media, industrial media and trade, and media in designing robots [17].

Previous research conducted by L. R. Dewi & M. Anggaryani (2020) showed that augmented reality can be displayed via smartphones indirectly has its relationship with the way optics works so that it is necessary to create augmented reality learning media with the topic of discussion on optical tool material [20]. Related research was also conducted by W. M. Putri, et al. (2016) shows that AR media has good quality to be used as a learning medium in optical materials with an achievement percentage of 86.43% [16]. However, in the research conducted by W. M. Putri, et al. Augmented Reality media, there are shortcomings, namely that the eye image is not close to the real shape, there is no designation on the parts of the eye. If these shortcomings are not corrected, then the use of Augmented Reality media will run less optimally and boringly.

2 RESEARCH METHOD

This type of research is descriptive and qualitative. In exploring the initial needs of AR technology, this research involved 18 UT Physics Education study program students. The research instrument includes a questionnaire on students' misconceptions and needs for AR technology in eye optic system materials. The data were analyzed descriptively and qualitatively. In this study, the data collection instrument used was a student misconception assessment sheet, a questionnaire to analyze student needs for AR media. Data analysis is carried out in a qualitative descriptive manner. After the entire initial data is analyzed, the design of the AR media product on the eye system material is designed.

3 FINDING & DISCUSSION

3.1 Material Characteristics of the Eye System

Optics is a branch of physics that discusses the nature and interaction of light using matter. In essence, optics talks about the symptoms of optics. The field of optics is divided into two, namely geometry optics and physical optics.

Students are given a printed questionnaire and asked to provide a response by providing two answer options, namely yes / no. Each student provides responses about several things, including: misconceptions that have the potential to be caused to the material, the need for material visualization, the level of understanding of the student material on the material, the complexity of

the material and media needs in accordance with the topic of the material in the optics course. Based on the results of the analysis of 9 modules, each module consisting of 2 Learning Activities (KB), it was concluded that AR media needs to be developed in KB 2 Module 3 which discusses the optical system of the eye. The results of the analysis can be seen in the following figure.
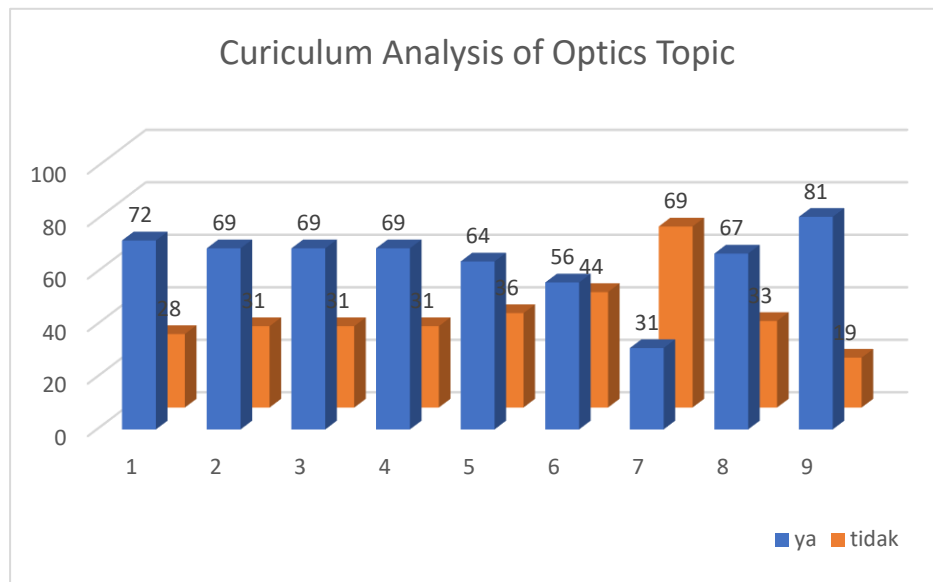
Figure 1. Results of Curriculum Analysis and AR Media Needs by Students on Eye Optics System Materials

Information:

1 = Material Has the Potential to Cause Misconceptions

2 = Need to Visualize The Material

3 = Low Student Material Comprehension

4 = Material Is Abstract

5 = Elusive Material

6 = Low Percentage of Learning Objective Achievement

7 = Can Be Learned Without Media

8 = Matter Is Complex

9 = Need AR Media

The findings in the curriculum analysis based on student perceptions can be concluded that the material of the eye optics system has material characteristics that have the potential to cause misconceptions. The presentation of optical material also requires a lot of demonstration and visualization so it requires complex tools and equipment and is often difficult to use in learning for a variety of practical reasons

In the eye system material, the components of the eye and their parts and functions, the

accommodation power of the eye along with eye and lens disorders are discussed to help people with eye defects, both myopy and hypermetropy [21]. Based on the results of the analysis that has been carried out on students' perceptions of the characteristics of the material in the optics course, it was concluded that some materials such as in module 3 in KB 2 regarding the eye optics system are still difficult to understand, and require visualization to understand the material, namely AR media. Referring to the analysis of the results of the student material understanding test on the concept of the eye optics system, it was found that the average score of students was 53.3. If converted into the final assessment, the average grade of the grade is at an unsatisfactory level. Following up on these findings, suggestions and input from students in the optics course are as follows: It is necessary to add visualizations to clarify the understanding of material concepts; it takes AR media to make the eye system material more concrete.

The application of Augmented Reality is considered more practical so that students are more enthusiastic about reading the subject matter [22]. There are three characteristics that state a technology applies the concept of AR: 1. Being able to combine the real world and the virtual world. 2. Able to provide information interactively and in real time. 3. Able to display in three-dimensional form. AR can be used to help visualize abstract concepts for the understanding and structure of an object model [23]. The eye system material also contains abstract concepts as an example of the components of the eye and their functions. With the advantages of AR media that can modify and change the appearance of 2D to 3D so that it is considered suitable as a learning medium on the material of the eye system.

Augmented Reality (AR) aims to simplify things for users by bringing virtual information into the user's environment [24]. In AR technology, users can see the real world around them with the addition of virtual objects generated by the computer. Therefore, AR media is needed in lectures on eye system materials. With the use of AR media will increase user perception and interaction with the real world.

3.2   Eye Optics System AR Media Design

AR technology is widely developed in the creation of multimedia learning presentations as a tool for teachers in the learning process in the classroom, and does not replace the teacher as a whole [25]. With the use of AR media, the teaching atmosphere in the classroom becomes more active and fun because students become more interactive in responding to the material provided by the teacher in the classroom. In line with the opinion of Khoirudin [26] the application of media with Augmented Reality for education is used in helping the process of self-learning. Optimization of Augmented Reality needs to be done because it has an entertainment aspect that can increase

students' interest in learning and play and project it in a real way and involve the interaction of all five senses [26] The excitement of learning not only increases students' interest, but can also motivate them to be better so as to produce good learning achievements. The same thing is also expressed by the opinion of Rahmatullah, et al. (2021) where the application of AR applications can make learning more interesting and help students in improving learning efficiency and knowledge retention related to the subject matter taught [27].

The following is presented the design of ar media for the eye system material:
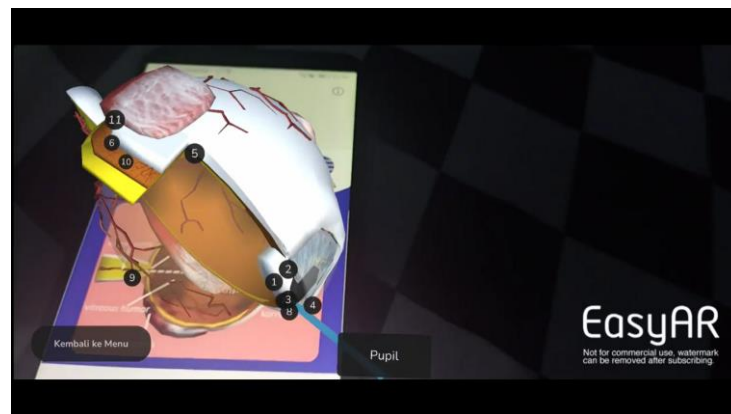
Figure 1. Eye System Parts presented in AR Media

To present the real concept of the eye system, AR media comes with the best visualization. As observed in the picture above, the parts of the eye are presented in detail and resemble their original shape. This is one of the advantages of AR media because it can present duplicates that resemble the original shape of the eye. In the appearance of the eye system, explanatory information for each part of the eye is also presented equipped with a voice that helps users to more easily understand the material.
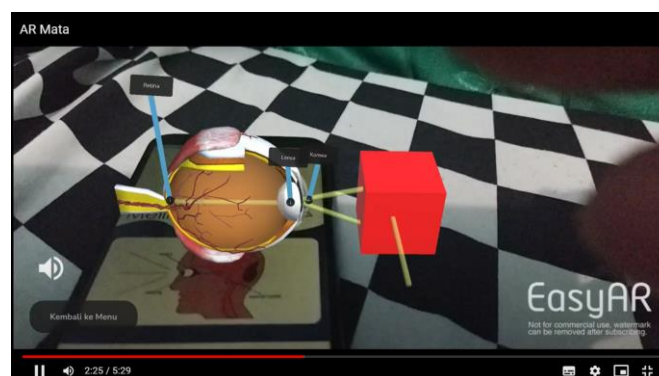
Figure 2. A Display That Shows The Eye Can See Objects

The process of the eye can see objects visualized interestingly in the picture above. It begins

with the process of the object being exposed to light and is continued towards the pupil and cornea so that in the end the shadow falls right on the diretina. All these processes are well presented using AR media.
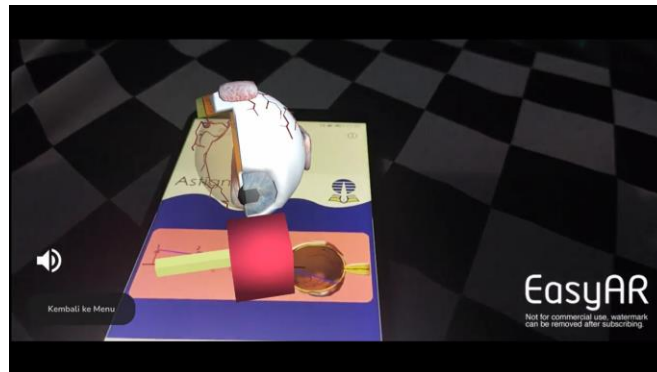
Figure 3. Rotation display when the Eye Process can see objects

The process of the eye being able to see objects can also be observed from different sides. The designed AR media display allows users to rotate 3D animations in various positions making it easier to observe and deepen the material. AR can provide information that can be more easily understood by the user[28]. Because of its advantages, AR can be used to create learning applications that can support the teaching and learning process[29]. Augmented Reality (AR) has been used in a variety of contexts in recent years to improve the user experience on mobile devices. Various studies have shown the usefulness of AR, especially in the field of education, where there is an increase in learning outcomes. Learning systems using AR are suitable for distance learning and promote self-study [30].

4 CONCLUSION

The results of the data analysis showed that 90% of students experienced misconceptions about the material of the eye optic system. Further analysis was carried out on several aspects, including as many as 69% of students agreed that the material of the eye optics system could not be studied without visualization media; as many as 67% of students think that the material of the optical system of the eye is complex and challenging to understand. Based on these findings, as many as 81% of students agree and need AR technology to support the improvement of understanding of eye optic system material. Therefore, AR-based learning media developed with unity technology is designed and equipped with visualizations that can help the advancement of student material understanding of the eye optics system material.

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DESIGN AND CONTENT DEVELOPMENT OF PHP FRAMEWORK OPEN UNIVERSITY

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Abstract

PHP (Hypertext Preprocessor) is an open-source server-side programming language. PHP has the advantage of being open-source; users are free to modify and develop applications or systems as desired. Frameworks facilitate world wide Web (Web) programming and make it more organized in many ways, such as increasing the productivity of programming a piece of written code that takes up a long time and hundreds of lines of code can be done in a matter of minutes with the help of the Framework's .built-in functions. The Development of the Design and Content of Open University MOOCs is expected to make the potential that participants can have on an ongoing basis. Developing Design and content on Open University MOOCs is one of the steps of change to be better and more useful to users. This research is a design and content development research Getting to know the Hypertext Preprocessor (PHP) Framework self-paced instruction model on the Learning Management System (LMS) of the Open University. This research is intended so that users can use it easily and correctly to improve the scientific field quality through the Massive Online Open Courses (MOOSc) service. This research is intended so that users can use it easily and correctly to improve the scientific field quality through the Massive Online Open Courses (MOOSc) service. Ten and twenty steps test the Design and content used in this study. The data collection instruments used are questionnaires and field observations. The use of questionnaires related to expert assessment questionnaires, Design and content practitioners, and assessments from linguists. The data analysis technique used is to describe all validators' opinions, suggestions, and responses obtained from the criticism and suggestion sheets, then continue the analysis by calculating the percentage of the item score of each answer to each questionnaire question. The results showed that the design and content development manual for the PHP Framework self-paced instruction model on the Learning Management System is feasible for Open University MOOCs. This book is integrated with implementing the material of video-based MOOCs with eight session views.

Keywords: Design, development, Framework, hypertext preprocessor, content, Open University

1   INTRODUCTION

Hypertext Preprocessor, PHP is a server-side script programming language designed for Web development. PHP is a server-side programming language processed on a server computer. PHP can be used for free and is Open Source. PHP is released under the license PHP Licence, slightly different from the *General Public License (GNU) commonly used for Open Source projects* (Jannah et al., 2019). PHP is open-source; users can modify and develop applications or systems as desired. Programmers first used the Framework in 2004. frameworks are software to make it easier for programmers to create applications or the Web that contain various functions, plugins, and concepts to form a particular system. With the Framework, an application will be composed and neatly structured. Programmers first used the Framework in 2004 (Amri et al., 2017).

Software Framework provides a collection of basic code that can assist in developing and merging different components in a piece of software (Paikens & Arnicans, 2008). A programming

framework can simplify the process of coding program functions by reducing the code of repetitive operations (Upton, 2007). The Framework's purpose is to help perform common activities, so the Framework provides many libraries for database access, session data management, and so on (DocForge, 2010). Web programming framework based on the Hypertext Preprocessor (PHP) programming language Facilitates the application development process, helping to structure the functions of a system in a faster time because you don't have to write it from scratch. Kaerangka can improve the quality and stability of programming code arrays(Yicheng, 2011).

Massive Open Online Course (MOOCs) adalah program pembelajaran online terbuka secara masif dalam pembelajaran berbasis online untuk mendukung perolehan keterampilan literasi (Johan, 2015). MOOCs are learning tools open to all group needs (Uan, L & Powell, S., 2013). MOOCs aim to provide time and space, unlimited participation, and open access through the website.

Furthermore, MOOCs provide an interactive user forum to help build a community of participants, tutors, and teaching assistants. This new mode began to be used in 2012 as the latest development in distance education Design and Content Development MOOCs Open University is expected to make the potential that participants have to be able to develop. Design and Content Development at Open University MOOCs is one of the steps of change for the better. In this development, a self-paced instruction model will be applied that allows participants to adjust their learning time according to their abilities.

Learning Management System (LMS) is a web-based software or technology application used to plan, implement, and assess a certain learning process (Susilo, 2019). Typically, a learning management system allows instructors to create and deliver content, monitor attendee participation, and assess attendee performance online. In addition, the LMS can also allow attendees to use interactive features such as threaded discussions, video conferences, and discussion forums. A learning Management System (LMS) is a web-based system that allows instructors and participants to share instructional materials, make class announcements, submit and return coursework, and communicate online (Doğancan Ülker, 2016).

Kumar, M., Benjamin Packer, and Daphne Koller in Zheng W., Guoqiu X.Z., Zhu W.Y. Yu H. & Gan J (2018:1) self-paced learning implements a learning mode from simple to hard by simulating human or animal learning mechanisms. The proposed method can automatically assign a weight to each sample and then gradually adds important representatives in the iterative process to train the feature selection model. Hence, the impact of outliers can be relieved or removed.

The results of research related to PHP, Saragih A. et al. (2015) concluded that the Design of the E-Library Application using the PHP Programming Language provides convenience for library employees in processing data, such as adding, changing, and deleting data. Manurung, IGH. (2015) concluded that a PHP program could minimize and even eliminate shortcomings in handling online information.

It was related to the background study of the introduction of PHP Framework- MOOCs and the results of previous research. However, the research on PHP mentioned above focuses more on its use than its Design and Content. The study of material on the PHP Framework in modules is still very limited, so it is important to research and develop Design and Content. Therefore, get to know PHP Framework-MOOCs with the Design and content development subtopic research by getting to know PHP Framework with a Self-paced instructional model in the Open University learning management system.

2 METHOD

a. Research Model

Research development to produce product Design and Content. Get to know PHP Framework in printed books and MOOCs applications. That agrees with Sepaham Borg & Gall (Setyosari, 2013: 222) that development research is developing and assessing products.

b. Development Procedure

The development procedure adopted by Sugiyono (2014: 298), namely there are ten steps in carrying out research and development, namely: (1) problem identification, (2) data collection, (3) product design, (4) design validation, (5) design revision, (6) product trial, (7) product revision, (8) usage trial, (9) product revision, 10) final product. According to research needs. The researcher constructed a draft development model that will be used in this study.

c. Product Trials

Product Trials are carried out in three stages: expert validation (material and design experts), practitioners, limited user trials, and field trials. Validate practitioners. Little user tests and field tests involve participants. The trial design can be described in the pipeline as follows
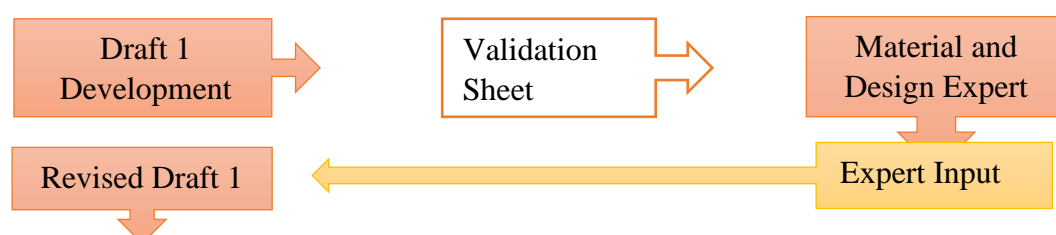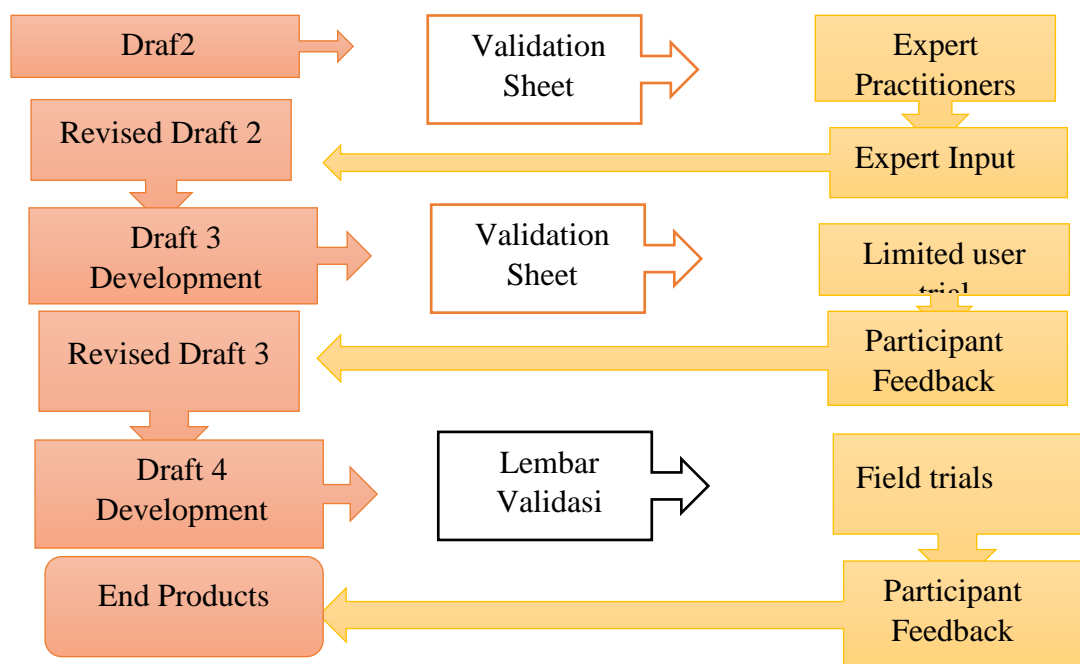
Fugure 1: Test Design

These steps can be observed as a development flow to provide clearer knowledge and understanding.
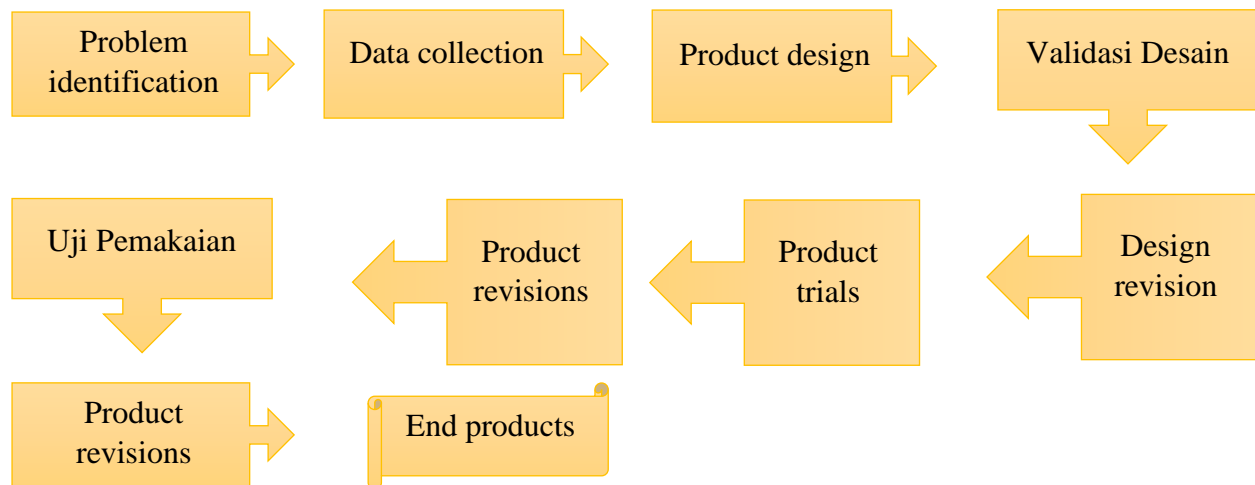
Figure 2 Steps – Steps of Development Form

A. **Data Collection Instruments**

The data collection instruments used in this research and development are observation techniques and questionnaires. The questionnaires are related to material expert assessments, learning design expert assessments, and linguist assessment questionnaires. Data analysis techniques

The data obtained are then analyzed. The data analysis technique in this study is to describe all validators' opinions, suggestions, and responses received from the criticism and suggestion sheets. The data from the questionnaire is qualitative data that is quantified using a four-level Linkert scale and then analyzed through the calculation of the percentage of item scores on each answer to each question in the questionnaire.

B. **Road map**

The road map for research and community service can be interpreted as a detailed work plan document that integrates the entire plan and implementation of research and community service within a certain period (Effendy, 2015). This road map is based on the suitability of the Indonesian field of study background. This road map is intended as an instrument that will monitor changes in activities while looking at their characteristics

3   RESULTS AND DISCUSSION

A. Research Results

This development research resulted in a book and application of MOOCs titled: "Design and Content Knowing PHP Framework." The display of books and application MOOCs is as follows.Penyajian Data Uji Validasi The book product, "Design and Content to Know PHP

Framework and MOOCs application, has been validated by material, content, and linguist experts and information system students of UPBJJ Makassar Open University. The validation results in question are as follows.

1. Material Expert Validation Test

The material validation test from material experts confirms that the book "Design and Content against Knowing the PHP Framework" and the MOOCs application are very worthy of being used by the community, students, and educational personnel or the percentage is very feasible to reach 100%. The basis for the analysis of material validation tests, namely the average percentage of material expert Validation Tests = X: Xi = 100 %. Once converted with the conversion table, the average 100% achievement rate percentage is at a decent qualification.

2. Design Expert Validation Test

The design validation test from a design expert provides validation that the book "Design and Content against Knowing the PHP Framework" and the MOOCs application are very worthy of being used by the community, students, and educational personnel or the percentage is very feasible to reach 100%. The basis for the design validation test analysis, namely the Average percentage of the Design expert Validation Test = X: Xi = 100%. Once converted with the conversion table, the average 85% achievement rate percentage is at a decent qualification.

3. Linguist Validation Test

The language validation test from linguists provides validation that the book "Design and Content against Knowing the PHP Framework" and the MOOCs application are very worthy of being used by the community, students, and educational staff, or the percentage is very feasible to reach 100%. The basis for the language validation test analysis is the average percentage of the Validation Test for Linguists = X: Xi = 100%. Once converted with the conversion table, the average 100% achievement rate percentage is at a decent qualification.

4. Product Trials

Product trials are assessed in terms of material, Design and language, carried out on a per-participant basis, and field trials with Open University Students of the Information Systems Study Program. The product trial results showed that the Average Percentage of Individual practices = X: Xi = 437/5= 87.4%. After being converted with the conversion table, the average percentage of the achievement rate of 87.4% was at a very decent qualification.

Furthermore, as many as 13 (thirteen) people with the same criteria carried out field trials by Open University students from the Information Systems Study Program. The total percentage obtained through field trials of Open University students of the Information Systems Study Program was 13 people, with a percentage achievement of 1090.90%. So it can be calculated as P= 1090.90/13 or converted into 83.92% cent. Thus it can be concluded that the learning media being on conversion is very feasible

B. Product Revisions

Product revision is carried out after the data obtained through the Open University field trial to students of the Information Systems Study Program is completed by the reviewer. The trial results are as follows: Product revision is carried out after the data obtained through the Open University field trial to students of the Information Systems Study Program is completed by the reviewer. The trial results are as follows: Product revision is carried out after the data obtained through the Open University field trial to students of the Information Systems Study Program is completed by the reviewer. The results obtained from the trial are:Hasil uji validasi perorangan mendapkan perolehan retata 87,4% dengan kategori konversi sangat layak

The results of the field validation test showed a state gain of 83.92% with a very decent conversion category

Based on the data obtained from individual and field trials, the Material Knowing PHP Framework is categorized as feasible, so it does not need to be revised.
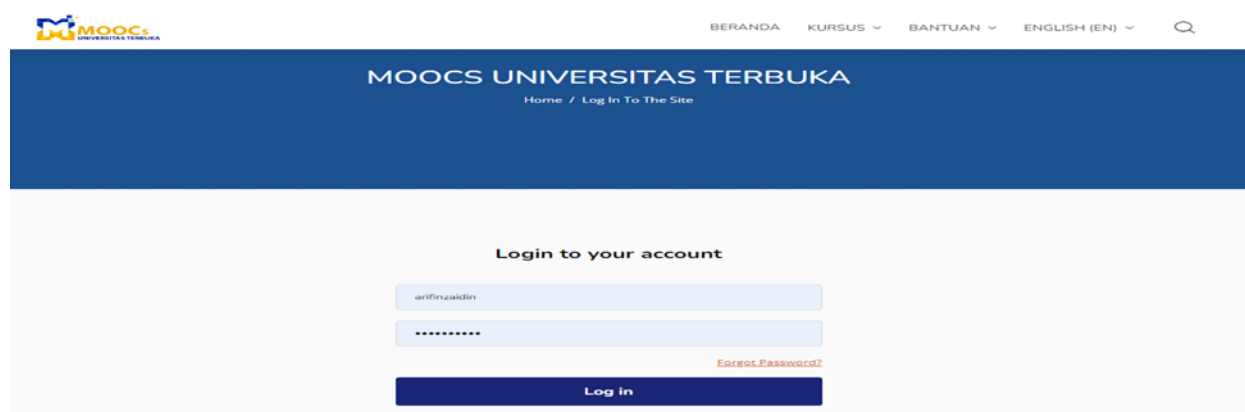
C. Implementasi Material On UT MOOCs

   How to Learn Material in MOOCs

This section will explain how to learn the Design and Content Materials Getting to Know the PHP Framework available at the Open University MOOCs.

a. Login

 Participants perform Login to the https://moocs.ut.ac.id/ website to access the available materials. The Login view is shown below.

b. Finding a Course

Furthermore, participants are looking for a course on Design and Content to Know the PHP Framework on MOOCs. Display in the following image.

Participants select the Community Service course menu and search for the PHP Framework Design and Content course. Display In The Following Figure.

Next will display the Course Display that will be completed on the MOOCs. The initial display of the selected course will show an Introductory Video about the course material, Foreword, Course Content, and Course Topics where there are 8 Topics, 1 Competency test, and a Course Certificate if you have completed the course.

Course content and topics include 8 Topics, a competency test, and a course certificate if you have completed the course. Tampialn in Figure follows.
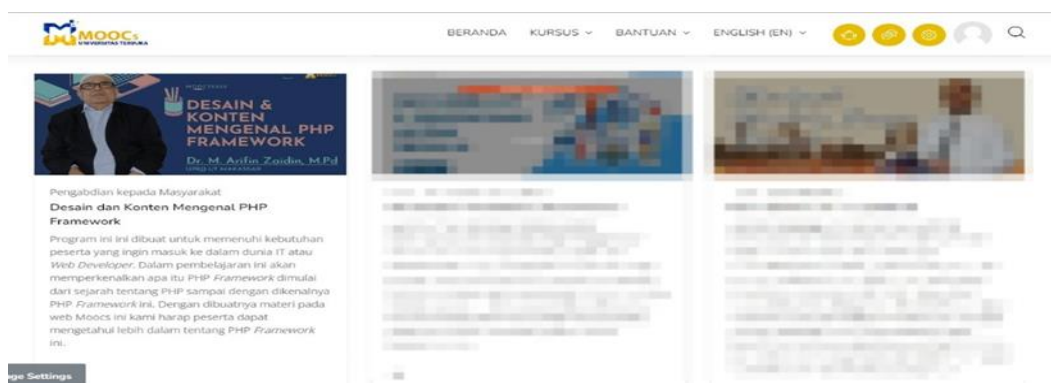
Furthermore, participants will access material on each topic that is already available in the course, where there is PPT material, a video presentation of the material on the subject, a Quiz containing ten numbers of questions, a discussion form related to the material, and a formative test containing five multiple choice numbers. Each available topic has the same process up to the last issue.
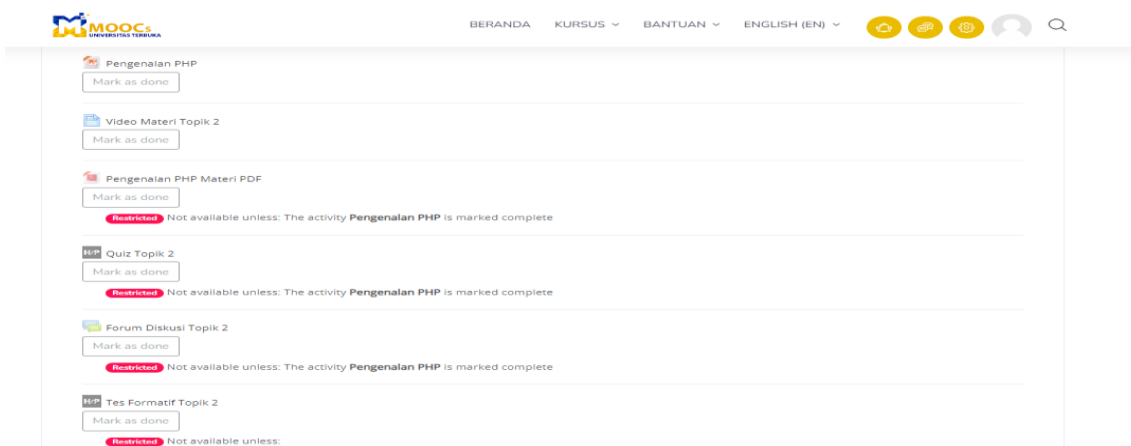
4   CONCLUSION

Following the results and discussion, it can be concluded that the results of the validity of the design expert state that the book Design & Content Knows PHP Framework are very feasible to use in self-paced instruction, the results of the reality of the material expert state that the book Design & Content Knowing PHP Framework is possible *used in self-paced instruction, the results of the validity of linguists state that the PHP framework design &content book is very feasible to use in self-paced instruction*, the results of student validity state that the book Design & Content Knowing PHP Framework is possible to be used in independent learning in self-paced education,

and the Book Desai and Content Know PHP Framework designed with video-based PHP Framework materials in the ease of self-paced instruction, as well as the implementation of the material, can be seen in the Open University MOOCs in the Content of Community Service.

ACKNOWLEDGEMENTS

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UTILIZATION OF LEARNING VIDEOS TO SHAPE STUDENTS' INDEPENDENCE IN LEARNING

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Abstract

Learning videos are one of the media that can be used by teachers in the learning process. So far, teachers have focused more on face-to-face learning in the classroom, students who do not understand the teacher's explanation in class cannot repeat. Through video learning, students who do not understand the teacher's explanation in class are expected to be able to repeat and review lessons by learning independently from home. This study aims to describe students' responses to learning videos and students' independence in learning. Student response data was collected using a questionnaire distributed using google form. The collected data were analyzed using descriptive statistical data analysis. The results showed that students had a good response to learning videos and students could study independently.

Keywords: video, learning, independent

1   INTRODUCTION

Media is a tool to convey messages from teachers to students. This tool can be in the form of media that utilizes simple technology to technological media that utilize computers in its manufacture. Media that teachers use in learning can be in the form of media that are deliberately designed for learning and media that are used for learning. Media designed for learning is deliberately designed beforehand by the teacher, such as slides, CD rooms, learning videos, and so forth. The media used in learning previously existed; the teacher just needs to use it in learning. For example, ATM for accounting lessons, vehicles for vocational school children's learning, animals for biology lessons, and so on.

Learning videos are media that are deliberately designed for learning. A good learning video is a video that is designed according to the learning objectives written in the Learning Implementation Plan. Video learning is a type of audio-visual media. In learning videos, students can use the senses of hearing and sight (Hadi, 2017). Research results related to learning videos have proven effective when used as media in learning (Yunita & Wijayanti, 2017). In his research, it showed that there were significant differences between students who were taught using learning videos and those who did not use learning videos.

Learning activities using learning videos will provide a pleasant learning atmosphere for students, learning videos can display objects that cannot be presented in class, and learning videos can facilitate different characteristics of students.

Video learning is very interesting to use in learning because the video contains several media such as text, images, sound, and graphics. Many computer programs can be used to create learning videos, for example, Microsoft PowerPoint, Kinemaster, Explee, Filmora, Powtoon, etc. At present, technological developments are increasingly sophisticated and rapid, so learning video media is easy to utilize. Teachers who want to utilize learning video media in their learning can look for tutorials via YouTube about video-making programs or applications.

The same research results were carried out by those conducted by (Priani et al., 2019) al., 2019) & (Supryadi et al., 2013), which have proven that using learning videos can improve student learning outcomes. Thus learning videos are very suitable to be applied in learning both at the elementary school level to the secondary level.

Through video learning media, students will no longer experience difficulties approaching exams, starting from daily exams, midterm exams, and final semester exams. In general, students study more actively when they want to face exams. This is because the exam can determine whether or not students pass. For students whose parents have middle to upper economic ability, they will not experience problems, and they can enter their children through private tutoring, both online and private tutoring, which are within reach of home. However, parents with middle to lower incomes or those who do not have time to take their children to private tutoring places will find it difficult to study.

Students do various ways at the time before the exam. Some study independently by searching for material that has been studied via YouTube and the internet; there are also those who study in groups with their friends. This indicates that students' enthusiasm to achieve their competence needs to be appreciated.

Teachers can use learning videos as alternative media to solve students' problems when facing exams. Suppose the teacher uses learning videos designed according to the principles of media preparation. In that case, students will no longer be confused and without the need to pay for private lessons.

Another benefit of using learning videos is that they can improve teacher skills in making instructional media. In addition, learning videos can train students' independence in learning. Students can study independently from home; when there is a material that needs to be understood, students can ask the teacher. So, the teacher can ask students what they have yet to understand while learning through learning videos. Learning videos teachers have designed should be

uploaded to the YouTube Channel so that students can access learning materials without limitations of place and time.

This study aims to describe students' responses when learning to use video learning media and to describe students' independence when learning to use videos. This research aims to analyze whether students learn well when studying independently without teacher supervision.

2 METHODOLOGY

This research was conducted in a private school in Surakarta City. The subjects of this research were students of Class XI. This study uses combination research. Combination research is research that combines quantitative research and qualitative research (Sugiyono, 2015). Learning videos that have been designed are then uploaded on the YouTube channel. The YouTube channel used is https://www.youtube.com/@srimulyanibiology. Students are asked to watch learning videos that have been uploaded, and after watching the learning videos, are asked to take formative tests and fill out a questionnaire in the form of a Google form. The questionnaire aims to find students' responses to learning videos. The questionnaires distributed contained questions with alternative answers using a Likert scale. Instruments used to measure independence include honesty, responsibility, and discipline.

3 FINDINGS AND DISCUSSION

3.1 Finding Research

This study aims to describe students' responses to learn videos and to measure students' independence when learning to use learning videos. Students are asked to learn through learning videos on the subject matter of the circulation system. The learning video link can be seen on the page https://www.youtube.com/watch?v=2RKky_4CXAs&t=452s.

3.1.1 Student Response

Aspects assessed to determine students' responses to learning videos include 1) sound clarity, 2) image clarity, 3) text clarity, 4) student responses and 5) learning video assistance.

The first aspect concerns the clarity of the sound in the learning video. Sound is very important. If the sound in the learning video cannot be heard clearly, the contents of the learning material delivered cannot be fully understood by students. Figure 1 below is the result of students' responses to sound clarity.
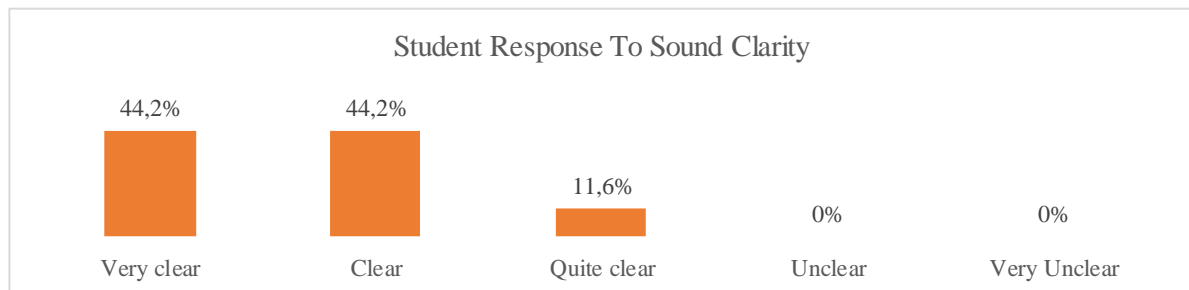
Figure 1. Voice clarity

The clarity of sound in Figure 1 can be described from 43 respondents stating that 44.2% of students stated that the sound in the learning videos could be heard very clearly. 44.2% of respondents stated that the sounds contained in the learning videos could be heard clearly, and 11.6 % of respondents stated that the sound contained in the learning videos could be heard quite clearly. It can be concluded that the clarity of the sound in the learning video can be heard properly.

In the second aspect, students were asked about the clarity of the picture. The image's clarity in question is visible and in accordance with the material presented. Figure 2 below is the student's response to the clarity of the images used in the learning video
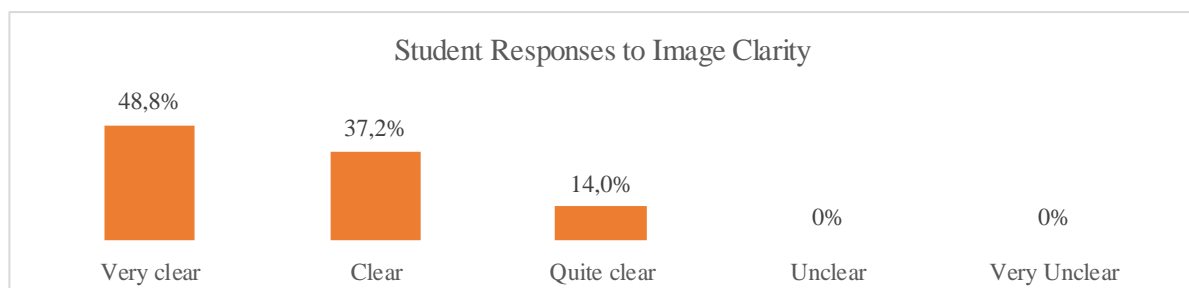
Figure 2. Image clarity

43 respondents can describe the clarity of the images in Figure 2 48.8% said the images in the learning video could be seen clearly, 37.2% of respondents said the images could be seen clearly, 14% of respondents said the images could be seen quite clearly. Respondents answered that the picture could not be seen clearly. Thus, the quality of the images contained in the learning videos can be seen properly.

In the third aspect, students were asked about the text in the learning video. This text is important, and clear text will help clarify the information conveyed. Student responses to the clarity of the text used can be seen in Figure 3.
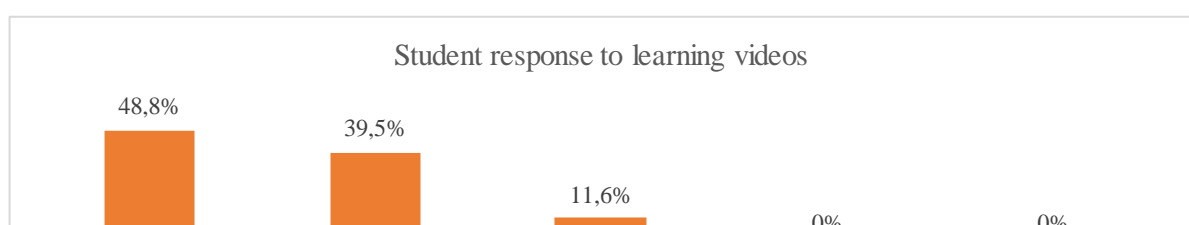
Figure 3. Text clarity

The clarity of the text in the learning videos shows that out of 43 respondents, 48.8% said the text contained in the learning videos could be seen very clearly, 39.5% said the text in the learning videos could be seen clearly, 11.6% of respondents. The clarity of the text in the learning videos based on the students' responses can be concluded that the text in the learning videos can be seen clearly.

The fourth aspect concerns the respondents' responses when learning through learning videos uploaded to the YouTube channel. Figure 4 below is the result of students' responses when learning through learning videos.
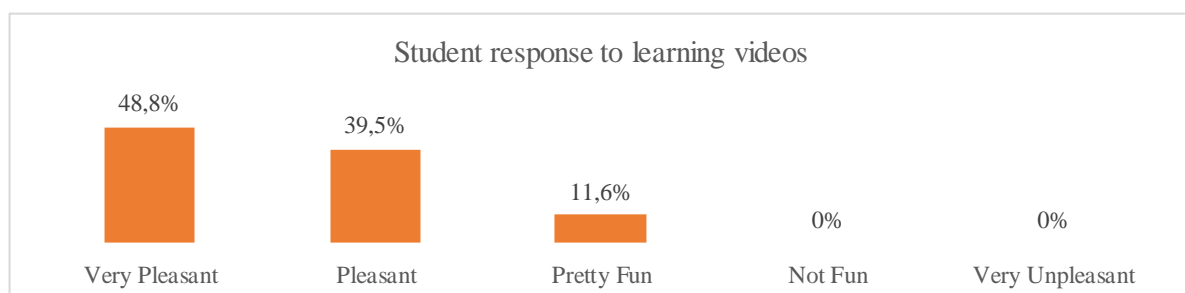
Figure 4. Student responses

The responses of students when learning to use learning videos in Figure 4 can be described by 14% of respondents saying they were very happy when learning to use learning videos. While 44.2% of respondents said learning to use learning videos was fun, and 41.9% of respondents said they were quite happy learning to use tutorial videos. None of the respondents stated that they were unhappy; thus, the students' responses when learning to use learning videos were good.

The fifth aspect asked of students was related to the assistance of learning videos in understanding biology learning material. 43 respondents can describe the assistance of learning videos 37.2% said learning using learning videos could help them understand lessons. While 37.2% of respondents said learning through learning videos could help understand learning material, and 25.6% said learning through learning videos was sufficient to help understand the learning material delivered by the teacher.

Overall, learning to use learning videos can help students understand learning material. The results of student responses with the help of video media are shown in Figure 5 below.
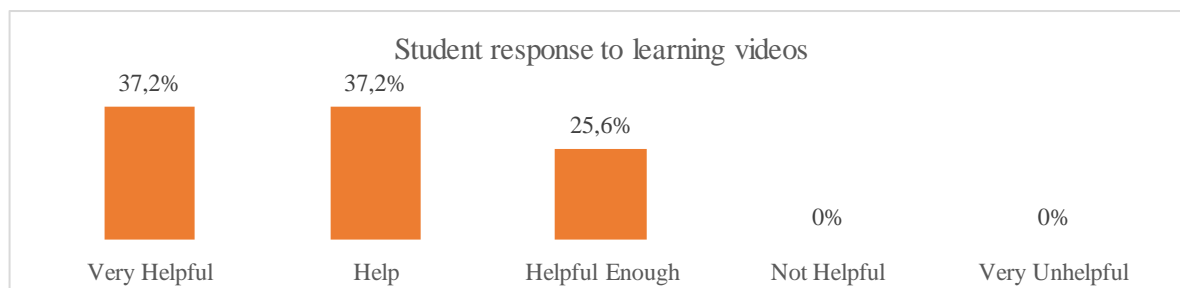
Figure 5. The use of video media

3.1.2 Independence Aspect

This study's student independence indicators include 1) honesty, 2) responsibility, and 3) discipline.

Aspect of Honesty

The honesty assessed in this study is about students' honesty in watching learning videos. The aspect of honesty that is assessed is how honest students watch the learning videos that have been shared before. Two aspects are measured to determine the honesty of students. First, students are asked to assess according to what they do. Second, students are asked to respond according to what they think. The results of student's answers can be seen in Table 1 below

Table 1. Aspects of Honesty

The First Answer	The Second Answer
1.2% of students stated that they had watched the video from beginning to end	60.5% of students stated that they strongly agreed that videos watched from start to finish would help understand learning material
37.2% of students stated that they had watched the video, only some parts that I had not watched	39.5% of students agreed that watching videos from start to finish would help them understand the learning materia
11.6% of students stated that they watched only 50%	

The honesty aspect was assessed in the first question asked to students, namely "have you watched the learning video from start to finish?". The second question "do you agree if the learning material contained in the learning video is watched from beginning to end more understandable"?. The answers from the students listed in Table 1 can be described as the majority of students agreeing that learning material should be watched from beginning to end so that the content of the learning videos can be understood. This can be seen in 51.2% of students, increasing to 60.5% and 37.2% of students, increasing to 39.5%. However, there is a difference that what students do is not the same as what they think because 11.6% of students have not watched the learning video from start to finish but agree that the content of the learning video will be understood if watched from start to finish.

The second aspect assessed is related to student independence, namely responsibility. The question posed to students was "do you record the contents of the learning material presented in the learning videos?". While the second question, "do you agree, students who record learning material both in

class and outside the classroom will help you understand the lesson well?". Answers from students can be seen in Table 2 below

Table 2. Aspects of Responsibility

The First Answer	The Second Answer
44.2% of students stated that they had recorded all the material contained in the video	69.8% of students stated that they strongly agreed that if the subject matter was recorded properly they would understand the content of the subject matter
32.6% of students stated that they had recorded the material contained in the video	27.9% of students agreed that if the subject matter was recorded properly they would understand the content of the subject matter
18.6% of students noted some of the material contained in the video	2.3% of students stated that they did not agree that by noting the material they would understand the subject matter
4.7% of students have not recorded the material contained in the video	

The aspect of responsibility shown in Table 2 is the same as the previous aspect of honesty, where students agree that taking notes on the subject matter will help them understand the lesson's content. However, what students do is lower than what students think. Students agree that well-recorded material will help them understand the lesson's content. However, not all students do what they think.

The third aspect related to student independence is the seriousness of students participating in learning through learning videos. The results of student responses to the seriousness of learning through learning videos can be seen in Table 3 below

Table 3. Seriousness Aspect

The First Answer	The Second Answer
46.5% of students stated that they really paid attention to learning through learning videos such as studying in the classroom	69.8% of students strongly agree that good students are students who keep learning even without teacher supervision
30.2% of students stated that they really pay attention to learning through learning videos such as studying in the classroom	37.2% of students agreed that good students are students who continue to study even without teacher supervision
18.6% stated that they really pay attention to learning through learning	7% of students stated that they quite agreed that good students were students who continued to study even without teacher supervision

videos such as studying in the classroom

4.7% of students have not recorded the material contained in the video	2.3% of students stated that they did not agree that good students were students who continued to study even without teacher supervision

Student answers from the honesty aspect in Table 3 show that students have learned through learning videos even without teacher supervision. The students' answers show this as 46.5% said they were very concerned, and 30.2% said they paid attention to learning videos like they were studying in class. In the second question relating to aspects that students think about, the percentage has increased, namely as many as 69.8% of students strongly agree that good students are students who study even without the presence of a teacher. 37.2% of students agreed that students need to learn even without the help of a teacher. This shows that students have independence in learning.

3.2   Discussion

Learning video media in the current era is necessary because most students already have tools to watch videos, such as computers and cell phones. Instructional videos that have been designed can be uploaded on the YouTube page so that students can see the learning video products that the teacher has developed.

Making learning videos must certainly pay attention to the principles of learning. In general, learning consists of preliminary activities, core activities, and closing activities. Teachers who want to use video media in learning should have a video containing three learning components.

In addition, making learning videos also need to pay attention to the principles of developing learning media. Learning video media contains sound, text, images, and graphic elements. The elements need to ask for an assessment from experts and practitioners and then need to be tested on students in small groups. This aims to produce quality learning videos. Quality learning videos are videos whose contents are easily understood by students and are precise from the elements of the media used.

(Hafizah, 2020) His research stated that learning videos could improve learning outcomes and encourage students to participate actively in learning. The same opinion was expressed by (Azis et al., 2018) in their research, which stated that learning videos positively influenced learning

outcomes. If a school or teacher wants to improve learning outcomes, learning videos can be used as alternative media to overcome the problem of low learning outcomes.

The results in this study strengthen the results of previous research, where most students stated that they really enjoyed learning using learning videos. If students enjoy participating in learning, it will certainly impact student learning outcomes. Besides improving learning outcomes, learning videos can also improve students' critical thinking skills (Harling, 2021).

The learning videos used in this study received positive responses from students. They start from voice clarity, image clarity, text clarity, and media assistance in supporting student learning activities. This shows that the developed learning videos have fulfilled the principles of preparing instructional media.

Independence in learning is needed because students who can learn independently will more easily succeed than students who only depend on the teacher. One way for students to learn independently is through the use of media in learning. According to (Suardana, 2012) his research, students who can learn independently have increased their learning activities and outcomes.

In research using learning videos aims to describe student independence in learning. The results prove that students have honesty, responsibility, and seriousness in learning. Thus, the use of learning videos can increase student independence in learning.

Student answers from the honesty aspect in Table 3 show that students have learned through learning videos even without teacher supervision. The students' answers show this as 46.5% said they were very concerned, and 30.2% said they paid attention to learning videos like they were studying in class. In the second question relating to aspects that students think about, the percentage has increased, namely as many as 69.8% of students strongly agree that good students are students who study even without the presence of a teacher. 37.2% of students agreed that students need to learn even without the help of a teacher. This shows that students have independence in learning.

4 CONCLUSION

Based on the results of the research and discussion that have been presented, it can be concluded that 1) students have a good response when learning to use learning videos. Most of them stated that they were happy when learning using learning videos, and 2) students could study independently even without teacher supervision. Most have independent characters, such as being honest, responsible, and earnest in learning.

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DEVELOPING AUGMENTED REALITY ON ENGLISH PHONETICS MODEL

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Abstract

The basis of developing English phonetic model to English literature students is giving concrete example of how sound produced in the vocal track. Due to distance learning environment that demand students to be independent learning, Augmented Reality technology is chosen manifesting 3D object to aim the goal of students mastering English phonetics. The research methodology is research development. The development is begun by identifying lesson objective and measuring to which extend the application intends to make. It is decided that the Augmented Reality is in form of mobile application with several menus such as tutorial, the vocal track, and exercise. The application contains the sounds of thirty-four vocal and consonant combines. Besides, it demonstrates how to pronounce single sounds or phoneme, it also serves examples in words. The development has three stages that are planning, making, and evaluation. The novelty of this research is shifting the 3D still image model into interactive 3D augmented reality model. The result is self-learning application that in form of moving 3D and expected to help students learning the English sound more precisely.

Keywords: Augmented Reality, Phoneme, Phonetic, and vocal track

1   INTRODUCTION

The need for students to understand the articulation organ to produce correct phoneme sounds in English drives the development of AR (augmented reality) phonetic articulation in the English sound system. Universitas Terbuka students enrolled in the English literature study program with a translation interest have the obligation to study independently. Due to these circumstances, students face numerous challenges in accurately learning the sounds of the language. This competence, however, is difficult to achieve correct English sound because lecturers and students do not meet in person and there is no form of verbal practice. Meanwhile, the ability to recognize articulations and understand vowels and consonants in English is important because a phoneme's sound can change the meaning.

When learning English spoken language, a problem with delayed meetings between students and teachers gave rise to the idea of using augmented reality. Augmented Reality (AR) is defined as a real-time direct or indirect view of a physical real-world environment that has been enhanced/augmented by the addition of virtual computer-generated data to it (Carmigniani & Furht, 2011). AR is also become good choice for educational media. Applications for augmented reality (AR) have already been used to develop literature and poetry as well as successfully teach science, biology, and math (Scrivner et al., 2017).

Our research focuses on the creation of augmented reality in the English phonetic model. Our research aims to determine the suitability of augmented reality (AR) as a teaching tool in independent learning. This paper includes the following sections: I) exploring AR learning in

English phonetic and phoneme, ii) gathering feedback from experts to match the lesson object, iii) describing example and voice over, and iv) planning future evaluation, technology, and instruction.

The development of AR is anticipated to result in the organ that generates the sound system appearing in three dimensions. It is anticipated that students will develop a more detailed understanding of the components involved in sound production. This AR is meant to supplement the English Translation Study Program's BING4214 - Introduction to Linguistics module.

2 METHODOLOGY

This paper is composed by content analysis of the AR application that English Literature program study of Universitas Terbuka has been doing. The AR itself is research development program that begin with need analysis that figure out which lesson is difficult to learn if there is no simulation. Then the research begins to develop its material by hiring experts and composed the content. After that, there are many revisions to perfect the result.

The educational benefits of augmented reality (AR) are closely related to how it is created, put into practice, and incorporated into formal and informal learning environments rather than being solely based on the use of technologies (Wu et al., 2013). So, in making this application, researchers hire vendors who are experts in making 3D while the research team focuses on creating content so that students can practice it properly. Actually, there are several forms of AR application such as mobile based, wearable device, computer based, computer and projector (Parmaxi & Demetriou, 2020). The application of Phonetic AR in this research is as a mobile based application.

The data of consonant and vocal phonemes are taken from IPA (International phonetic alphabetic) of English. The vocal consists of monophthong and diphthong then will be categorize by each manner of articulation and how it will be voiced or voiceless. Meanwhile consonant will be categorized by its place of articulation, manner of articulation and the airflow.

3 FINDINGS AND DISCUSSION

The finding and discussion will discover how the AR is being developed from the planning to become an application that can be used to self-learning.

3.1 Pre-developing Process on Augmented Reality

Before deciding to create AR, we already decided that it should aid lessons that are challenging to comprehend through reading alone. To clearly explain how the vocal tract produces sounds at the

level of the smallest unit of sounds, a 3D simulation is required. According to that strategy, it was decided to include phonetic and phoneme topics in this development.

3.1.1 Exploring AR learning in English Phonetic and Phoneme

There are two ways to convey meaning when learning a language: spoken and written. Spoken language is formed by a series of sounds that combine to form meaning. Phonology is the study of sound production in linguistics. Phonology is derived from the words "phone" (sound) and "logy" or "logos" (knowledge). Therefore, phonology is the science that deals with sound. Phonetics and phonemics are the units studied in phonology. Phonetics studies how sound is produced, whereas phonemics studies sound systems (Wiratno, 2013).

Phonetics is the study of how sound is produced in the human vocal organs, including how articulation produces a sound (Mcmahon, 2002). There are two types of phonetic articulation of sounds: consonants and vowels. Each sound is distinguished by three variables: laryngeal activity, point of articulation, and articulation method. The image below depicts an organ that generates sound.
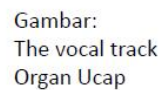
Figure 1. vocal track

The sound is produced by air expelled from the lungs (lungs), which travels to the larynx and then to the vocal cords. Air is formed into specific sounds at the vocal cords. The shape of the position

of other organs such as the lower articulatory such as the tongue, lips, and lower teeth which move to the upper part such as the upper lip, upper teeth, and palate then determines the formation. A velum, a soft palate without bones at the back of the oral cavity, opens and closes the passage from the pharynx to the nasal cavity (Yavas, 2011).The ability to distinguish meanings in English depends on an understanding of the various sounds. For instance, compared to the sounds [k] and [t], the English phoneme [k] and [c] do not significantly affect meaning (Mcmahon, 2002). The ability to distinguish meanings in English depends on an understanding of the various sounds. For instance, compared to the sounds [k] and [t], the English phoneme [k] and [c] do not significantly affect meaning (Mcmahon, 2002).

3.1 Expert feedback for Lesson objective integrated on Augmented Reality

The research team conducted a forum discussion group with two experts to develop the AR. We gather feedback on the application blueprint and the best lesson activity that will enable students to learn about the subject on introduction of linguistics.

The application's design is generally sound. There are some things to keep in mind, though, in order to enhance its usability. From experts, we make some points to be installed on the application. They are:

1. An introductory menu could be the first menu. An introduction to phonetics and phonology can be seen on this menu. The terms phonemes, allophones, phonemics, and phonetics must also be explained. The terms segmental and suprasegmental must also be explained.

2. The next menu can display the structure of speech instruments or articulators so that students can recognize and have basic knowledge of speech tools to produce consonant sounds and vowel sounds.

3. The menu about consonants is the following one. It is also necessary to clarify the idea of consonant voicing (voiced vs. voiceless). It is necessary to define consonants generally in this situation. The consonant submenu of the manner of articulation and the consonant description in terms of the place of articulation can both be found under this menu. The definition of each place of articulation and manner of articulation needs to be explained in each of these submenus, and sound examples are shown with the IPA symbol. To help students learn to mimic the sound, it would be preferable to also provide an example of the sound.

4. The fourth menu is about vowel sounds. The concept of vowel sounds must be explained in this menu. The high and low of the tongue, as well as which part of the tongue is active

in producing the vowel sound, can be used to explain vowel sounds. In this case, it is necessary to explain the vowel sound categories based on their high and low frequencies, as well as their location, namely front, middle, and back. As a result, especially in English, it is necessary to display quadrilateral vowels with vowel sounds. The vowel sound menu, like the consonant sound menu, must include all vowel sounds in English, including diphthongs, and be accompanied by examples in words written with IPA symbols.

5. Equally important is the menu of pronunciation exercises or the practice of transcribing sounds using IPA symbols. This exercise needs to be reproduced so that students are familiar with science symbols in English. For example, students can be given a game to transcribe words by choosing the consonant or vowel symbols in the word.

6. Finally, it may be necessary to display the latest science symbol table so that students become more familiar with science symbols for consonants and vowels in English, especially.

Based on learning objective of linguistic subject, students are demanded to apply basic concepts and theories of English linguistics to answer linguistic phenomena problems (*Capaian Pembelajaran ESAI – ESAI Indonesia*, n.d.). Bachelor students are advice to take the linguistic knowledge, in this term in phonetic and phonemes, on basic level. Therefore, the menu that the researcher established will focus on the vocal track, consonant, vocal, and exercise. Those valued as sufficient to achieve lesson goal.

3.2 Display of Menu, Example, and Voiceover

The application is given name PHONETICS; consonant and vowel. The Application has several menus. They are tutorial, phonemes and AR scan, exercise, and Vocal track. Tutorial means to be the guidelines on using the application. Phonemes and AR scan contain vocal and consonant in English sound. It also has the scan function to detect the phonemes to be in 3D form. The exercise menu is a display that includes words, phonetic symbol, and sounds. The vocal track menu is the menu that shows a 2D picture with name label of the human voice organ. Figure 2 shows the display of application. From left to right are login display, phonemes, AR scan, and Vocal Track
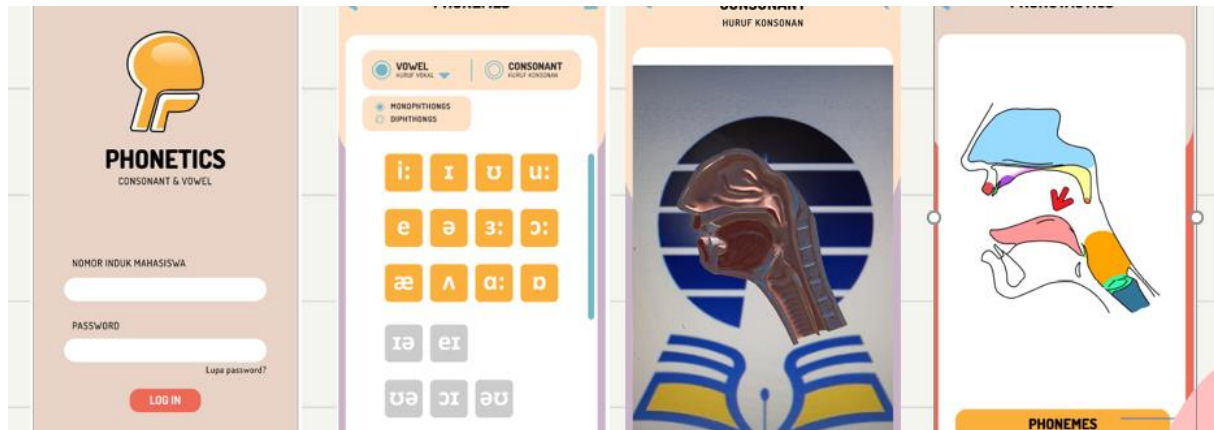
Figure 2. Menu display on AR Phonetic

Students must enter their student ID number and password to log in. They can read the tutorial and a brief description of the application after that. The phonemes menu will then be presented to the students. Consonant and vocal are available on the phoneme menu. This application includes features for 33 phonemes. The student must then select one of the phonemes after that. Then the AR scan will show up. To display a 3D image, it will detect a specific code (in this case, the UT symbol). A 2D figure of the vocal track is also available to help students learn.

Exercise was also used to complete the application. The exercise consists of a word, a phonetic symbol, and a sound. This application's voiceover is performed by a native speaker. The British standard on Oxford dictionary guidelines is used for the sound reference. Table 1 shows an example of how the exercise is created.

Table 1. The example of exercise

No.	vowel	word	sounds
1	iː	peal	/piːl/
2	ɪ	Sit	/sɪt/
3	ʊ	foot	/fʊt/
4	uː	goose	/guːs/
5	e	dress	/dres/
6	ə	above	/əˈbʌv/
7	ɜː	nurse	/nɜːs/

8	ɔː	bought	/bɔːt/
9	æ	bag	/bæg/
10	ʌ	young	/jʌŋ/
11	ɑː	spa	/spɑː/
12	ɒ	boss	/bɒs/
13	ai	ice	/aɪs/
14	aʊ	mouth	/maʊθ/
15	ɔɪ	voice	/vɔɪs/
16	əʊ	bone	/bəʊn/
17	eə	square	/skweə(r)/
18	ɪə	here	/hɪə(r)/
19	ʊe	cure	/kjʊə(r)/
20	eɪ	train	/treɪn/

3.3 Following Evaluation, Technology, and Instruction

Future evaluation planning is required because the use of AR applications in phonetic and phoneme learning is still relatively new. The plan is to integrate this application into the tutorials and modules for introductory general linguistics courses. We will conduct an evaluation in one usage semester by soliciting feedback from students who have used the application, particularly regarding its usability and effectiveness in fostering learning.

As an early product in the English literature study program, AR will have advantages and risks that need to be considered. The benefit of using AR is that it can be used anywhere and with self-service. The user's dependence on an internet connection, however, presents a limitation because not all students are adept at using the application and have a reliable internet connection. Because of how quickly the internet and technology infrastructure are evolving, difficulty is not a valid excuse for not fostering innovation.

As a stand - alone product, this augmented reality app's instructions ought to be easy to understand. When practicing English phoneme pronunciation, students use this application both as a visual aid and as a useful tool or virtual simulation of human substitutes. Future modifications to these instructions must be made to the tutorial or the module.

4 CONCLUSION

The development of AR phonetic to learn how to produce the correct sound in English pronunciation is a form of learning aid application that is very appropriate for independent students. Making AR begins with identifying learning objectives, inviting experts, making teaching materials, developing AR, and preparing evaluation designs after AR is ready to be used for the public. The advantage of using AR is that this application can support independent learning, provides a 3D simulation form and is also equipped with pronunciation exercises narrated by native speakers.

ACKNOWLEDGEMENTS

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DEVELOPING INSTRUMENTS OF STUDENT ENGAGEMENT AND SELF-REGULATED LEARNING IN ONLINE TUTORIAL

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Abstract

The purpose of the study was to analyse validity and reliability of the instruments that measured students' engagement in online tutorial and self-regulated learning. The population of the study were students from 11 undergraduate study programs who attended online tutorial at the Faculty of Teacher Training and Education at Universitas Terbuka in Indonesia. The sample was randomly selected from students who registered in 5 courses of semester 2020/2021.2, for each study program. Data were collected using questionnaires that were presented in online format and distributed to students via their email address. The number of respondents who filled out the questionnaire was 261 students. The data were analysed to determine the values of validity and reliability instruments of students' engagement in online tutorial and self-regulated learning and to explain the relationship between the two variables. The results of the study indicated that the instruments are valid and reliable, in addition there is a relationship between variables students' engagement in online tutorial and self-regulated learning. The conclusion is that the two instruments can be used for further studies.

Keywords: online tutorial, distance learning, student engagement, self-regulated learning.

1   INTRODUCTION

To ensure the success of student learning, lecturers should analyze and conduct studies on the characteristics and behaviors of students learning. Characteristics that students should have in participating in online learning include independent or self-regulated learning, motivation, and computer literacy (Dent & Koenka, 2016; Wandler & Imbriale, 2017). Self-regulated learning refers to a model regarding student characteristics in planning and monitoring learning activities and building self-regulated learning is a challenge in the online learning environment (Pintrich, 1990; Wandler & Imbriale, 2017; Zimmerman, 2000, 2002).

Self regulated learning is very important because it supports the development of lifelong learning skills. These skills include setting specific goals for oneself, how to adopt strategies to achieve goals, selectively monitoring performance, managing physical and social contexts, managing time efficiently, linking things that happen to goals, and adapting innovative methods (Zimmerman, 2000, 2002). Self-regulated learning involves three aspects, namely how students cognitively process learning material, metacognitive strategies, and determination (Bilde et al. 2011; Winne 1995).

Vytasek, Patzak, & Winne (2020) show that there are three main themes regarding student engagement in learning, namely perceptions of active involvement in learning, how active involvement relates to the learning process, and student relations in learning and academic

performance. Student engagement has a relationship with emotional, behavioral, cognitive, success, learning outcomes and other student academic performance (Kuh, Cruce, Shoup, & Kinzie, 2008; Kahu, Stephens, Zepke, & Leach, 2014; Krause and Coates, 2008; Martin & Bolliger, 2018). The involvement of these students in online learning is very important to support learning success, improve academic performance, reduce feelings of isolation, and solutions to dropout problems (Martin & Bolliger, 2018).

Student engagement is the key to successful teaching and learning. Therefore education providers and teachers always try to provide learning environments and online learning strategies so that students' active involvement in online learning can increase (eg Khan, Egbue, Palkie, & Madden, 2017; Zhu, Zhang, Au, & Yates, 2020).

Strategies for student involvement in learning need to be carried out by providing a variety of positive active learning experiences through the provision of counseling, tutoring, writing centers, learning communities, and other active learning experience support services. Farrell & Brunton (2020) shows that students' active involvement in successful online learning appears to be influenced by psychosocial factors such as peer community, tutors or lecturers, self-confidence, and structural factors such as life load and course design. Advances in technology in learning enable the use of these technologies to identify and analyze students' active involvement in learning through reports on learning analytics.

Previous studies have shown that student engagement in learning supports learning success and learning outcomes (Bowden, Tickle & Naumann, 2021; Kahu, Stephens, Zepke, & Leach, 2014; Phan, McNeil, & Robin, 2016; Paulsen & McCormick, 2020) and related to student satisfaction (Lu, 2020). The success of students in learning is supported by various aspects, including a student-centered learning environment, interactions between students and instructors and interactions between students, characteristics and use of media, course design, innovative techniques and methods, task clarity, fast and relevant feedback (Poll and Weller, 2014).

Referring to background that have been mentioned, it is deemed necessary to conduct research on (1) developing valid and reliable instruments to measure student engagement and self-regulated learning in online learning and (2) identifying the relationship between student engagement and self-regulation learning in tutorials. Research formulations that can be raised are (1) Are the instruments that measure student engagement and student self-regulated learning valid and reliable? (2) Is student self-regulated learning predict student engagement in online learning?

2 METHODOLOGY

The study has been carried out using methods of development of measurement instruments and correlational research. Once the dimensions and indicators of the two instruments are agreed upon by the research team, then the team developed items of the indicators of the two instruments and was followed by conducting discussions and revising the instruments.

The study was conducted to the students of undergraduate program in the Faculty of Education and Teacher Training, who register in the semester of 2020/21.2. This study carried on May – June 2021. The population was students who took online tutorials in 11 undergraduate programs at the Faculty of Education and Teacher Training. The sample were students who took 5 courses randomly selected from the 11 study programs. The number of respondents who sent the questionnaire was 1921 students. However, the number of students who responded to the instrument was 261 students.

Self-regulated learning Instrument modified the self-regulated learning instrument used in the research of Rahayu, Widodo, & Redjeki, S (2017), The instrument refers to the Motivated Strategies for Learning Questionnaire (MSLQ) from Pintrich (2004) and Zimmerman (2002). The dimensions of the instrument consisted of a motivation dimension with indicators of intrinsic motivation, extrinsic motivation, and self-efficacy, as well as learning strategy dimensions with indicators of academic and scientific goals, self-monitoring, learning source and environment managing, time management strategy, self-regulating, and reflection. The student engagement instrument modifies the instrument from Dixson (2010, 2015) which the dimensions consisted of skills, emotional, participation, and performance. Both of these instruments were in the form of an online questionnaires and was sent to the elected students via their e-mail address.

The team of the research team conducted an analysis of the instruments to evaluate the validity and reliability of the instruments. Factor analysis technique was carried out in order xected to analysis instruments validity. Moreover, Cronbach's alpha analysis was executed in order to test reliability. In addition, regression analysis was used in order to identify whether student self-regulated learning could predict student engagement in online learning.

3   FINDINGS AND DISCUSSION

The Research Team consulted about learning in the distance education system to two experts. The results of the consultation found that the learning experience in online tutorials would involve teaching presence, social presence, cognitive presence (Garrison, Anderson, Archer, 2000). The teaching presence refers to the process structure of the learning experience.

Furthermore, the results of the consultation also concluded that there are types of interactions that can occur in online learning (Anderson, 2004). Interactions in online tutorials can occur between lecturers and content, lecturers and students, and students with content. In addition, there are also interactions that occur among lecturers, among content, and among students. Furthermore, it can also be conveyed that the interaction between teaching presence and social presence is referred to as climate setting; between teaching presence and cognitive presence is called selecting content; between cognitive presence and social presence is called supporting discourse; and between teaching presence and social presence and cognitive presence is called educational experience.

3.1 Instruments of Students Engagement in Online Tutorial and Self-Regulated Learning

3.1.1   Students Engagement in Online Tutorial and Self-Regulated Learning: Instrument Validity

The KMO and Bartlett's Test scores of the two instruments of student engagement and self-regulated learning were more than 0.60, which means that factor analysis could be carried out (shown in Table 1) (Shrestha, 2021; Taherdoost et al., 2020). Furthermore, the results of the factor analysis of the two instruments showed that the indicators of these instruments have met the requirements. These results were supported by (1) communalities scores of items of the two instruments were more than 0.45 (Table 2 and Table 3), and the percentage of the total variance of the instruments for student engagement was explained by 62% (Table 4), and for self-regulated learning was explained by 64% (Table 6). Data were analysed by extraction method principal component analysis and rotation method: varimax with Kaiser Normalization. In this analysis there has been a converged rotation in 8 iterations for student engagement instrument and 17 iterations for self-regulated learning instrument (item construct of the instrument as shown in Table 5 and Table 7).

The dimension of self-regulated learning instrument consisted of indicators of intrinsic motivation, extrinsic motivation, and self-efficacy, academic and scientific goals, self-monitoring, learning source and environment managing, time management strategy, self-regulating, and reflection (Pintrich, 2004; Zimmerman. 2002; Rahayu, Widodo, & Redjeki, 2017).

The dimensions of the instrument for student engagement instrument are indicators of skills, emotional, participation, and performance (Dixson, 2010, 2015). In online learning, student engagement in the learning process is also an important aspect because the aspect is related to various student academic performances. There are 4 components of student engagement in learning, namely academic, social, cognitive and affective components (Finn & Zimmer, 2012).

Zhu, Zhang, Au, & Yates (2020) further argued that sustained student engagement in online learning is significantly predicted by four self-regulation factors (intrinsic orientation, performance orientation, self-management, and metacognitive awareness) and attitudes, which are mediated through interaction online social experience felt by students.

Table 1. KMO and Bartlett's Test of the Two Instruments

Instrument of Student Engagement			Instrument of Self-Regulated Learning		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.949	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.922
Bartlett's Test of Sphericity	Approx. Chi-Square	5566.998	Bartlett's Test of Sphericity	Approx. Chi-Square	6066.771
	df	435		df	666
	Sig.	.000		Sig.	.000

Table 2. Communalities of Student Engagement Instrument

Item	Extraction	Item	Extraction	Item	Extraction
SE01	0.507	SE11	0.624	SE21	0.679
SE02	0.566	SE12	0.699	SE22	0.587
SE03	0.527	SE13	0.495	SE23	0.663
SE04	0.637	SE14	0.689	SE24	0.622
SE05	0.64	SE15	0.788	SE25	0.568
SE06	0.607	SE16	0.79	SE26	0.57
SE07	0.651	SE17	0.585	SE27	0.673
SE08	0.676	SE18	0.551	SE28	0.588
SE09	0.504	SE19	0.594	SE29	0.675
SE10	0.722	SE20	0.584	SE30	0.597

Table 3. Communalities of Self-Regulated Learning Instrument

Item	Extraction	Item	Extraction	Item	Extraction
A01	0.562	B06	0.557	B18	0.603
A02	0.628	B07	0.669	B19	0.626
A03	0.689	B08	0.557	B20	0.709
A04	0.688	B09	0.751	B21	0.668
A05	0.665	B10	0.737	B22	0.553
A06	0.677	B11	0.696	B23	0.552
A07	0.507	B12	0.572	B24	0.717
B01	0.702	B13	0.607	C01	0.742
B02	0.694	B14	0.578	C02	0.735
B03	0.643	B15	0.595	C03	0.727
B04	0.498	B16	0.598	C04	0.753
B05	0.613	B17	0.594	C05	0.729
				C06	0.501

Table 4. Total Variance Explained of Student Engagement Instrument

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	14.288	47.626	47.626	14.288	47.626	47.626	5.753	19.178	19.178
2	1.784	5.947	53.574	1.784	5.947	53.574	4.739	15.797	34.975
3	1.49	4.967	58.541	1.49	4.967	58.541	4.721	15.375	50.71
4	1.097	3.656	62.197	1.097	3.656	62.197	3.446	11.487	62.197

Table 5. Rotated Component Matrix of Student Engagement Instrument

Item	Component				Item	Component			
	1	2	3	4		1	2	3	4
SE01			0.571		SE16		0.777		
SE02	0.402		0.612		SE17		0.641		
SE03	0.608				SE18	0.614			
SE04			0.703		SE19		0.5		0.472
SE05			0.628		SE20	0.577			0.409
SE06			0.559	0.462	SE21	0.739			
SE07			0.511	0.489	SE22	0.595			
SE08			0.759		SE23	0.683			
SE09	0.602				SE24	0.584	0.413		
SE10				0.718	SE25	0.504			
SE11				0.598	SE26	0.56			
SE12				0.691	SE27		0.708		
SE13	0.436		0.438		SE28	0.679			
SE14	0.421		0.682		SE29		0.697		

Item	Component	Item	Component
SE15	0.881	SE30	0.559

Table 6. Total Variance Explained of Self-Regulated Learning Instrument

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	13.723	37.089	37.089	13.723	37.089	37.089	4.881	13.192	13.192
2	2.81	7.594	44.683	2.81	7.594	44.683	3.868	10.454	23.647
3	1.938	5.238	49.921	1.938	5.238	49.921	3.696	9.988	33.634
4	1.586	4.286	54.207	1.586	4.286	54.207	3.511	9.49	43.125
5	1.365	3.689	57.896	1.365	3.689	57.896	3.724	8.849	51.974
6	1.173	3.17	61.066	1.173	3.17	61.066	3.05	8.244	60.218
7	1.097	2.964	64.03	1.097	2.964	64.03	1.41	3.811	64.03

Table 7. Rotated Component Matrix of Self-Regulated Learning Instrument

Item	Component							Item	Component						
	1	2	3	4	5	6	7		1	2	3	4	5	6	7
A01				0.672				B13	0.512						
A02							0.712	B14	0.564						
A03				0.68				B15	0.475						
A04				0.703				B16					0.66		
A05			0.569	0.459				B17					0.465		0.45
A06			0.648					B18						0.68	
A07			0.569					B19					0.574		
B01			0.705					B20					0.64		
B02			0.705					B21					0.587		
B03				0.644				B22						0.628	
B04				0.55				B23					0.472		
B05	0.497		0.5					B24						0.785	
B06			0.526					C01						0.798	
B07	0.546				0.436			C02		0.714					
B08	0.648							C03		0.717					
B09	0.759							C04		0.784					
B10	0.72							C05		0.79					
B11	0.69							C06		0.483					
B12	0.476														

3.1.2 Students Engagement in Online Tutorial and Self-Regulated Learning : Instrument Reliability

The instruments of student engagement and self-regulated learning are reliable. The Cronbach's alpha score from the student engagement instrument in online tutorials was 0.961, while the Cronbach's alpha score from the self-regulated learning instrument was 0.945 (Table 8). Furthermore, the correlation of the items from the two instruments to the total score of each instrument is shown by the scores in Table 9 and Table 10.

Table 8. Reliabilities Statistics of the Two Instruments

Instrument of Student Engagement		Instrument of Self-Regulated Learning	
Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items
.961	30	.945	37

Table 9. Item Total Statistics of Student Engagement Instrument

Item	Corrected Item-Total Correlation	Item	Corrected Item-Total Correlation	Item	Corrected Item-Total Correlation
SE01	.614	SE11	.687	SE21	.687
SE02	.611	SE12	.671	SE22	.700
SE03	.631	SE13	.648	SE23	.660
SE04	.624	SE14	.672	SE24	.726
SE05	.693	SE15	.686	SE25	.709
SE06	.636	SE16	.749	SE26	.701
SE07	.693	SE17	.650	SE27	.667
SE08	.619	SE18	.643	SE28	.591
SE09	.534	SE19	.666	SE29	.638
SE10	.678	SE20	.677	SE30	.697

Table 10. Item Total Statistics of Self-Regulated Learning Instrument

Item	Corrected Item-Total Correlation	Item	Corrected Item-Total Correlation	Item	Corrected Item-Total Correlation
A01	.455	B06	.585	B18	.352
A02	.291	B07	.649	B19	.549
A03	.565	B08	.565	B20	.596
A04	.545	B09	.654	B21	.677
A05	.570	B10	.641	B22	.312
A06	.555	B11	.644	B23	.590
A07	.508	B12	.685	B24	.475
B01	.635	B13	.675	C01	.499
B02	.615	B14	.642	C02	.642

Item	Corrected Item-Total Correlation	Item	Corrected Item-Total Correlation	Item	Corrected Item-Total Correlation
B03	.519	B15	.646	C03	.637
B04	.501	B16	.550	C04	.611
B05	.650	B17	.535	C05	.581
				C06	.579

3.1.3 Relationships between Students Engagement in Online Tutorial and Self-Regulated Learning

The results of the analysis show that there is a significant relationship between student engagement and self-regulation learning. The results of the analysis are shown in Table 11. Self-regulated learning seems to be able to predict student engagement by 58,7 % (Table 12), while 41,3 % could be influenced by other factors which were not examined in this study. The calculation of Anova for the regression analysis is shown in Table 13. The results of the study are in line with those that was proposed by Vytasek, Patzak, & Winne (2020), that actively student engagement related to cognitive, emotional, and motivational aspects, as well as to goals and learning adaptation.

Table 11. Correlation Between Self-Regulating Learning and Student Engagement

		Student Engagement	Self-Regulating Learnng
Pearson Correlation	Student Engagement	1.000	0.587
	Self-Regulating Learnng	0.587	1.000
Sig (1 tailed)	Student Engagement		0.000
	Self-Regulating Learnng	0.000	
N	Student Engagement	273	273
	Self-Regulating Learnng	273	273

Table 12. Analysis Regression: Model Summary

Model	R	R Square	Adjusted R Square	Std Error of the Estimate
1	0.587	0.345	0.342	12.09

Table 12. Analysis Regression: Anova

Model		Sum of Squares	df	Mean Squares	F	Sig
1	Regression	20839.103	1	20839.103	142.561	0.000
	Residual	39614.026	271	146.177		
	Total	60453.128	272			

4 CONCLUSION

From the studies that have been done it seems that (1) the indicators of the variables in student engagement in the tutorial refer to the dimensions of skills, emotional, participation, and performance, (2) the indicators of the variables in self-regulated learning include the dimensions of motivation , self-concept, goals, monitoring, managing time and resources, as well as evaluation and self-reaction.

The conclusions of this study are (1) the instruments of student engagement in tutorials and self-regulated learning appear to be valid and reliable, and (2) there is a relationship between self-regulated learning and student active involvement with learning outcomes in online tutorials. Both of these instruments can be used for further research. Recommendations for improvement are the need to continue research by reassuring the validity and reliability of the two instruments.

ACKNOWLEDGEMENTS

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METAVERSE FOR LEARNING ARACEAE PLANT IN DISTANCE LEARNING

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Abstract

Distance learning has been the most preferred method of learning during the pandemic. Previous studies shows that students consider communication is the most important aspect. In addition, technology increases interaction among students. Universitas Terbuka as the primary distance learning higher education institution in Indonesia also develop computer application that support online learning. BIOL4225 Higher Plant Taxonomy course is equipped with metaverse for learning Araceae plant. The metaverse is developed for learning in a virtual environment. Students can interact in a more intense situation.

Keywords metavere, learning, Araceae, distance learning, plant taxonomy

1 INTRODUCTION

The Covid pandemic changes learning activities in many parts of the world. Most lectures are conducted online. Students also begin to adapt with the new learning environment.

One digital environment that can be a choice is metaverse. Metaverse becomes more popular during the Covid pandemic since it provides opportunities for people to communicate in immersive digital platform.

2 METHODOLOGY

The author develop a blueprint. The blueprint includes learning competence that students must have

3 FINDINGS AND DISCUSSION

The blue print is developed into metaverse.
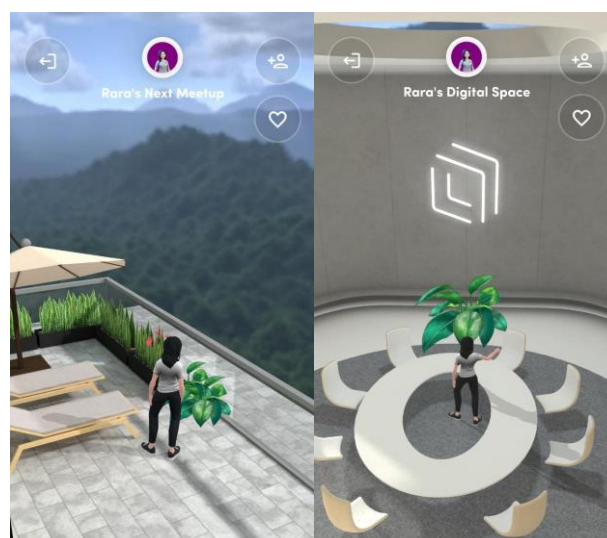
4 CONCLUSION

The conclusion needs to be concise and coherent.

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DEVELOPMENT DESIGN OF VIRTUAL REALITY FOR OPENING CRIMINAL TRIAL SIMULATION IN LEGAL PRACTICE COURSES

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Abstract

Legal Practice Courses as a practical course in the Law Study Program of FHISIP Universitas Terbuka. This course aims to hone students' high-level skills through solving various legal cases or what is known as High Order Thinking Skill, which is abbreviated as HOTS. In addition, this course aims to hone students' skills in compiling various documents in court proceedings as well as mastering debating techniques in the answer process in court. Another basic thing that is equally important is to provide students with understanding and experience on how the trial goes. Students need to understand that the course of the trial must comply with legal rules or guidelines (both the Criminal Procedure Code and the Civil Procedure Code). Presenting a trial simulation learning experience directly during a pandemic is a challenge for lecturers of the Practice Experience course in the Legal Studies Program. If at normal times, students can make direct observations at court hearings, then during a pandemic, students make indirect observations through various broadcasts and online trial documentation. To answer these challenges, there needs to be a breakthrough by using artificial intelligence in the form of virtual reality in practical experience courses. The use of virtual reality is focused on simulating the opening of a trial in which several roles are played, including the Registrar, the Panel of Judges, the Defendant, the Public Prosecutor, and Legal Advisor. With the simulation using virtual reality, it is hoped that students will find it easier and clearer to understand the flow of the trial and provide a different, higher quality experience than just making observations online through various broadcast media.

Keywords: *virtual reality, trial simulation, legal practice courses*

1 INTRODUCTION

The practice of legal proficiency is a must (*conditio sine qua non*) for every student who has entered the last semester of the law study program to achieve learning outcomes to provide mastery of the concepts and practice of resolving legal cases both in litigation and non-litigation. The Law study program of Universitas Terbuka has offered courses in Practice Experience using 2 learning models, direct observation to courts and online tutorial practice. In the learning process students are provided with guidelines in the Legal Experience Practice. However, to further hone the skills of students in the procedural process, it is necessary to have a procedural simulation to provide a complete understanding and picture of the actual procedural practice.

The impossibility of implementing face-to-face learning during the Covid-19 pandemic finally forced stakeholders in the education sector to issue policies to carry out online learning where this learning certainly requires the use of information technology as the medium. Universitas Terbuka as a pioneer of open and distance higher education has used technology for a very long time in the implementation of learning. One form of the learning model at Universitas Terbuka besides face-to-face is by opening an asynchronous online tutorial service.

As explained above, in normal situations students can carry out direct observations at court, but when the Covid pandemic broke out students were only given the option of indirect observation through various media and online documentation of the trial process. So, to answer this challenge, a breakthrough is needed by utilizing artificial intelligence in the form of virtual reality in practical experience courses. The use of virtual reality is planned to be focused on simulating the opening of a criminal trial in which there will be several roles played including the role of Registrar, Council Judge, Defendant, Public Prosecutor and Legal Counsel. Of course, this will be an interesting experience that has never existed in practical learning before.

2 METHODOLOGY

The research method in this article is based on action research (participatory actions research) (M. Atwi Suparman, 2005) which combines legal research and research in the education sector. This inductive-deductive study is to find certain criteria in the analysis of designing virtual reality applications in learning legal practice for prospective law enforcement students. This research has a goal to produce a product that is novel and then test the effectiveness of the product. The steps of the research consist of three stages, namely:

1) Pre-production which includes the concept, design, or initial design. This stage begins with the define stage which contains various steps of background analysis and problem formulation. Next, a flowchart design (Heldina, 2021) and a moodboard are made. Flowcharts contain flowcharts that describe the steps and sequences to carry out a process in a program. While the Moodboard is a composition of images, visuals, and objects to be created.

2) Production Phase, starting the development of virtual reality applications.

3) Post-Production Stage, after the application is completed, a trial is carried out on students of the UT FHISIP Law study program.

3   FINDINGS AND DISCUSSION

3.1   Virtual Reality

One form of technology that is starting to be widely used in learning is the use of Virtual Reality (VR) technology. VR itself is a technology that allows users to interact with the virtual world environment, so that users feel like they are in that environment (K.G. Herlangga, 2016). The experience felt by the user is like being in the real world even though it is only a virtual display. This is because VR is a computer-based technology that combines special input and output devices so that users can interact deeply with the virtual environment as if they were in the real world. (Antoni Musril Day, 2020).

This technology is proven to be able to make the learning process more effective, efficient, and very timesaving. VR technology can be said as a way in which several illustrations and learning images appear in the form of three-dimensional media or better known as 3D. By using VR, hoped that the concept of interacting in the learning process will become easier. Even several studies that have been conducted by several researchers reveal that now only with a smartphone and the help of Google Cardboard can display the world of virtual reality (Soni, 2020). With VR, students will be taken to another dimension whose visuals resemble the original form as in the real world when in fact they are still in the same place.

VR as a learning media will have a contribution to improve student learning, especially for students at Universitas Terbuka law study programs. The use of VR as a tool in the learning process will attract the attention of students so that it can increase learning motivation besides that the learning methods will be more varied, making students not bored because with VR students are able to feel how the trial simulation is even though they are not in real court.

3.2   Practical Experience In Court Proceedings as a Practical Course in the FHISIP UT Law Study Program

Practical Experience In Court Proceedings is a learning activity with experience (experimental learning) for students to apply various knowledge, attitudes, and skills in learning as a whole and integrated in real situations. This course has 4 credits. Every student of the FHISIP UT Bachelor of Law study program is required to carry out the Legal Experience Practice (PPB). PPB is implemented through two modes, namely direct observation and through online practice or known as praton. Students are given the choice of whether to use the mode of going directly into the field or through online practice.

The practice material for procedural experience is more emphasized on practical material in the form of procedural stages, legal documents, and the latest cases in various fields of law. Legal documents used as lecture materials can be used, among others, to:

1. Explain the format of certain legal documents that apply in the world of legal practitioners.
2. Indicate what elements are needed in the preparation of a legal document, and what their functions are.
3. Examine the legal terminology used in it.
4. Shows the weaknesses and strengths of a document compared to similar documents produced by different institutions/people.
5. Demonstrate how to obtain facts and legal provisions for the preparation of certain documents.
6. Make an analysis of a legal issue disclosed in a document.

3.3   Virtual Reality Development Design Simulation Opening of Criminal Trials

In its development, Virtual Reality for simulating the opening of early criminal trials begins with an initial design by creating a scenario of the opening stages of a criminal case trial, establishing the roles that will appear in the VR consisting of three judges, prosecutors, defendants, advisers. lawyers, witnesses, and clerks. In addition, the concept of the shape of the courtroom that will be used is also designed.

The following steps will be carried out in the process of opening a criminal trial:

a) On the day of the trial that has been determined by the judge/judge panel, the trial for examining criminal cases is opened. The procedure is as follows: The Panel of Judges Entering the Courtroom:
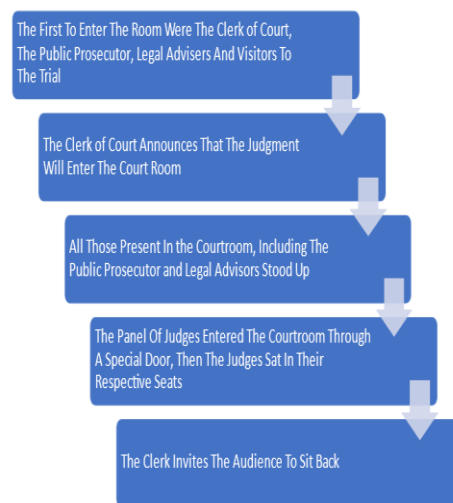
b) Calling the Defendant to Enter The Courtroom
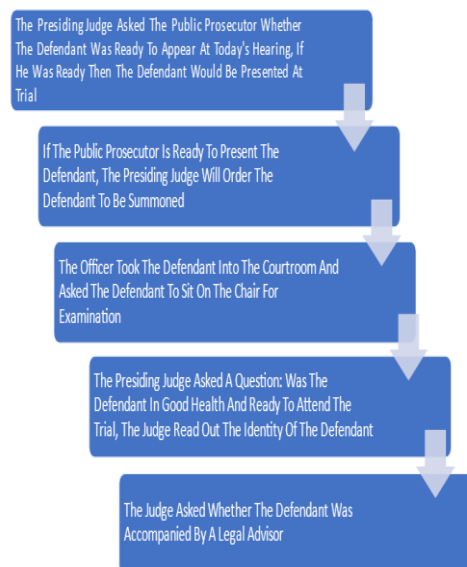
c) Legal Counsel Confirmation

If the defendant is not accompanied by a legal advisor, the judge affirms the right of the defendant to be accompanied by a legal advisor, then the judge gives the defendant the opportunity to take the following positions:

Declaring that The Defendant will not be accompanied by a legal advisor (progress alone)

Submit a request that the court appoint a legal advisor to accompany him free of charge

Requesting time for the panel of judges to find/appoint their own legal advisor
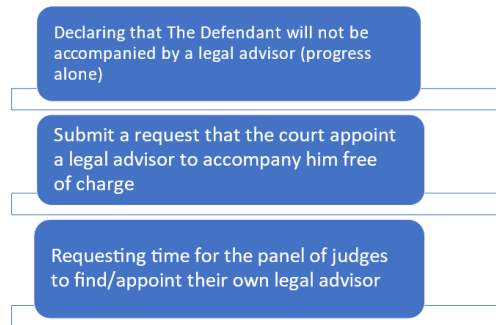
If the defendant is accompanied by a legal advisor, the next process is:

The Judge Asked The Legal Advisor Whether It Was True That In This Trial He Acted As The Defendant's Legal Advisor

The judge asks the legal advisor to show a special power of attorney and a lawyer/advocate practice license card

After The Presiding Judge Has Observed The Power Of Attorney And The Practice Permit Card, The Presiding Judge Shows The Two Documents To The Member Judges And To The Public Prosecutor

The following are story guidelines for scenarios for the Judicial Practice Virtual Reality application

1. User Guide

At this stage the user is presented with information by the system so that he can operate the VR Tour Website. Some of the information includes: Welcome page and user control.
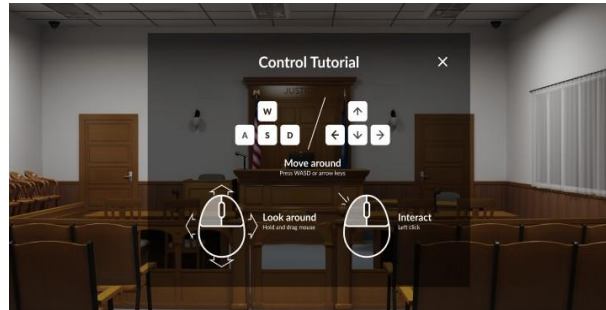
2. Explanation of The Role in Judicial Practice

At this stage, the user will see an explanation of what roles are in a Judicial Practice, along with a description of each of the clothes worn. Users can view information from each role, there are 3D people with their respective clothes accompanied by information. The roles include Courtroom Officers, Registrars (Clerk), Chief Judge, Public Prosecutor, and the Defendant.

3. Gamification 1 – Role Determination Quiz

At this stage, the user will be presented with an explanation/case study, then answer what role is appropriate in the description of the question. After answering correctly, the user will run the scenario according to the answer from the user.

4. Gamification 2 - Material Comprehension Quiz

At this stage, the user will get one question regarding the basic concept of Judicial Practice in the form of multiple choice to hone the knowledge possessed by the user.

5. Closing

This stage is the final stage for the user to perform a VR scenario of Judicial Practice. Users will be given the option to end the scenario, or start again from the beginning with a different role choice

Flowchart & Moodboard

1. Flowchart

Berikut adalah gambaran dari aplikasi VR Praktik Peradilan yang akan dibangun:
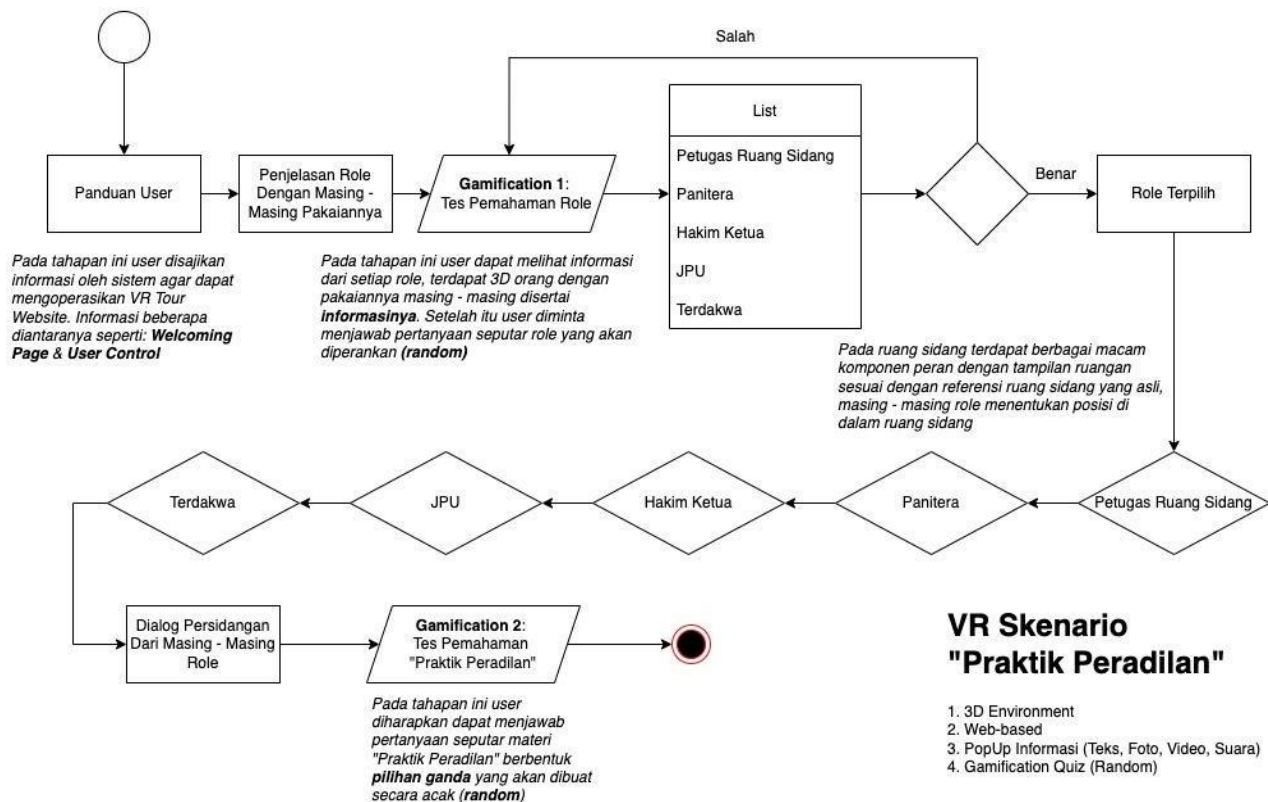
2. Moodboard

The following is an overview of the Judicial Practice VR application that will be built:

With the simulation using virtual reality, it is hoped that students will find it easier and clearer to understand the proceedings of the trial and provide a different, higher quality experience than just making online observations through various broadcast media.

4   CONCLUSION

The applied approach to the Legal Studies Program has used several subject instruments. It begins with procedural law courses that study examination procedures in court (criminal and civil). The procedural law course focuses on theory and procedural processes along with its developments. As an effort to take a more applicable approach, courses in Event Experience Practice are provided. In the Practical Experience course, students will be faced with cases that exist or are designed to then analyze and prepare legal documents.

In its development, in helping students understand the practice of event experience, learning media are developed that utilize technological developments in the form of virtual reality (vr) simulations of opening criminal trial trials. it is hoped that students will be able to better understand the concept of learning in the practice of trial experience, especially the proceedings or trial processes that apply in indonesia and be able to experience the process as in the real world even though it is in a simulation in cyberspace through virtual reality

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DEVELOPMENT OF A PRACTICAL COURSE GUIDE DIGITAL BOOK FOR EARLY CHILDHOOD EDUCATION (ECE) STUDENTS

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Abstract

The ECE Department at Universitas Terbuka has the vision to produce excellent ECE teachers through the Open and Distance Learning (ODL) system. To ensure the achievement of the vision, it is necessary to develop appropriate competencies. The competence of ECE teachers is very thick with teaching skills, so the lecture material also needs to contain a lot of exercises and practical assignments. Therefore, the ECE-UT Department has 12 practical courses, namely courses that require practical assignments as a learning experience. So that students can practice correctly, it is necessary to make a comprehensive guide so that it can be used easily by students and tutors. So far, there is no specific practical guide for the ECE-UT study program. Some practical assignment provisions are only submitted via Technical Instructions or Catalogs. This study aims to develop a digital guide for practical courses in the ECE-UT Study Program. This research was carried out in 2022 and is the final stage of 3 stages of research starting in 2020. The research method used is Research & Development adopted from Borg & Gall (2007), especially in stages 8 and 9, namely operational field testing and final product revision. The research product was revised based on input from 25 tutors and 121 ECE students from the previous draft, namely a practice guidebook in PDF form. The inputs from these users are: need to be made in detail for each course and need to make navigation to make it easier for students to read. The result of this research is a digital book of ECE-UT practice course guide that utilizes an *exelearning* application to make it easier to navigate while reading. Each course is packaged in the same sub-chapters, namely: understanding, course learning outcomes, tutorial patterns, practical assignments, tutorial kits, and assessment systems.

Keywords: Practical Course Guide, Digital Book, Early Childhood Education

5   INTRODUCTION

Graduates of the ECE-UT UT study program are expected to be able to become professional early childhood education teachers who can carry out learning for children with the help of technology. To achieve these competencies, student learning experiences in 12 courses at ECE-UT are designed with practical assignments, so that students do not only understand education and learning theory. In these 12 courses, the minimum cognitive competence is at level 3 (application) to level 6 (creation), meaning that students are required to be able to apply and experience it themselves, as well as make a learning design according to the characteristics of the course. The courses are:

Table 1. Practical Courses at ECE-UT

No	Code	Course	Semester
1.	PAUD4201	Children's Play and Games	1
	PAUD4208	Handling Children with Special Needs	2
	PAUD4202	Physical Development Method	3
	PAUD4206	Art Development Method	4
	PAUD4204	Kindergarten Learning Media and Resources	3
	PAUD4302	Integrated Learning	4
	PAUD4101	Cognitive Development Method	5
	PAUD4106	Language Development Method	5
	PAUD4102	Moral and Religious Development Method	6
.	PAUD4402	Music and Dance Skills	7
.	PAUD4401	Methods of Development of Behavior and Basic Abilities of Early Childhood	8
.	PAUD4103	Methods of Social and Emotional Development	8

Practical assignments in these courses are carried out by students when they participate in tutorial learning services, both face-to-face tutorials, web tutorials, and asynchronous online tutorials. Based on the results of monitoring while students were carrying out the tutorial, there were several findings, namely: (1) practical assignments carried out by students were not fully by the expected competencies, (2) tutors were confused about finding appropriate practical assignments and how to assess them because there was no practical assignment guide available. structured in 1 book specifically, (3) tutors and students do not understand which courses require practical assignments because they are not careful when reading the ECE-UT curriculum catalog.

According to Marisa's research, students believe they require tutorials that are of higher quality in terms of the delivery of learning media, case studies, and concept practices for the subject matter being covered (Marisa, 2016). Similarly, the in-person instructors advise that tutorials should be used to carry out practices for the courses in the ECE study program. Tutors occasionally neglect to practice in the practical courses that are their responsibility, according to information gathered from the observation of UT Central lecturers at UT's remote area.

The data above shows that there is a possibility that students do not get the learning process outlined in the competencies of the courses, so the students possibly do not achieve the competencies in these courses, both in face-to-face tutorials and online tutorials. Therefore, this research aims to

develop a practical course guide digital book in the ECE-UT Study Program.

The separate lecturers and students in the learning process are one of the important characteristics of the distance education system (Santo, 2011). The learning process is carried out through media. The learning process referred to here is in the case of lecturers delivering learning materials through the media and students who study the material.

Another important feature in distance education is connecting separation, in this case between students, lecturers, and learning resources (Santo, 2011). This separation must be bridged through the use of learning strategies that are by student conditions. Learning strategies are defined as tools or techniques available to educators and learning developers to facilitate the learning process (Gagne et al., 2005). In the context of open and distance education, the learning strategies, in this case, include the media and teaching tools/materials used, the learning methods provided for students, and the time to conduct the learning process.

2 METHODOLOGY

This research is a research and development as part of the Borg & Gall model, modified by Suparman The focus of this research is to continue the research that has been done previously from steps 8 and 9. These steps are operational field testing and final product revision (Gall et al., 2007). This research was carried out in 2022 and is the final stage of 3 stages of research starting in 2020.

In the 8th step, namely operational field testing, the second draft of the practical course guidebook in PDF format was tested on 25 tutors and 121 students who are currently/have received one or more of 12 practical courses. This trial was conducted online and offline. The online trial was conducted via Google Form with accidental sampling, while the online trial was conducted through a focus group discussion with tutors and students at UT Samarinda, the Salut Balikpapan study group. In the 9th step, which is the final product revision, the final revision of the practical course guidebook is made using *exelearning*

3 FINDINGS AND DISCUSSION

In the operational field testing step, inputs are obtained from tutors and students. Previously, the normality test of the data generated from the guidebook questionnaire was carried out. The data is

normally distributed with sig. > 0.05 (tutor $= 0.988$ and student $= 0.975$). The results of input from tutors and students in the guidebook are as follows.

Table 2. Recapitulation of The Guidebook Practical Course by Tutors and Students

No	Aspect	Score by Tutors	Score by Students
1	Layout	4,24	3,88
2	Usefulness	4,34	3,87
3	Content	4,32	3,88
4	Linguistic Aspect	4,67	3,92
Achieved Score		17,57	15,56
Maximum Score		20,00	20,00
Percentage		87,85	77,80
Criteria		Very good	Good

Based on Table 2, it can be seen that in general the draft guidebook has been rated well by tutors and students, but needs to be improved, especially in terms of layout, usability, and content. The aspect of the display that is considered to still need to be improved is the layout and physical form of the manual. Meanwhile, from the usability aspect, what needs to be improved is the time needed to read the manual, the ease of understanding the material in the manual, and illustrations/tables/graphics that make it easier for users to understand. In the material aspect, things that need to be improved are the completeness of the material, the breadth of the material covered, the accuracy of the examples in the guidebook, the clarity of practical assignments, and the up-to-date information according to the development of science and technology. Meanwhile, from the language aspect, things that need to be improved are coherence between sentences and consistency in the use of terms.

Based on the FGD during the offline trial, various inputs were also obtained. Some of these inputs are:

Table 3. Input from Tutors and Students in FGD

Aspect	Student Feedback	Tutor Feedback
Layout	1. More reproduced images 2. Enlarged letters 3. Simplified language 4. Brighter colors 5. More attractive look 6. Too many table views 7. Create a guide that is a video 8. Less attractive layouts	1. Covers and designs are made even more attractive 2. Navigation made it easy to search 3. Certain parts need to be bolded, namely the title, instructions, score calculation, and comparison table. Important points are not bulleted but numbered

		4. Adding infographics to make students more engaging 5. Fonts should be black 9. The color composition is more attention
Usefulness	10. Made more detailed and detailed again 11. MK practical and practical guidance materials are separated 12. Guidebooks are very useful	6. Can be supplemented a little with photos of activities or media used to give a better picture or inspiration 7. It's adequate and good enough
Content	13. Each course is written separately in sub-chapters 14. Given examples of the task 15. Abbreviations can be given abbreviations	8. It is hoped that for courses whose practical assignments are reports, there is a style of report format with standardized systematics. 9. The content of the material should be adjusted to the applicable curriculum 10. Giving examples of daily plans with new or diverse versions so that it can add scientific insight
Linguistic	16. It's very clear 17. It is worth noting punctuation 18. Need to create a glossary	11. The sentence is by the official spelling 12. It is worth noting some typos and spaces that are not yet appropriate 13. Only words or sentences in italics are written in foreign languages. Instructions should use short and simple language.

These various inputs became the basis for making the final revision of the guidebook to the final draft. In step 9, a revision of the guidebook was carried out on several aspects according to the results of the trial. The guidebook for the final practical course is compiled no longer using pdf format but is made online by utilizing *exelearning*, to accommodate the use of navigation that makes it easier for readers to find the necessary information. Each course is packaged in the same sub-chapter, namely: understanding, course learning outcomes, tutorial patterns, practical assignments, tutorial kits, and grading systems. These sub-chapters are arranged in such a way as to make it easier for

users, and they can click on any section they want to learn first. An example of such navigation is as follows.
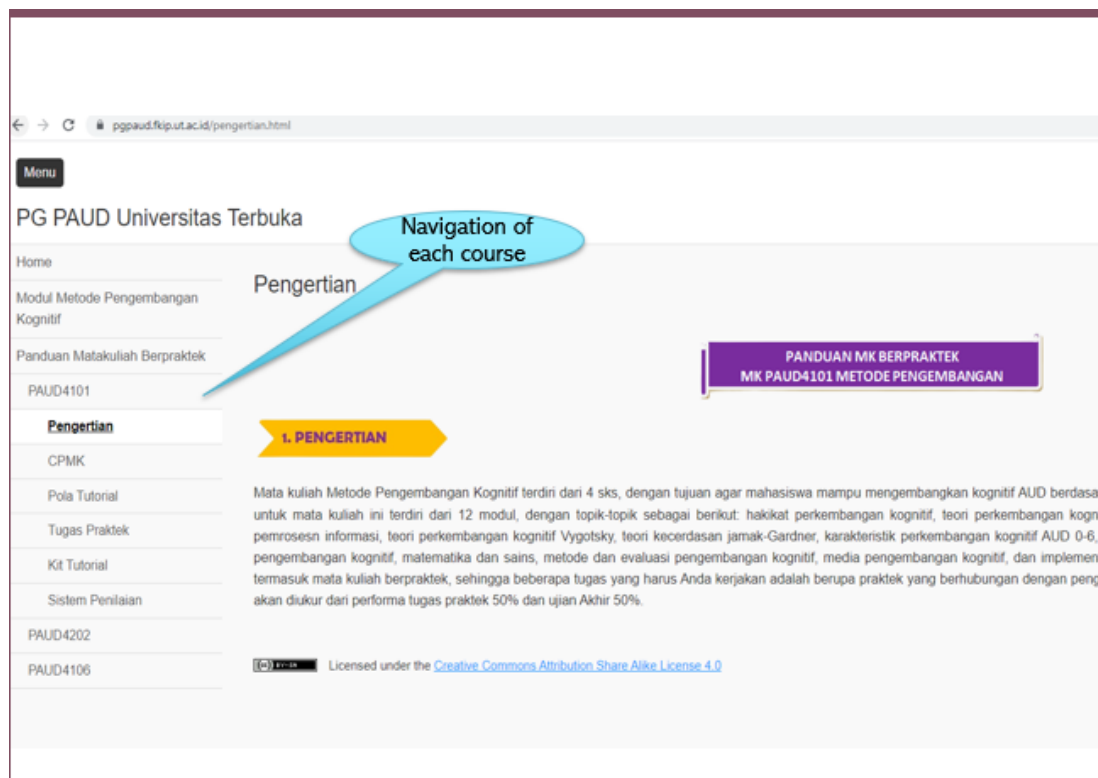
Figure 1. Subtopic Navigation for Each Course

The ease of clicking on certain sections that students want to learn, especially for students, is expected to increase their motivation in fulfilling the practical tasks of the courses being taken (Brophy, 2013). The next impact is that students are better prepared to achieve the expected competencies in the course (Nuamah, 2019). However, the clarity of the material and the completeness of the tasks that must be done while taking certain courses are one of the main factors for students to achieve the expected competencies (Niesen, 2015).

In addition, each course is rewritten separately according to user input, with examples as follows.
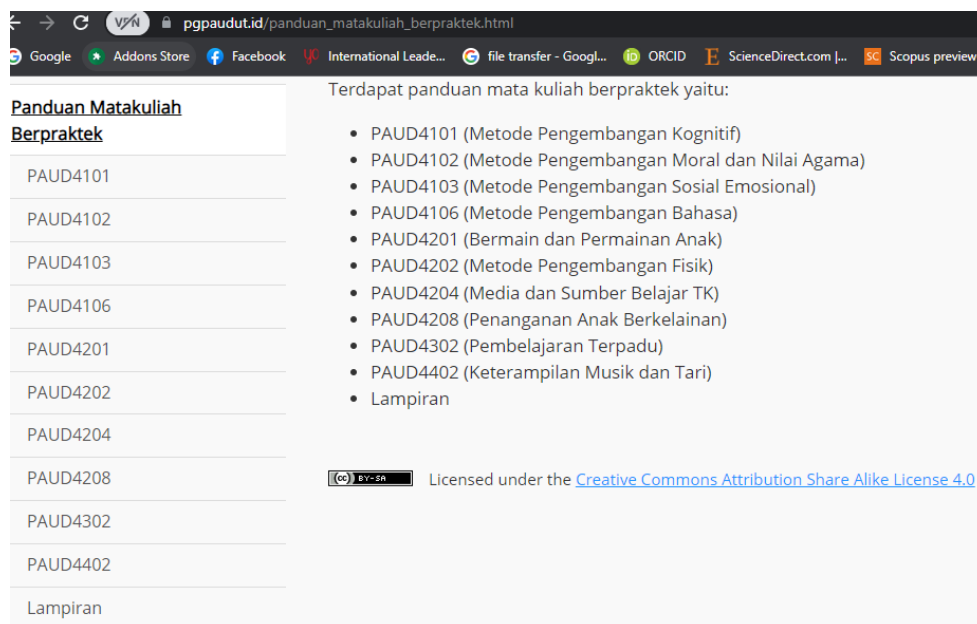
Figure 2. Guidelines for Each Course are Presented Separately

Some formats that have similarities for all courses are placed in the appendix, namely as follows.
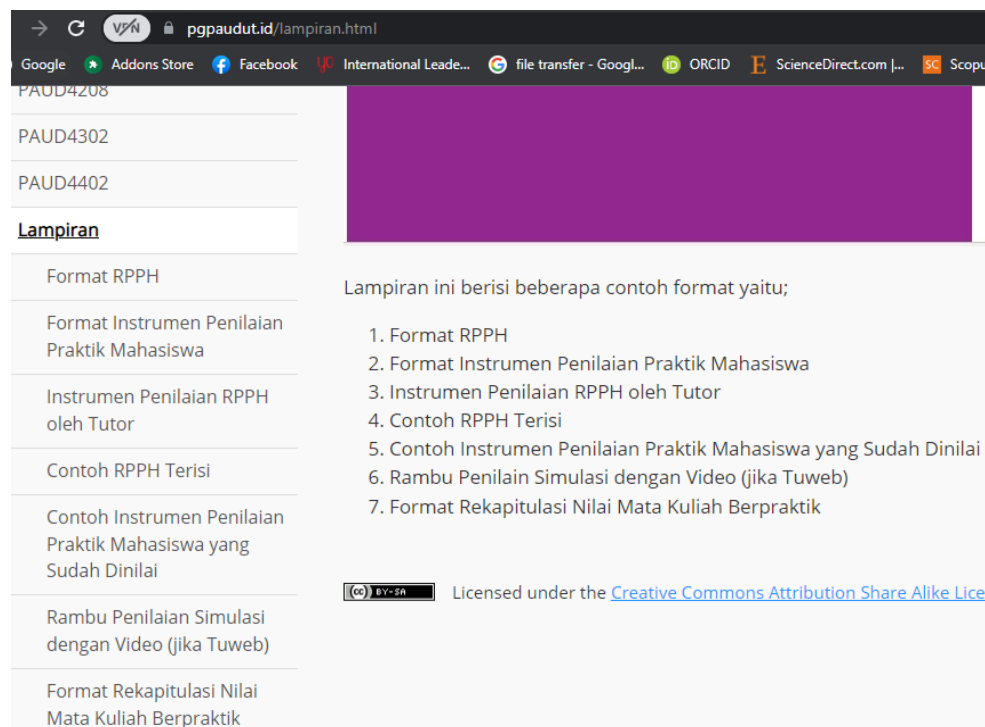
Figure 3. Format of Attachments in the Digital Book of Practical Course Guide

This digital book guide for practical courses is packaged only online and can be accessed by all parties, especially for students and tutors of ECE-UT. The form of online media was chosen for

several reasons. The first reason is paperless so that it saves costs. Currently, the world's tendency globally is to reduce trash and waste, with the slogan go green. Reducing the use of paper and ink is one of the efforts to meet the goals of a green world (Mitka, 2005). The second reason is mobile friendly because this digital guide can be opened and learned through a smartphone that is connected to the internet without having to carry a printed guidebook everywhere (Izmaylov, 2021). The use of smartphones today is very common, especially among college students (Nwachukwu & Onyenankeya, 2017). Now, it is rare for people who do not have a smartphone connected to the internet, and less often people who do not have a mobile phone as a means of communication (Kane, 2017). Therefore, media and teaching materials should be able to be multi-presented, including online which is mobile friendly (Zlatović & Orlić-Bachler, 2022).

The third reason is that maintaining the navigation pattern is quite difficult if it is printed. In printed books, the reference used is inevitably only a table of contents on the front of the book. Meanwhile, currently, students usually want to learn quickly and concisely. Flipping through books from front to center and back is certainly time-consuming, and this will make students demotivated (Zhao et al., 2021).

The last reason is to make it easier for researchers if they want to make edits according to the policies that apply at UT. As we know, especially during and after the Covid-19 pandemic, there are many adaptations that we have to do, including in the world of education. This is also the case at UT a university that implements the Open and Distance Learning (ODL) system. Policies often change according to conditions. The policy changes that need to be accommodated in the printed book of practical course guides certainly require a lot of effort and money for the editing process if the book has already been mass-printed (Wheatley, 2015).

4   CONCLUSION

Based on input from tutor users and students during operational field testing, the practical course guidebook packaged in pdf form is good but needs to be improved, especially in terms of its needs to be made in detail for each course, and it needs to be navigated to make it easier for students to read. The final product revision of this guidebook is in the form of a digital book guide for practical courses that are packaged online by utilizing *exelearning* with uniform systematics for each course.he conclusion needs to be concise and coherent.

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DEVELOPMENT OF ONLINE PROCTORING AND QUESTION AND TEST INTEROPERABILITY

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Abstract

One of the information technology facilities used to support the teaching and learning process in a distance is the application of online exams. This system has been used for a long time by students and lecturers as a developer of test materials. In developing the system, innovation efforts are needed, one of which is Online Proctoring and Question and Test Interoperability. This study aims to implement Online Proctoring and Question and Test Interoperability so that it is expected to be able to evaluate exams and provide recommendations to stakeholders to improve the quality of exam services. This research is a research and development using mixed methodology. The research was conducted for two years. The first year research will be carried out in 2020, is to study relevant theories and research results, draft models and mechanisms or procedures for use, conduct FGDs to validate draft models and mechanisms, and revise draft models and product procedures for Online Proctoring and Question and Interoperability test developed. In this first year research, researchers also held FGDs to validate the products developed, namely Online Proctoring and Question and Test Interoperability. The result of this prototype was developed a flowchat form with access individuals and access groups.

Keywords: Online Proctoring and Question and Test Interoperability

1 INTRODUCTION

The implementation of quality education is mostly carried out on the island of Java and has not been evenly distributed throughout Indonesia. Especially the problem of administering the test. All Indonesian people want to get quality education, easily accessible and affordable. One solution to this problem is e-learning and online exams (Yuliyanto, Wahyuni, and Seputra, 2016).

Online exam system using facial recognition to authenticate students attending online exams. The system works continuously (with short time intervals), to check student identity during the entire exam period to ensure that the student who started the exam is the same person who continued to the end and prevent possible cheating by looking closely. The system will issue an early warning to students if suspicious behavior is known by the system (Fayyoumi & Zarrad, 2014). Automatic Facial Recognition (AFR) technology has made many improvements in a changing world. Attendance Real-Time Face Recognition is a real-world solution that comes with the day-to-day handling activities of student attendance systems. The presence of a facial recognition-based system is the process of recognizing student faces to take attendance using facial biometrics based on high-definition

monitoring videos and other information technologies (Nandhini, Duraimurugan, & Chokkalingam, 2019).

The multimedia analysis system is a system that performs online automated proctoring exams. The multimedia analysis system tools or hardware used include one webcam, one wearcam, and a microphone. Aims at visual and acoustic environmental monitoring of the test site. The system includes six basic components that continuously estimate key behavioral cues: user verification, text detection, voice detection, active window detection, gaze estimation and phone detection. By combining the continuous estimation components, and applying a transient sliding window, we designed a higher level tool to classify whether a test taker is cheating at any point during the exam. Extensive trial results demonstrate the accuracy, robustness, and efficiency of our online test preparation system (Atoum, et.al., 2018).

The results of Alessio, et.al., (2017)'s research on the performance tests of 147 students enrolled in several parts of the online course, after being compared using a linear mixed effects model with almost half of the students not having proctoring and the rest needed to use online proctoring software . Students scored, on average, 17 points lower [95% CI: 14, 20] and spent significantly less time on the online test using processing software versus the non-programmed test. Significant class and time-of-use disparities occurred across different exams, both across and within sections of the same course where some students used the testing proctor software and others did not.

The Learning Management system (LMS) requires human resources who have competence in designing, manufacturing, reviewing and finalizing the LMS system (Indriani, Fathoni, and Riyana, 2019). The integration tester of IMS Questions and Interoperability Tests (QTI) and IMS Learning Design (LD) in the implementation of E-learning from a pedagogical and technological point of view conducted by Sitthisak, et.al., (2007) stated that presenting an assessment using IMS QTI provides flexibility and reuse within the IMS LD Learning Unit (UOL) for individual studies. However, for group studies, the use of QTI items encountered coding difficulties, because group members needed to wait for feedback from all students.

Evaluation of the Multiple Choice Question (MCQ) conducted by Aras, Rahayu, and Prabandari, (2014) concluded that the Multiple Choice Question (MCQ) could have an adverse impact on the learning process. In the MCQ questions which structurally contain flaws items, the contents of which

only test memorization, not the application of a science, and questions that provide incomplete information. Regulations in the form of summative exams can motivate students to prepare themselves more seriously than formative exams.

The Open University has completed an online learning system and online exams. However, it has not been equipped with a reminder information system for collecting questions and using real-time facial recognition in finalizing exam questions in the question bank. Based on the description of the problem above, the writer is interested in raising a theme that will be discussed under the title "Development of Online Proctoring and Question and Test Interoperability".

Computer Based Examination

Administering a computer-based exam using the classical method is a process of administering an exam that involves providing a special exam center, namely using a machine configured with a static security policy, used specifically for exam purposes (Kaiiali, et.al., 2016). The problem of applying the classical method of carrying out exams uses large manufacturing costs, equipment maintenance, and an environment that must be carried out continuously (Panyahuti, et.al., 2019). These problems are the following: first, it is difficult to identify online test takers. The second is the difficulty of preventing cheating during the exam. Thirdly, the difficulty of keeping unauthorized use of textbooks and notes on exams. Fourth, the difficulty of preparing for online exams and arranging the implementation of the exam. Fifth, it is difficult to prevent student access, who may have access to the question bank.

Sixth, it is difficult to prevent students from using cellphones during exams, calculators, and Bluetooth devices. Seventh is the difficulty of limiting access to other individuals during exam time. The eighth is the difficulty of ensuring students who are good at using computers to upload and download. The ninth difficulty is identifying intentional computer crashes. The tenth is the difficulty of recording various methods of examination examination (Ghosh, et.al., 2011).

The researchers argue that online programs should address students' integrity in their use of supervisory software. One way to do this is to ensure that students being fairly evaluated are effective (Moten, Fitterer, Brazier, Leonard, & Brown, 2013). Research by Berkey and Halfond, (2015) found 84% of 141 students who responded to the survey. Students agree that their dishonesty in online

exams is a significant issue. However, less than half of the students surveyed indicated that they had used proctoring software in online tests.

The study of King, Guyette, and Piotrowski, (2009) stated that 73% of the 121 undergraduate students surveyed found it easier to cheat on online exams compared to traditional face-to-face classes. When asked if they were more likely to cheat, a survey of 635 students found that almost one of them would consider cheating in any setting. College students also indicated that they were more likely to cheat in class when exams were online. The survey results found no significant differences in students' descriptions of their cheating behavior in the internet and face-to-face classes (Watson & Sottile, 2010).

While many studies address the prevalence of cheating online vs. in-person classes, many of these studies rely on self-reports from college students (King, Guyette & Piotrowski, 2009; StuberMcEwen, Wisely, & Hoggatt, 2009; Etter, Cramer, & Finn, 2007; Watson & Sottile, 2010).

Research that focuses on actual student behavior has found conflicting results. For example, Ladyshewsky's research (2015) analyzed test scores of postgraduate students and found no difference between test scores in non-programmed online tests, when compared to in-person programmed tests. Likewise, Yates and Beaudrie's (2009) study found no difference in course scores between student communities who took monitored versus unmonitored exams.

Research Corrigan-Gibbs, et.al., (2015) found rampant cheating, seen between 26% and 34% of students cheating by searching for answers online. Innovative study by Alessio, et.al., (2017) regarding the effect of proctoring on online test scores using several techniques to identify student fraud. As for these techniques, they are: 1) the exact words of the question are entered in the Google search engine; 2) expert analysis of words, comparing responses from students to one another, as well as general website language focusing on idiosyncratic language; and 3) IP address tracking. The results showed clear differences in test scores in separate sections of the same course and under contrasting conditions. There are various strategies for addressing integrity during online testing, and the use of proctoring software is one of them (Berkey & Halfond, 2015).

Processing software involves two main elements. First, activate the camera on the computer, and record students who take the exam. This allows faculty to observe student behavior and identify activities that could indicate cheating such as talking to others or looking over information in books.

Second, it limits students' ability to use their computers for other tasks by eliminating the ability to engage in activities such as copy-pasting, printing and searching the Internet, or recording everything students do on their computers, or both. Restricting a student's ability to use other tools or resources is known as "locking" the computer or browser. Exam recordings can be reviewed by the teaching professor or lecturer.

Research by Meinawati, Satoto, and Nurhayati, (2013) states that by using the E-service application for online exams, it is hoped that it will increase public interest in the Diponegoro University Computer Systems Department, and also make it easier for online test users and do not need to use stationery for the process. Supported by Kusworo's research, (2010) shows that the creation of an online exam system is an online exam tool to optimize exam activities. The online exam system provides benefits, namely that there is no need to procure exam paper and saves time for exam corrections so that the efficiency and effectiveness that is the goal of making an online exam system can be achieved. The function of random questions in the online exam system can reduce fraud committed by examinees because the questions presented vary so that examinees will receive questions that vary from one to another.

The Online Examination System uses Face Recognition

Online exam system using facial recognition to authenticate students attending online exams. Computer systems will be able to find and recognize human faces quickly and precisely from images or videos captured by surveillance cameras. Many algorithms and techniques have been developed to improve facial recognition performance but the concept applied here is Deep Learning. This helps in converting video frames into images, so that students' faces can be easily recognized by their presence, so that their attendance into a database can be easily reflected automatically (Nandhini, Duraimurugan, & Chokkalingam, 2019).

Facial recognition system applications in real time can be found in surveillance, identification and security systems based on facial recognition. Observation of faces directly by humans has weaknesses, because the fatigue and boredom that may occur can cause a decrease in accuracy. For that the use of computers can be an alternative solution. In this study, facial recognition was carried out through the stages of face detection, feature extraction and face recognition, then matched with profile data stored in the database. Face detection uses the Adaboost method, facial recognition uses

the Eigenface PCA method and a MySQL database to store profile information. The use of this method for facial recognition in real time conditions with differences in the distance between the sensor and the face, the position of the face, the intensity of light hitting the face, facial expressions and facial attributes in this study gave an 80% success rate in identifying faces (Suprianto, Hasanah, Santosa , 2013).

Online Proctoring

The Online Proctoring System is an online monitoring system that is carried out by recording the activities carried out by the examinees, both the computer screen used and the examinees' faces via a webcam. During the process of recording the examinee's activity, the system tests the availability of the internet on the examinee's computer. If the internet is available, the system will broadcast live or stream. done by using a cloud service, which allows sending videos to a server which can then be opened on a computer that has access. If the internet is not available, the system will carry out the storage process.

The storage process goes through a compression and segmentation process so that the resulting recording storage does not take up a large amount of space and when the upload process experiences problems (connection loss) the upload process can be resumed without having to start over from the beginning. Storage is divided into 2 types, offline storage and online storage. In the offline storage process, recordings are stored in the computer's local drive storage, while in online storage, recordings are stored in cloud storage with an upload process. In the upload process, if a connection loss occurs, the system can continue the upload process manually or automatically.

The Online Proctoring System being developed is a system that is used to facilitate supervision when exams are being carried out, so that the examiner and the exam supervisor do not have to be in the same place. Seen in the table below:

Table. The difference between online and conventional exams

No	Difference	
	Online Exams	**Conventional Exam**
1.	Can be done anywhere	Done in a certain place
2.	Proctor and exam taker do not have to be in the same place	Proctor and exam taker have to be in the same place

The conventional exam process tends to cost more to provide a place and accommodation costs to go

to the place where the exam is held. Meanwhile, in the online exam system, exams can be carried out anywhere as long as internet access is available. The second difference is that in conventional exams, the participant (exam taker) and the test supervisor (proctor) must be in the same place to carry out the supervision process. Meanwhile, in online exams, the proctor can supervise the exam directly with the live video stream feature.

Interoperability Questions and Tests

Question and Test Interoperability (QTI) is a standard format for representation of assessment content and results, supporting the exchange of this material between authoring and delivery systems, repositories and other learning management systems. This allows assessment materials to be written and submitted on multiple systems in turn. Hence, it is designed to facilitate interoperability between systems.

This specification consists of a data model that defines the structure of the questions, the assessments and the outcomes of the questions and assessments along with an XML data binding which essentially defines the language for the questions exchanged and other assessment materials. XML bindings are widely used to exchange queries between various authoring tools and by publishers. Ratings and results are part of the specification of little use.

QTI is produced by the IMS Global Learning Consortium (IMS GLC), which is an industrial and academic consortium that develops specifications for interoperable learning technologies. QTI was inspired by the need for interoperability in question design, and to avoid people losing or having to retype questions as technology changes. Developing and validating good questions can be time consuming, and it is desirable to be able to create them in a technology neutral format and platform.

QTI version 1.0 is materially based on QuestionMark's proprietary Questions Markup Language (QML), but the language has evolved over the years and can now describe almost any reasonable question one might want to describe. (QML is still used by Questionmark and generated for interoperability by tools such as Adobe Captivate).

Version 2.0 was finalized in 2005 and only addresses the item level (i.e., individual questions) of the specification. A draft version of Version 2.1, which included test structure and results, was also released in 2005. But because Version 2.0 did not address test-level issues and was incompatible with Version 1, and because 2.1 was still under development, adoption of Version 2 was delayed. This was exacerbated in 2009 when IMS GLC withdrew a draft of Version 2.1 and informed the user community that the only version "fully supported" by IMS GLC was 1.2.1, which in effect also deprecated Version 2.0. Nonetheless, after a few more drafts, 2.1 was finalized and released in 2012.

The current version is 2.2, which was finalized in 2015, and then had two minor revisions, 2.2.1 and 2.2.2, the last being in November 2017. Version 2.2 updates and improves integration with W3C standards such as HTML5, SSML, PLS, CSS, ARIA, and MathML, and otherwise made relatively minor changes to the core Version 2.1 specification.

Version 2.x is a significant improvement over Version 1, which defines a new underlying interaction model. It is also notable for its much greater level of integration with other specifications (some of which were missing during production v1): the specification addresses relationships with IMS v1.2 Content Packaging, IEEE Learning Object Metadata, IMS Learning Design, IMS Simple Sequencing and other standards like XHTML. It also provides guidance for representing usage data and context-specific information to support content migration from previous versions of the specification.

Research Method Design

The approach model in this study was designed with a research and development approach. Gall, Gall and Borg (2003) describe that research and development originates from the industry-based development model, which is used as a product to design and develop a quality new product. In educational development sometimes called research based development appears as a strategy that aims to improve the quality of education. More specifically stated that in the field of education, research and development is a process used to develop and validate educational products and find new knowledge through "basic research", and aims to provide educational changes to increase potential positive impacts from research findings in solving educational problems and used to improve the performance of educational practices.
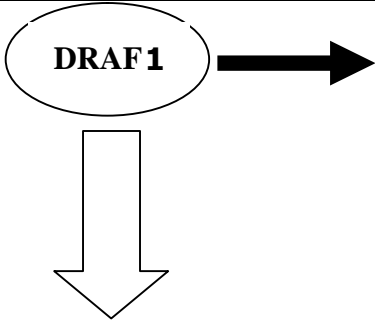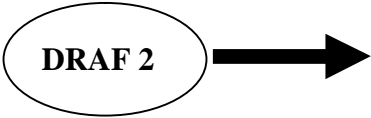
In general, the work procedure in research and development is in the following steps (Gall, Gall, and Borg, 2003:772), namely: (1) Research and information collecting planning. Review and gather information, including by reading literature, observing, interviewing and preparing reports on development needs. (2) Planning. Planning prototype components to be developed, including determining/defining the skills to be developed, formulating objectives, determining the sequence of learning activities, compiling scales of measurement and testing possibilities on a small scale. (3) Develop preliminary from product. Compile/develop the initial product/initial prototype. (4) Preliminary field testing. Conducting limited treatment/testing of the initial reconstruction model product (including conducting observations, interviews, and questionnaires). In this stage, classroom action research (CAR) will be carried out. (5) Main product revision. Revision of treatment results from the initial product model. (6) Main field testing. Implementation of field trials (observation, interview). Quantitative data at the beginning (pre) and end (post) of teaching were collected and evaluated. (7) Operational product revision. Perform product revisions, based on the results of field trials. (8) Operational field testing. Conduct field trials. (9) Final product revision. Perform final revision of the reconstruction model and determine the final product. (10) Dissemination and implementation. Dissemination and implementation/distribution to various parties.

2 METHODOLOGY

Development Procedure

This research is research and development using mixed methods. This research was conducted for two years. The first year of research that will be carried out in 2020, is to conduct a theoretical study and relevant research results, prepare a draft model and mechanism or procedure for use, conduct FGDs to validate the draft model and mechanism, and revise the draft model and product procedures Online Proctoring and Questions and Test Interoperability developed. Also in this first year of research, researchers held FGDs to validate the products being developed, namely Online Proctoring and Question and Test Interoperability. In the second year of research, empirical trials (limited and expanded) were carried out as well as dissemination of the products being developed. Figurally, the research procedure can be seen in Table 1 on the following page

Table 1. Research procedure

ACTIVITY	PRODUCT
DRAF 1 → (with downward arrow)	1st year Reviewing relevant research theories and results, then drafting the product being developed. Initial drafts and products are then validated through FGDs. Subsequently, this initial draft and product after revision was named Model 1.
DRAF 2 →	2st year Conducting empirical tests on products (limited and expanded tests and disseminating products through user tests, and revising them so that the product is final.

Subject, Place, and Time of Research

Respondents who were involved in the first year's FGD were 7 experts from the fields of evaluation, educational technology, and PJJ. The place of research is carried out at the UT head office and the time of implementation is in 2020.

Data Collection Techniques and Instruments

Data collection in this first year's research was carried out through the Focus Group Discussion (FGD) method. During the FGD, the experts were given a product draft, then they were asked to discuss it, guided by the researcher. The FGD participants were experts from related fields of expertise. After revision, the product draft was named Prototype-1. In the second year of research, Prototype-1 was tested empirically and disseminated through user tests.

3   FINDINGS AND DISCUSSION

The online proctoring system is an online monitoring system that is carried out by recording the activities carried out by the examinees, both the computer screen used and the examinees' faces via a webcam.

During the process of recording the examinee's activity, the system tests the availability of the internet on the examinee's computer. If the internet is available, the system will broadcast live or stream. done by using a cloud service, which allows sending videos to a server which can then be opened on a computer that has access. If the internet is not available, the system will carry out the storage process. The storage process goes through a compression and segmentation process so that the resulting recording storage does not take up a large amount of space and when the upload process experiences problems (connection loss) the upload process can be resumed without having to start over from the beginning.

Storage is divided into 2 types, offline storage and online storage. In the offline storage process, recordings are stored in the computer's local drive storage, while in online storage, recordings are stored in cloud storage with an upload process. In the upload process, if a connection loss occurs, the system can continue the upload process manually or automatically. The workflow of the Online Proctoring system can be seen in the figure below with the Online Proctoring System Workflow.

The following describes the flowchart of the results of the development of the online proctoring system workflow prototype design.

This slide depicts the global system as a whole where users are divided into two groups

1. Individual access
2. Access groups

Each access has network security which will later be determined by standardization (security). Before the user makes a connection with the server, his identity is first checked through a second layer security system (security). after everything is complete and safe, users can make transactions with Active Documents through the server.

This is a somewhat more detailed description of the description above. Individual or group users. can make transactions to active documents with the encryption method which will later be standardized. each encryption will be different and stored in an access sand box stored on the main frame or server.

To establish a relationship with the server, the user must go through several stages of checking which will later be determined by standard. Connecting with the server can be done using WEB Based, Mobile Based while the devices used can use computers, gadgets, tablets, laptops etc. whose information is recorded or stored in the access sandbox box. so each user will be able to make a transaction if:

1. With a device whose information has been recorded in the sand box
2. Internal Data Verification
3. The two items will be matched through parallel Task checking. If true, then you can request documents on local verification.

On the second slide is the process that occurs with the standard function flow.

On the third slide is a process where each activity is completed with video recording which is sent to the streaming engine and restreamed to the parts that really need to monitor the activities being carried out. What needs to be considered in this section is the use of bandwidth or bandwidth considering that the band for audio video is quite wide.

One thing that is important here is the plan or schedule to be able to restream. The system can serve audio video restream if there is a schedule. otherwise monitor access will be denied.

The fourth slide is the process in the data center section. where all access will be protected by security (the outline info is in the previous slide for user access).

This is from this slide the document is divided into several parts.

a. Active Document is a document that can be accessed directly from the device.

b. Near line storage is a document that will be archived but has not been done until the specified time limit. To be able to access this document, several stages of user checking are required, the standard of which will be determined later.

c. Document storage is a document that has been stored and cannot be accessed directly or to the items above. This document is offline. To be able to access this document, you must make a request to the offline section whose process can be determined later.
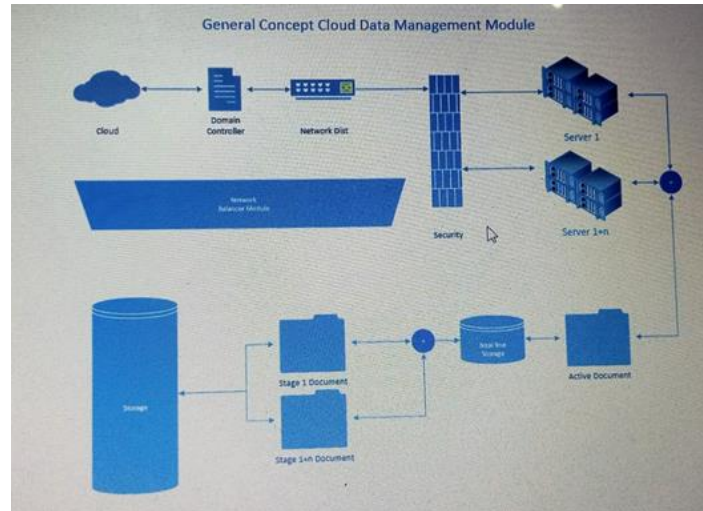
3.1 Initial Prototype Trial Process

The main contribution to the development of this prototype is to provide a comprehensive framework for online exam supervisors. Meanwhile to achieve good performance in evaluation, this framework can be improved in various ways. For basic components, you can apply more advanced algorithms to each component, such as representation-based deep learning features, typing-based continuous authentication, upper body alignment-based pose estimation, and model personalization. The initial prototyping trial process can expand the basic component set, to include additional components such as pen detection. For cheat classification, one can explore spatial-temporal dynamic features, similar to video-based activity recognition.

In addition, system efficiency can also be improved to maintain high accuracy in recognizing cheating events as a process in taking exams. Apps can choose more appropriate features and classifiers, and choose a smaller number of frames and use all frames. This process recognizes that there is always a possibility that some hidden cheating might be taking place outside of the view of the two cameras. To overcome this, the system plans to generate random commands, such as asking the test taker to look around or under the table to check the surroundings of the exam. To detect whether a test taker has a sensor, the system may occasionally display a simple icon on the computer screen to validate the wearcam can "see" it, or play a quick sound clip to validate that the microphone can "hear" it. Such randomness as command and intervention would likely make our system better against intentional fraudulent behavior. Note that the definition of fraudulent behavior depends on the context of the exam, such as an oral exam, open book exam, etc. The following is an initial review related to the application development prototype trial.

a. Test results prototype function 1: Recording the screen

b. Based on the results of function 1 performance testing, it can be concluded that Preset1 has the video output with the lowest size. Based on the results of function performance testing 1, it can be concluded that the smaller the rtbufsize, the smaller the output video size. For probesize, the smaller the probesize, the smaller the output video size will be. The fast preset setting will have a smaller output video size than the slow preset setting. Setting function 1 which functions to record the screen on the Online Procotoring system will be continued using Preset

c. Functional Testing Results 2: Recording Examinees via Webcam

d. The results of function 2 performance testing are shown in table 3. Function 2 performance test results. Based on function 2 performance test results, it can be concluded that the size of the video produced from function 2 is 2.54 MB per minute. Based on the results of function performance testing 2, it can be concluded that in the process of recording test participants via webcam, no problems or errors were found.

e. Function Test Results 3: Segmentation

f. Based on the results of function 3 performance testing, it can be concluded that the average time required for function 3 to segment files is 2.1 MB per second. Based on the results of function performance testing 3, it can be concluded that the average file size that can be compressed is 0.02 MB per MB of the original file size.

g. Function Testing Results 4: Uploading

h. The test uses 3 different file sizes on 3 predefined connections. The results of the upload process are in the form of the time needed to carry out the uploading process up to 100% which can be seen in table 5. Test results for the uploading process

i. Function Test Results 5: Streaming

j. After testing three presets on three connections, it can be concluded that the quality of the streamed video is not affected by the type of connection used but is affected by the preset used. The metadata of each streaming test shows that connection differences also do not significantly affect the number of frames, fps, Lsize, and bit rate.

k. Multimedia analysis system for online exam supervisors, aims to maintain academic integrity in e-learning. The system is affordable and convenient to use from a text taker's perspective, as it only requires having two inexpensive cameras and a microphone. By recording video

and audio, it extracts low-level features from six basic components: user verification, text detection, speech detection, active window detection, eye gaze estimation, and detection phone. These features are then processed temporally in the window to obtain high-level features, and then used for fraud detection.

l. With a collected database of 24 test takers representing real behavior in online exams, and demonstrating system capability, with nearly 87% detection rate
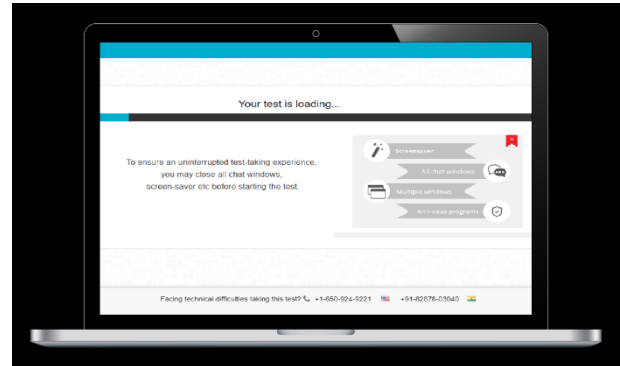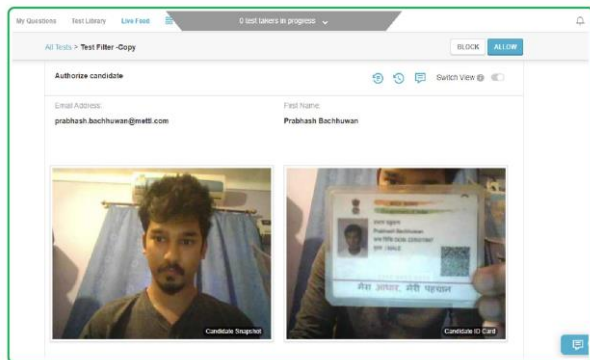
2. Verify Authenticity with 3 Point Authentication System
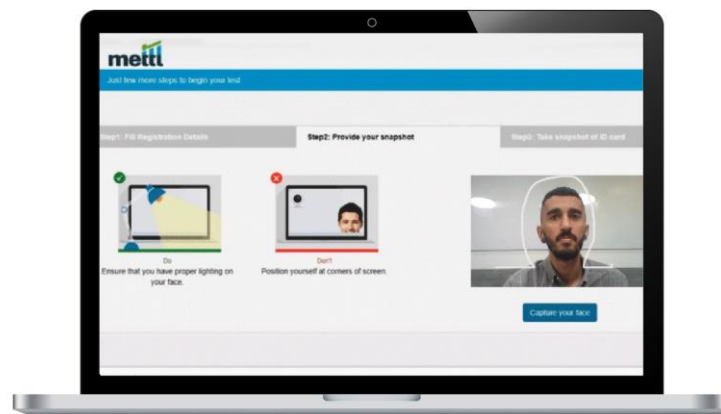
a. Enter registration details (Columns can be customized)
b. Clicking on the photo
c. Verify his ID proof

4 CONCLUSION

The online proctoring system is an online monitoring system that is carried out by recording the activities carried out by the examinees, both the computer screen used and the examinees' faces via a webcam.

Storage is divided into 2 types, offline storage and online storage. In the offline storage process, recordings are stored in the computer's local drive storage, while in online storage, recordings are stored in cloud storage with an upload process. In the upload process, if a connection loss occurs, the system can continue the upload process manually or automatically. The workflow of the Online Proctoring system can be observed with the Workflow of the Online Proctoring System.

ADVICE

In this early stage research, a prototype was produced in the development of an online proctoring system workflow. In the first year the research design is carried out to produce a reference related to this development. For this reason, in the following year, it will be developed more technically and will be tested on the system and examinees.

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INTERNET OFFLINE SERVER DESIGN NAMED "UTAKSES" FOR UNIVERSITAS TERBUKA STUDENT LIVING IN INTERNET BLANK SPOT AREAS

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Abstract

Universitas Terbuka students living in remote areas of Indonesia without reliable Internet access have suffered to access UT Online. This condition creates a vast digital divide compared to their peers in the urban area. This paper reviews the opportunity to provide a local server design for wireless network systems named "UTAkses" for them. Offline Internet servers have two (2) main functions to serve the student learning process and support offline Internet network operations. The SSH, DHCP, and DNS servers are used to perform offline Internet network operations. Apache Web Server, Moodle e-Learning, Kiwix, and file sharing for online libraries to aid the student learning process. Kiwix is used to make Wikipedia accessible offline for students. Two major system requirements, namely, performance and affordability, are critical for remote students for Offline Internet operations. Following the desired performance sequence, the Internet server design can use Raspberry Pi 3 or 4, mini pc, or personal computer to serve 100 students. The project also discovered the most feasible service in term of budget, capacity and the reliability services. The compared budget for the server ranges from Rp. 700,000 to 8 million with the wifi-coverage ranges from 10 meters to 2 km. The mini PC seems to become affordable and reliable choice to be implemented for upscaling digital literacy and access for UT students in Internet blank spot areas.

Keywords: Local Cellular Network, Internet blank spot, Inclusive Online Learning,

1   INTRODUCTION

Universitas Terbuka is developing an offline Internet system for student access residing in remote areas with limited telecommunications/Internet networks. This research activity is triggered by the fact that unreliable networks are widespread, supported by data provided by the nperf.com (Daengsi et al., 2021) (Budiman et al., 2017) and the OpenSignal application.

Internet access, especially in rural/rural areas, will usually largely depend on the presence of mobile/3G/4G operators. It is clear from the data nperf.com from one of the mobile operators; there are still many blank spots in various regions in Indonesia. Consequently, Internet access in the area is also challenging.
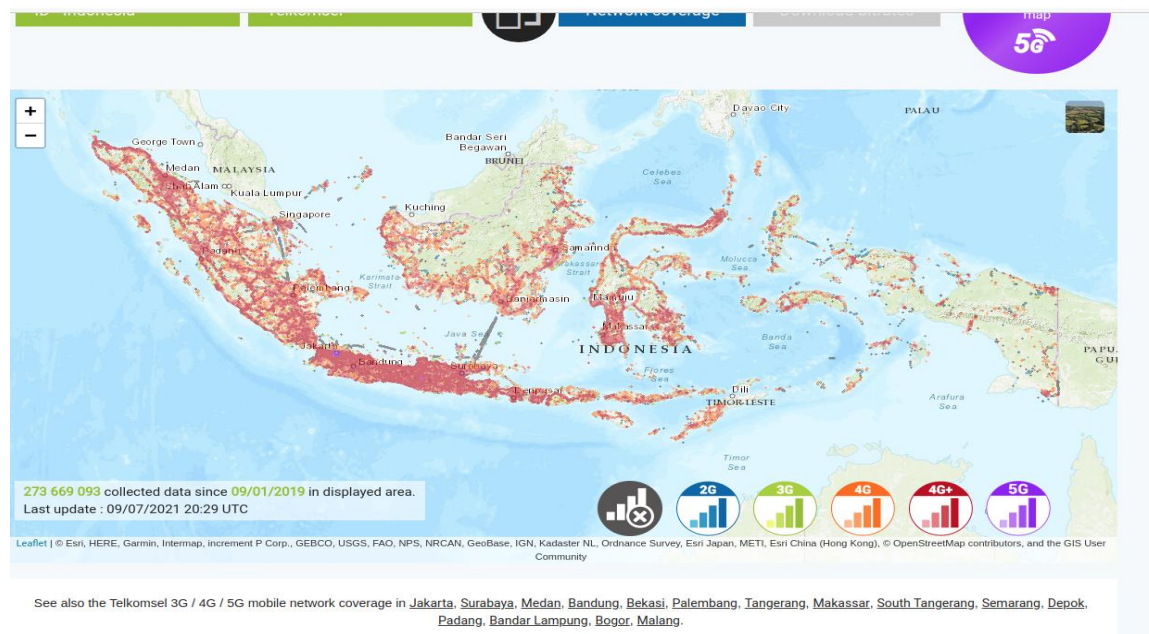
Figure 1: Telkomsel Signal Conditions throughout Indonesia.

The above picture shows Telkomsel signal condition coverage throughout Indonesia, which can be accessed through the nperf.com site. There are many blank spots, especially outside Java. On the nperf.com site, we can evaluate mobile operator coverage in Indonesia with data collected by nperf.com since 2019 (Nperf, 2022, February).

Efforts to make internet access offline may not be new. Since the beginning of Internet development, some groups, especially in developing countries, have been trying to find solutions to read internet content while offline. They start from simple by backing up email, SMS, WhatsApp to more complex activities such as downloading songs, movies, files, PDFs, ebooks.

In this study, the focus was given for making educational content accessible offline. These efforts are nothing new; several steps seem to be made globally from the initiative of several state institutions and non-governmental organizations supported by various technologies that support the offline Internet. So, there are some offline Internet initiative activities, but not many. Only a handful of institutions/research in the world are trying to provide solutions for areas with scarce internet access.

2 METHODOLOGY

The study was conducted for 3 years using an action research approach. The action research is preferred to enable the experimental design in a real situation. an approach in which the action researcher and a client collaborate in the diagnosis of the problem and in the development of a solution based on the diagnosis". Action study assumes social world to be constantly changing, both, researcher and research being one part of that change.

The study was organized into several activities as follows

	Activities	2021	2022	2023
A	**Instructional Design**	green		
	Instructional Desain Assessment	green		
	Content Development	green		
	Small group evaluation	green		
	Content Deployment	green		
B	**Hot-Spot Infrastructure Development**			
	Pilot Target Location	green		
	Assessment of Existing Infrastructure	green	green	
	Equipment Procurement		blue	
	Mockup Pilot Development (UT)	green		
	Mockup Trial (UT)	green		
C	**Hot Spot Infrastructure Installment**			
	Setting Up Hot Spot Infrastructure		blue	
	Installation of Hot Spot Infrastructure		blue	
	Student's testing and Feed Back		blue	
D	**System Design and Governance**			
	Development of system design and governance – (workhsop)		blue	
	Training (Workshop)		blue	
	Coaching and evaluation		blue	
E	**Evaluation and Reporting**			
	Evaluation			orange
	Reporting			orange

3   FINDINGS AND DISCUSSION

In general, OFFLINE Internet Servers can be placed in a good location, such as schools or sub-district offices. OFFLINE Internet servers are connected to local hotspot WiFi networks so that students/students around offline Internet servers can access easily (Flickenger, R.; Aichele, C. et al., 2007) (Hargreaves et al., 2015). Internet connection is "optional" only, can be done with a modem / MiFi connected to the switch/hub.

For students who are scattered within a distance that is some distance from the location of the OFFLINE Internet server can access the server, we need to establish a remote connection and then redistribute it using the local HotSpot WiFi. Long-distance connections can be made using two (2) parabolic WiFi antennas placed on a mast/tower that is relatively high (Patra, 2007) (Flickenger, R.; Aichele, C. et al., 2007) (Pietrosemoli, 2008).

At this time, some villages in the Republic of Indonesia began to create their networks using fiber optic cables (Iwata et al., 2017) (Ishizaki et al., 2011). The network setup allows a speed of about 100Mbps to 1Gbps. The necessary equipment was also not too expensive before because the price of fiber optic cables is currently around Rp 1 million per km (1000 m) (Iprice, 2021, November).

There are several initiatives at the level of institutions, both non-governmental organizations (NGOs) and state institutions, some of which are,

- ICT Centre Uganda https://sites.google.com/site/ictcentreuganda/ - ICT Center Uganda seeks to create a system so that schools can access content on the Internet offline. There appear to be several similar attempts, particularly in Africa, to create/copy Internet content to make it accessible offline.
- EduAir (formerly Kwiizi) from Cameroon is the concept's name for offering a better education digitally with or without the internet. They focus on designing portable and open media libraries in the form of solar cells that provide access to millions of educational content and offer an integrated communication system where students can make video calls in the local network used by the Box http:///www.eduairbox.com (Eduair.com,).
- Project Tawasol Tunisia - IEEE Sight in Tunisia developed a Raspberry Pi-operated device with a hard disk with relevant content such as Wikipedia pages, TED Talks, and other

educational content from the Internet. They periodically update the content in the hard disk when connected to a Wi-Fi or 3G network (Mansouri, 2016).

There is no detailed technological information from the various initiatives above. Interestingly, Project Tawasol Tunisia uses a cheap Raspberry Pi. We cannot compare UTAkses OFFLINE Internet with the above initiatives because UTAkses OFFLINE Internet is functionally much more complex. After all, it also provides e-learning services, online learning evaluation, and various references in digital libraries to make it easier for students to get a Bachelor's Degree.

In terms of technology, some exciting technologies are partly also used in UTAkses Offline Internet system; at a glance, the technology includes

- SolarSpell - SolarSpell - Library powered by Raspberry Pi, with Access Point Wifi http://solarspell.org/ (SolarSPELL, 2021)
- Kiwix - is a free app that lets us search and read Wikipedia without an internet connection. Available for Android, iOS, Windows, MacOS, and Linux http://www.kiwix.org/ (Kiwix, 2021) (Lin, 2015, June) (Purbo, 2019)
- Wikipedia and Wiktionary
- Open content repository

Indeed, not many patents have been written on Offline Internet technology, some of which are,

- Jay F. McLain, "Offline view of internet content with mobile devices", Assignee Microsoft Technology Licensing LLC, US Grant US6493758B1, 1998 (McLain, 1998).
- Robert Shaver, William Clogston, "Systems and methods for providing the same offline viewing experience of online website content", Assignee University of Texas System, Oath Inc., U.S. Grant US8001471B2, 2006 (Shaver et al, 2006a).
- Robert Shaver, William Clogston, "Systems and methods for a single integrated online and offline content development tool provide the same viewing experience", Assignee Oath Inc., U.S. Grant US8015491B2, 2006 (Shaver et al, 2006b).

The above initiatives are mainly in developing Internet OFFLINE technology. Thus, people may easily access the knowledge. There are not many initiatives similar to the Universitas Terbuka as open university undertaken, where lecture access is done offline, including digital libraries and even the student evaluation process.

3.1 General Design of offline internet in general

In general, a relatively complete OFFLINE Internet access network may be described as shown in the following Picture.
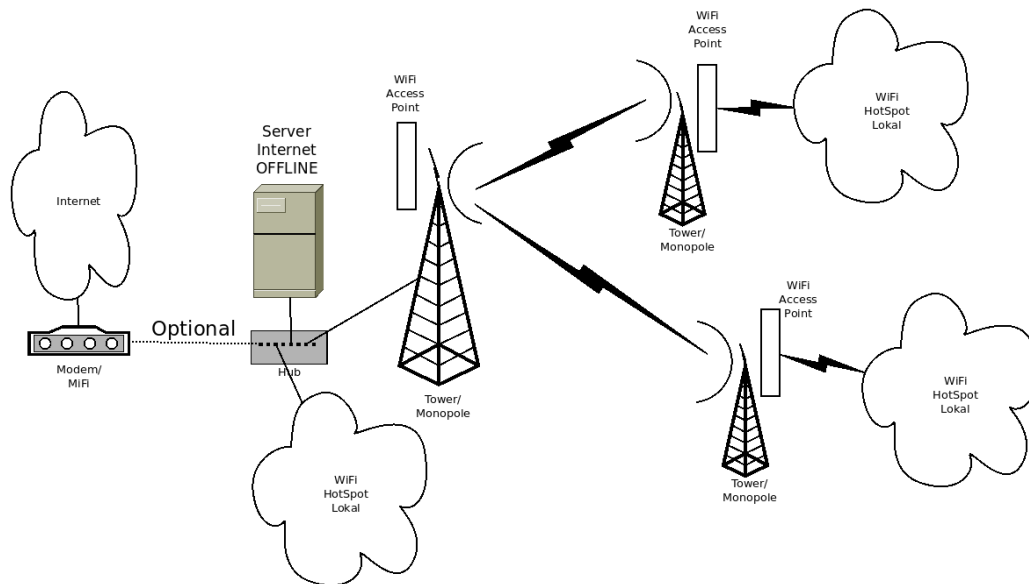
Figure 2: Offline Internet System Design.

3.2 OFFLINE Internet Server Design

A IT network technician can easily create offline Internet systems. It would be easier if the network technician knew more about the Linux operating system (Ward, 2021) (Prasetya et al., 2021) (Jaiswal, 2021) and server administration (Choi, 2021) (Westfall, 2021).

Some assumed server parameters in developing OFFLINE Internet systems are,

- Operating System - Ubuntu 20.04 or Debian 11, or most recently.
- 32bit or 64bit computer.
- 4G or 8G RAM Memory.

For the purpose of designing the content and learning management systems, we need to install some of the main applications supporting learning services, such as,

- Apache web server, mariadb database server, and PHP

- Moodle for e-learning

- Kiwix for offline wikipedia

As well as intranet network operations, such as,

- bind dns servers

- Server SSH

- DHCP Server

- SAMBA File Sharing server if needed.

Details of the installation and configuration of various server applications on OFFLINE Internet systems will be published in the form of handbooks to help hundreds of thousands of schools in Indonesia.

3.3 OFFLINE Internet Server Application Planning

The primary purpose of offline Internet systems/servers is to help students, especially those in the area, learn online without the Internet. For the system to be implemented reliably and cheaply by schools, open-source applications are used.

Raspberry Pi 3 or 4 servers may be suitable for small remote schools with small numbers of students. The Raspberry Pi may use the moodlebox operating system. The moodlebox is complete with e-learning can be implemented to operate directly at schools (Ndassimba, 2021) (Ncube, 2020). For schools or larger groups may use a computer or mini pc. The main application that must be installed on the server are

- E-learning application, using moodle which is the best and open-source e-learning application. (Rice et al., 2006) and (Simanullang et al., 2020)

- Kiwix application to create a copy of Wikipedia to be accessible offline (Kiwix, 2021) (Lin, 2015, June).

- Digital Library applications can be built from folders on a regular web server (Udosen, 2018).

These three applications can only run well if supported by the following applications,

- Web Server, there are three main options, namely, Apache, Openlitespeed, Nginx. Apache (Mustafa et al., 2019), although the slowest of the three, is relatively easy and quite widely used for moodle e-learning applications (Rice et al., 2006) (Simanullang et al., 2020) (Zabolotniaia et al., 2020).

- Database server, there are three main options, namely, MySQL, MariaDB or Percona. In this study, it was suggested to use MariaDB (Kenler et al, 2015) (Bartholomew, 2014) (Prebensen, 2019), which is relatively more straightforward than MySQL (Converse et al., 2004) (Prebensen, 2019) and Percona (Prebensen, 2019).
- Php last version.

For operating system support for the network to run correctly, we need to install some additional applications that are all open source, that is,

- SSH Server so that admins can easily log into the server safely. The application used is OpenSSH-server (Venkatachalam, 2007).
- DHCP Server, so that if there is no router on the network, the OFFLINE Internet Server can provide an IP address for the client/user/student who accesses the system. The application used is isc-dhcp-server (Dinu et al., 2014, May).
- DNS Server, so that users can access the server using a domain name, such as utakses.ac.id. The application used is bind (Liu et al., 2006).
- Agreement in IP Address and domain name used.

On offline internet systems operated at the Open University (UT), it is agreed that

Ubuntu LTS 20.04 Operating System (or later version)

Utakses.ac.id server   name, utakses.id

Server IP address   192.168.88.8

IP Address   192.168.88.0/24

Gateway IP address   192.168.88.1 (Default microtik 192.168,.88.1)

The hardware and software configurations are presented in the following picture.
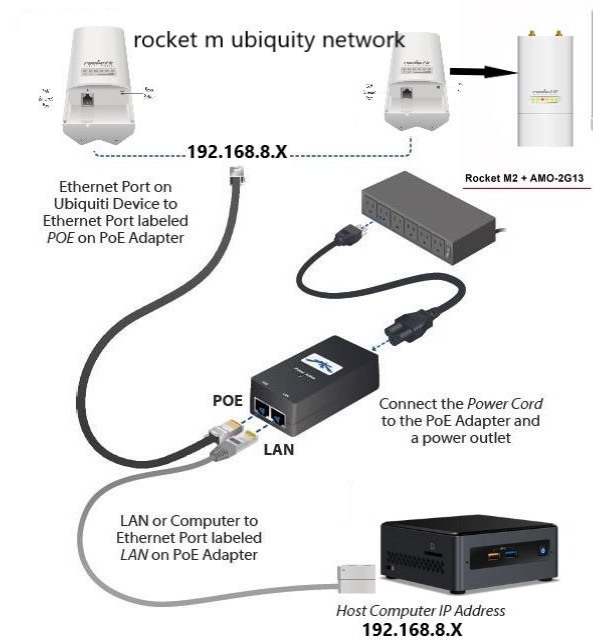
Figure 3. Internet Offline Hardware and Software Configuration

3.4   Server Capacity Analysis

One of the biggest problems in determining a server is ensuring that the server we set up is enough to handle the desired workload. Especially for e-learning applications using moodle, some notes about the planning of moodle e-learning servers scattered on the Internet can be summed up as follows.

The specifications of the processor used can vary depending on the load to be handled. For a small number of students, an arm processor machine such as Raspberry Pi 3 or 4 can be used. Raspberry Pi 3 has the lowest capability. Mini PC ASUS mobile processor with 2G RAM has the ability two-three times Raspberry Pi 3. A computer or mini pc that has capabilities far above the Raspberry Pi 3 (Purbo, 2020). For offline Internet server purposes with hundreds of students in POKJAR, computers or mini PCs with i3 to i7 processors can be used (Purbo, 2020). A high-load server for a large school or campus with thousands of students will need a server with a Xeon class processor (Cadambi et al., 2013) (Loghin et al., 2015).

The amount of RAM is the most decisive component in handling the load on the moodle e-learning server (Guo et al., 2013) (Jayakody et al., 2016). In general, the formula used is as follows,

Concurrent User Max = RAM (GB) * 50

Approximately. Max Browsing User = about max. concurrent user * 5

So, for example,

Moodle server with 4GB of RAM

Max. Concurrent user = 200

Max. Browsing user = 1000

Some tips to make the small servers work,

- Images, Videos, documents/files/pdf, etc., not on moodle servers, but elsewhere, such as youtube, google drive, etc. It may be good to set up its digital library server to accommodate various images, videos, documents, etc.
- Moodle servers should be prioritized for handling exams/ quizzes, especially if we adopt the pattern of exams that can be repeated for one semester. The ability to take exams on moodle servers becomes very special in offline Internet systems because the learning evaluation process is a core component/life of offline Internet systems.

In summary, a computer with an i5 or i7 processor with 4G RAM capacity will be sufficient for POKJAR with up to 50 students. For schools in areas / rural areas with students of 300-500 people would be better off using more RAM, for example, 8Gbyte.

3.5   Procurement Budget Analysis

We need to choose equipment for (1) offline Internet servers and (2) local HotSpot networks in schools. In this paper, we will not describe long-range wireless networks.

The choice for offline Internet servers depends on the number of students who access simultaneously, with alternative options and prices,

- RaspberryPi 3 or 4, for 10-20 students/ students. Estimated price rp. 700,000-1.2 million.
- Used desktop, for 200-300 students / students. An estimated price of Rp. 1-2 million

- Mini PCs, physically small and low power, may serve 200-300 students. The estimated price is Rp. 8-15 million, depending on the configuration.
- Server, for thousands of students. The estimated price is Rp. 10-20 million depending on (Iprice, 2021a, November) configuration.

WiFi equipment to create local hotspots for students to access using their gadgets is easy to obtain in online stores. They are starting from fairly cheap, like tp-link, to good ones like Microtik and Linksys. HotSpot WiFi equipment that is simple but adequate can be obtained at prices between Rp. 200-400,000,-. Usually, equipment with a higher price will be more durable for long-term use.

Operating support equipment that is no less important is (1) Uninterruptible Power Supply (UPS) can usually be used to provide electricity on offline Internet systems when PLN electricity for a period of not long between 15-30 minutes only. The estimated price of UPS is around Rp. 1-2 million, and (2) alternative sources of electricity using solar power. This option needs to be chosen if you want to operate the system in a region where there is no electricity.

4 CONCLUSION

Half of the Indonesian nation today lives in rural areas with very limited telecommunications and Internet infrastructure. Knowledge access inequality may be reduced by implementing offline Internet systems in schools/campuses located in areas that have internet access difficulties. The design of servers for OFFLINE Internet systems on UTAkses in study groups (POKJAR) has been discussed.

Offline Internet servers run two (2) main functions: to serve the student learning process and support offline Internet network operations. To help the student learning process used Apache Web Server, Moodle e-Learning, Kiwix, and file sharing for online libraries. Kiwix to make Wikipedia accessible offline. Several servers, such as SSH, DHCP, and DNS servers, need to be installed to serve offline Internet network operations.

For offline Internet purposes in POKJAR with 100 students can use a computer or mini pc process i7 with 8G RAM. The estimated budget is around Rp. 8 to 15 million for mini pc with maximum capability with 8G byte SSD memory RAM hard drive. For small schools can use moodlebox in raspberrypi 3 or 4 with a budget of around Rp. 700,000, - so it is very affordable for most schools and universities that want to provide knowledge for students and students with Internet problems.

ACKNOWLEDGEMENTS

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IDENTIFICATION OF THE CAUSES OF STUDENT FAILURE TO TAKE ONLINE PRACTICUM IN FOOD TECHNOLOGY STUDY PROGRAM, UNIVERSITAS TERBUKA

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Abstract

In the application of online practicum by Tutorial Webinar (Tuweb) during the Covid 19 pandemic at Food Technology Study Program, Universitas Terbuka (Indonesia), there were several students who did not pass practicum courses such as the Food Engineering Principles, Food Processing Technology, and Sensory Evaluation courses. Failing to pass the practicum course indicated student failure that can disserve the institution and the students themselves. The purpose of this study was to identify the factors that cause students failure in participating in online practicum. The method used in this study is a qualitative descriptive approach by observing and evaluating the online practicum implementation documents in Semester 2020.1-2021.2 and interviewing the practicum instructors. Based on our results, we found that students who did not pass practicum courses during the Covid 19 Pandemic were due to not participating in online practice, not doing independent practicum assignments, and not collecting practicum reports. Based on these findings, there were implications that the Food Technology Study Program needed to provide more intensive communication to students who register practicum courses by utilizing various media regarding practicum debriefing materials and general provisions for online practicum courses, so that students are avoid factors causing failure and can pass taking online practicum courses.

Keywords: Covid 19 pandemic, distance education, failure factors, online practicum, tutorial webinar

1   INTRODUCTION

The competency targets for graduates of the Faculty of Science and Technology (FST) at Universitas Terbuka (UT) refer to the National Higher Education Standards (SNPT) contained in the Regulation of the Minister of Education and Culture Number 3 of 2020 covering attitudes, knowledge and skills expressed in the formulation of learning outcomes (LO) graduates (Kemdikbud, 2020). To achieve competency skills, graduates need the practicum in the learning process. Graduates from study programs are expected to have comprehensive competencies from the three learning domains (cognitive, affective, and psychomotor) in accordance with science and technology in their study field. In an education, the emphasis is not only on mastering the teory, but also on mastering the skills that can be acquired in practicum. In line with the 2022 PATPI curriculum, the food technology study program needs to be supported by practicum activities in scientific subjects, including chemistry, biochemistry, microbiology, engineering and food processing. (PATPI, 2022).

According to Nurhayati et al., (2021), to achieve the expected graduate competencies, not only conceptual knowledge is needed, but practicum is needed to demonstrate concepts, theories, principles and procedures of knowledge in a field of study. Practicum provides direct experience to students related to learning theory (Masruri, 2020). Through practicum, students can develop scientific process skills that support theoretical knowledge (Yunus & Syam, 2021). According to Indonesia's national qualifications framework (KKNI) in the 21st century, the 2022 PATPI curriculum emphasizes problem formulation, analytical and critical thinking, and collaboration in solving problems. This competency can be obtained through practicum because in practicum, students can practice skills in conducting experiments, using laboratory equipment, choosing analytical methods, measuring, and processing, conducting data analysis, and interpreting the data obtained. In addition, practicum activities can train the ability to cooperate and collaborate which are the soft skills required by a graduate in the world of work. Based on the tracer results of the Food Technology Study Program at Universitas Terbuka in 2020, students suggest more integrated practicum material to support graduate competence (Hakiki et al., 2020).

In December 2019, in China's Hubei province, Wuhan became the epicentre of a pneumonia outbreak (Papa et al., 2022). In a short time at the beginning of 2020, the phenomenon of the spread of the Covid 19 pandemic occurred in several countries, including one of which was in Indonesia. The spread of Covid 19 (Corona virus disease 2019) is very fast, which in a short time has spread to almost all countries in the world. The spread of this virus through droplets and direct contact with sufferers (Sumampouw, 2020). Under these conditions, the Indonesian government implements social distancing and physical contact policies (Kresna & Ahyar, 2020). In 2020, through a circular letter from the Ministry of Education and Culture Directorate of Higher Education Number 1 of 2020, higher education institutions are instructed to implement a distance learning system (Nisa, 2020). With this policy, the face-to-face learning system and practicum facilities were also closed, so that those are transferred to online learning system such as online practicum (Joji et al., 2022; Papa et al., 2022). Under these conditions, organizers need to adapt by modifying the materials and practicum program units. Prior to the Covid 19 pandemic, learning activities were carried out face-to-face or offline (synchronous) but during the Covid-19 pandemic, learning activities were not face-to-face or online (asynchronous).

Previous research by Papa et al., (2022) stated that they support anatomy teaching practice cadaveric dissection and cannot be completely replaced by online practice. Study by Winangun, (2021) implementing project based learning to replace practicum activities during the Covid 19 pandemic. Research result of Nisa, (2020) states that plant anatomy practicum is more effectively carried out face-to-face in the laboratory than online practicum. Meanwhile according Hanik & Wiharti, (2021), practicum activities can be carried out online from home by first modifying the material and practicum program units. Practicum in Covid 19 pandemic, blended mode is more successful and well received by students and institutions (Joji et al., 2022). Likewise, practicum activities in food technology study program at Universitas Terbuka, which before the Covid 19 pandemic for the 2018.1-2019.2 registration period were carried out face-to-face in partner university laboratories, but during the Covid 19 Pandemic during the 2020.1-2021.2 registration period, the practicum material was modified and carried out virtually through Tuweb using the Microsoft Teams application. According to Shurygin et al., (2022), LMS Moodle and laboratory work on Microsoft Teams proved to be useful for laboratory in Covid 19 pandemic. However, not all practicums in the food technology study program, at Universitas Terbuka can be carried out independently by students through web tutorials. For example, chemical practicum and food analysis that require laboratory equipment cannot be done using Tuweb. Three practicum courses that in food technology study program can be carried out independently through Tuweb include food processing technology, principles of food technology and sensory evaluation.

The existence of technical changes in the practicum implementation of the food technology study program has an impact on student grades as a reflection of the achievement of competency in practicum courses. Based on data on learning outcomes documents owned by the study program, no student received an E during the practicum registration period before the Pandemic (2018.1-2019.2), but during the covid 19 pandemic (2021.1) the number of students who received an E grade was 26 students or around 18 %, while during the 2021.2 registration period there were 9 students who got an E grade or around 10% of the total students doing practicum. Thus, it is necessary to study the causes of student's failure in taking online practicum courses held by Tuweb. This study aimed to identify what mistakes students obtained E grades or failed in online practicum courses through Tuweb in the Food Technology Study Program, Faculty of Science and Technology, Universitas Terbuka.

2   METHODOLOGY

The research was carried out at the Universitas Terbuka, South Tangerang. This study used qualitative research methods using descriptive data obtained through observating documents and interviewing practicum instructors. The data analysis technique used was Miles and Huberman in Asipi et al., (2022) research, interviews were conducted with four Tuweb practicum instructors with the criteria of having been Tuweb instructors for online practicum in the 2021 registration period. The interview data were carried out in the data reduction stage which aimed to summarize and focused on the things that will be studied, the next stage was data display by analysing qualitative data, describing, and presenting the data in the form of a flow or brief description, then the final stage was to draw conclusions. The first stage was the activity of interviewing practicum instructors accompanied by a review of the documents resulting from practicum student scores, then data analysis was carried out by systematically compiling the results of the interviews.

3   FINDINGS AND DISCUSSION

Based on data on the value of practicum courses for students of food technology study program at Universitas Terbuka, during the 2021.1 registration period there were 26 students or around 18% of students who obtained an E grade in practicum courses conducted online by Tuweb such as food processing technology, principles of food engineering, and evaluation sensory, while during the 2021.2 registration period there were 7 students or around 10% of students who received an E (Figure 1). Even though during the previous registration period (2018.1-2020.2), none of the practicing students in food technology study program got an E grades or all students passed online practicum courses. On the basis of the researcher's curiosity to find out in more detail about the factors that cause students failed in online practicum courses, the researchers conducted in-depth interviews with practicum instructors regarding what components influenced the final grade of the practicum course, and the problems faced by students in carrying out practicums as well as the factors that cause students to get an E grade. The research data are presented in Table 1.
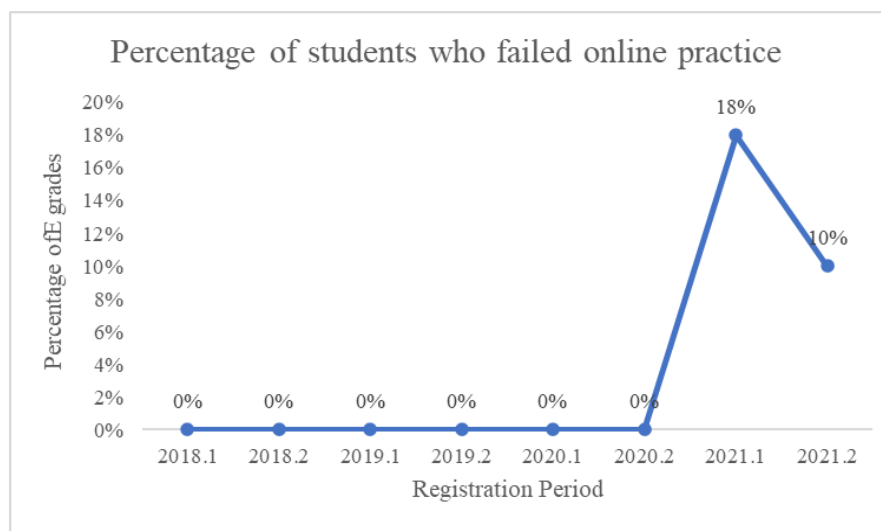
Figure 1 The percentage of students from food technology study program, Universitas Terbuka who obtained an E grade in online practicum courses

Table 1 Assessment components and factors that cause students to get an E grade

Assessment component	Observed problem	Factors causing the problem
Report	Low practicum report value or zero	1. Students do not work and upload practicum reports on the praktik.ut.ac.id page 2. Students commit plagiarism by copying and pasting the other's practicum reports
Practical Value	Low attendance rate	1. Students are constrained by the network to access *Microsoft Teams Account* 2. Students are late in participating in practicum activities 3. Students do not take practicum activities in full or leave practicum activities before they are finished 4. Students have several times been absent from practicum activities for several reasons such as clashes with their work and not getting time off from work 5. Students do not work additional assignments for absence sanctions

Zero or low pre-test and post-test scores	1. Students do not take the pre-test and post-test and do not read the practicum module before practicum activities
	2. Students do not pay attention to the materials presented during the practical activities
Low practicum readiness value	1. Students do not use laboratory coats during practicum
	2. Students do not print out the practicum guidelines and forms needed during the practicum
	3. Students do not prepare the tools and materials needed for practicum
	4. Students are late for practicum activities
Low practical skill scores	1. Students do not conduct independent practicum and do not upload it on the lms.ut.ac.id page
	2. Students are not skilled in conducting experiments and observations in practicum
	3. Students are not skilled in using practicum tools
	4. Students are not killed and inappropriate in presenting and interpreting practicum result data
	5. Students do not pay attention to the cleanliness and safety of practicum work

3.1 Value of Practicum Reports

In food technology study program, Universitas Terbuka, the value of the practicum report contributes 40% to the final grade of the practicum course, and if you do not upload the practicum report on the praktik.ut.ac.id page, the system will automatically close so that the instructor cannot input the value components practice for students who do not upload practicum reports. Thus, the practicum report is the main assessment component which if not done can cause failure for students in conducting online practicum. Furthermore, interviews and analysis of the factors that caused students to get E grades were conducted. From the results of interviews to practicum instructors, the increase in the percentage

of students who failed in Tuweb online practicum could be caused by several problems in the assessment component including the zero-practicum report value or low. The acquisition of a zero or low practicum report value can be caused by several factors including students not working on and uploading practicum reports on the praktik.ut.ac.id page. The reasons for students not submitting reports are 1) students have difficulty accessing the praktik.ut.ac.id page due to problematic accounts; 2) students pay less attention to the deadline for uploading practicum reports; 3) students are constrained by the network when uploading practicum reports on the praktik.ut.ac.id page; 4) Students do not master practicum materials, so they have difficulty in compiling practicum reports; 5) students commit plagiarism by copying and pasting other people's practicum reports.

In terms of time, giving students time to work on practicum reports for 1 month is sufficient for students, but because the characteristics of Universitas Terbuka students are already working, with a high level of activity and other subject assignments and quite a lot of work assignments, some students do not work on practicum reports. or simply copying a friend's completed report. These results are in line with research Ali, (2017) which stated that some students did not work on practicum reports or only copied reports from friends who had finished reaching 43%. The writing of practicum reports is the most difficult thing for practicums to do. The solution to this problem is that students must be able to organize and divide their time by not delaying course assignments with work assignments, so that both can be completed properly and on time.

3.2 Practical Work Value

The practical assessment component consists of practicum readiness scores, pre-test and post-test scores, attendance scores, and skills in doing practicum. The practical value contributes 60% of the final practicum course value. Even though the contribution is high to the final score, this practical value cannot be input if the practicum report is not uploaded on the praktik.ut.ac.id page. The low value of the practical component contributed to a decrease in the final grade and failed in the practicum course. In detail the components of the practice assessment are described as follows:

a) The readiness of practicum students is assessed by the completeness of the laboratory coat and the guidelines and practicum forms. Practicum guidelines are urgently needed by practitioners and instructors as guidelines in carrying out work procedures in practicum activities, so that if students do not have a practicum module and practicum guide prior to practicum implementation,

it becomes one of the indicators of students' unpreparedness in carrying out practicum which has an impact on the low value of practicum readiness. Planning and preparation imposed the quality of education (Yun et al., 2022). According to Ali, (2017), practicum preparation including the availability of practicum guides or guidelines and completeness of practicum attributes including laboratory coat, ID cards, masks and forms for filling in practicum results as well as tools and materials needed for practicum activities. Students who are not perform in the kitchen based experiment at home said that the required materials was unavailable (Mojica & Upmacis, 2022).;

b) Low practicum pre-test and post-test scores can be caused by students not reading the practicum module so that they do not master the material being practiced. It is aligned with Pujiati et al., (2018) which stated that a low pre-test score indicated that an initial understanding of the materials to be practiced was lacking. In addition, during the practicum activities students pay less attention to the explanation of the materials presented by the practicum instructor, so that students do not master the material and their post-test scores are low. To help students can pay attention, instructors need to be self-efficacy or can increase student's motivation (Rosen & Kelly, 2022).;

c) Low attendance scores can be due to students not attending the Tuweb online practicum. Some reasons for student absence from participating in practicum activities are network constraints, being unable to leave work, and force majeure such as natural disasters, parents or relatives dying. According to Hanik & Wiharti, (2021), as many as 23.4% of students experience network problems, 21.5% of students do not have a quota and as many as 30.6% are busy. In addition, joining online practicum classes are late and leaving classes before the practicum time can reduce the value of practicum attendance. Students who are absent from online practicum usually receive additional assignments as a sanction for being absent from practicum, but these assignments are not carried out, so the attendance score is low;

d) Skills in practicum are assessed from independent practicum assignments, skills in conducting experiments and observations in practicum, skills in using practicum tools, skills and accuracy in presenting and interpreting practicum result data, skills in paying attention to cleanliness and safety of practicum work.

4   CONCLUSION

During the Covid 19 pandemic, food technology study program implemented online practicum through Tuweb in three practicum subjects namely food processing technology, principles of food engineering, and sensory evaluation. The application of online practicum had an impact on increasing the percentage of students who failed the Tuweb practicum course. Based on the research results, there were several problems that caused students to get an E grade including: 1) students do not work on and do not upload practicum reports on the praktik.ut.ac.id page; 2) absence of students in Tuweb practicum activities; 3) low pre-test and post-test scores; 4) unpreparedness of students in doing practicum; 5) students' skills in doing practicum are low. The results of this study are expected can be a source of information so that food technology study program students can pass practicum courses by avoiding the factors that cause failure in practicum courses.

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DEVELOPING VIRTUAL REALITY OF BLUE WHALE (BALAENOPTERA MUSCULUS) FOR LEARNING BIOLOGY IN DISTANCE LEARNING

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Abstract

Blue whale (Balaenoptera musculus) is an endangered marine mammal that lives in Indonesian seas. Understanding blue whale behavior and its role in marine ecosystem may improve our method of conservation. Learning structure and biological aspects of blue whale needs virtual reality. Besides, the use of virtual reality increase learning and increase collaboration among students.

Students achieve flow situation in VR which supports learning process. In addition, that VR may help learners in idea generation, which is a component of creativity.

The VR provide students opportunity to learn blue whale skeleton, movement, and feeding. Development of the VR is based on ADDIE, consisting of analysis, design, development, implementation, and evaluation. The first phase which is analysis is carried out by defining the aim of development, audience, and competence that students will have after using the application. Target audience are students of Universitas Terbuka already took classes of BIOL4212 Animal Structure and BIOL4322 Vertebrate Taxonomy. The VR content includes skeleton, whale activities while swimming, and a video of how blue whale feeds on krill. The reason for selecting the topics is that those topic are the most difficult for students to learn. The VR is called "Blue Whale" (Beginning of Learning Enthusiastically While Engaging). After finishing the design, the design is evaluated by content and multimedia expert. The content experts are lecturers of the departement of biology at Faculty of Science and Technology of Universitas Terbuka. The result of review showed that some revisions are required to match the design with the aim and the competence that students have to learn about the whale.

Keywords: Blue whale, ADDIE, virtual reality, design, learning

1 INTRODUCTION

The first phase which is analysis is carried out by defining the aim of development, audience, and competence that students will have after using the application. Target audience are students of Universitas Terbuka already took classes of Animal Structure and Vertebrate Taxonomy. The VR content includes sekeleton, whale activities while swimming, and a video of how blue whale feeds on krill. The reason for selecting the topics is that those topic are the most difficult for students to learn. After finishing the design, the design is evaluated by content and multimedia expert. The content experts are lecturers of the departement of biology at Faculty of Science and Technology of Universitas Terbuka.

2 METHODOLOGY

The first phase which is analysis is carried out by defining the aim of development, audience, and competence that students will have after using the application. Target audience are students of Universitas Terbuka already took classes of Animal Structure and Vertebrate Taxonomy. The VR content includes sekeleton, whale activities while swimming, and a video of how blue whale feeds

on krill. The reason for selecting the topics is that those topic are the most difficult for students to learn. After finishing the design, the design is evaluated by content and multimedia expert. The content experts are lecturers of the departement of biology at Faculty of Science and Technology of Universitas Terbuka.

3   FINDINGS AND DISCUSSION

The first phase which is analysis is carried out by defining the aim of development, audience, and competence that students will have after using the application. Target audience are students of Universitas Terbuka already took classes of Animal Structure and Vertebrate Taxonomy. The VR content includes sekeleton, whale activities while swimming, and a video of how blue whale feeds on krill. The reason for selecting the topics is that those topic are the most difficult for students to learn. After finishing the design, the design is evaluated by content and multimedia expert. The content experts are lecturers of the departement of biology at Faculty of Science and Technology of Universitas Terbuka.

4 CONCLUSION

The design is still in the development process. Future studies are required to measure students/user satisfaction in using the VR.

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BUILDING COMPETENCY BASED LEARNING MODEL FOR DISTANCE EDUCATION IN POST COVID19 ERA: A CASE STUDY IN UNIVERSITAS TERBUKA

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Abstract

This paper presents the efforts made by a Team at Universitas Terbuka (UT) to provide optimal learning support services to students piloted on Management Information Systems (MIS) course offered in the Economics Education study program. Students in the open and distance education (ODE) system are required to implement self-directed learning. At the same time, ODE institutions are required to provide facilities needed by the students, one of which is providing learning support services for students. As an ODE institution, UT provides various forms of learning support services to students, including tutorial. Basically, there are two types of tutorials, face-to-face and online. During the COVID 19 Pandemic, due to limitation of physical contact, UT provided webinar tutorial to replace face-to-face tutorial. Tutorials online (tuton) are conducted asynchronously in a period of 8 consecutive weeks of each semester. The materials on tuton are basically an additional explanation of the materials discussed in the modules, topics for discussions, and assignments. Students are expected to log in to the tuton at least once a week to learn the material, participate in discussion, and on certain weeks work on and upload assignment. To provide optimal learning support services, synchronous discussions and augmented reality (AR) programs were added on tuton of MIS course in second semester of 2021 and first semester of 2022. The synchronous meetings provided opportunities for students to discuss topics with tutors and specially invited speakers. The AR programs were added to enrich students' learning experiences. However, students' response to these facilities have not been encouraging yet. Not many students were logged in in the discussions and AR programs have not attracted many discussions. Nevertheless, based on inputs from students, improvements were made to assemble this form of learning support service in order to improve quality of student learning support services.

Keywords: synchronous learning, asynchronous Learning, students learning support service.

1 INTRODUCTION

The development of the industrial world requires people to have abilities known as 4Cs (Critical thinking, Communication, Collaboration, and Creative) in all domains (knowledge, skills, and attitudes). For this reason, the world of education needs to anticipate this need by providing educational content and processes that are able to equip students and graduates with the ability of 4 Cs. The problem is, since the beginning of 2020 the Covid 19 pandemic, has forced the world of education to take advantage of information and communication technology (ICT) due to restrictions

on face-to-face meetings. Distance education system (ODL) or e-learning is booming because this system can be applied to the conditions of the Covid 19 pandemic.

On the other hand, the question arises to what extent can ODL/e-leaning facilitate students' need for 4Cs in three competency aspects: knowledge, skills, and attitudes. Research in the 4C area on ODL is only at an early stage. Competency Based Learning (CBL) has not been widely studied in relation to the increase in 4Cs of students.

In addition, research that links CBL with learning outcomes and student needs has not been widely carried out. Some of the CBL research conducted has generally focused on knowledge. There is no CBL Model yet to optimize 4Cs. The absence of a CBL Model which is related to the ability of students in 4Cs may result in the inability to fulfill the work tenage requirements to be absorbed by the industrial world. In addition, the inability to participate in 4Cs will also result in the inability of students to survive in the new era of life after the Covid Pandemic. Therefore, this Study aims to develop CBL Model, specifically in the distance education system, that can produce students/graduates who have 4Cs which in turn preparing them for the world of work in the post-Covid 19 era.

The theoretical framework of this Study is depicted in Diagram 1. While focusing on the learning process of a student where students actually engage in learning, this Study also takes comprehensive approach to learning to also include student's background and student's achievement.
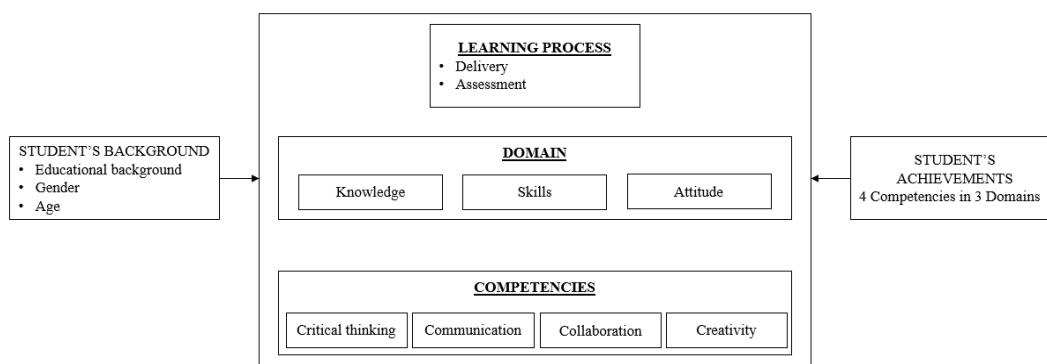
Diagram 1. Learning process

2 METHODOLOGY

This Research used qualitative using portfolio and content analysis will be used to measure changes in 3 domains for 4 competencies. The complete approach is displayed in Table 1. A comprehensive

method of the Research (data needed, data collection, instruments, and data analysis) can be viewed in Table 1. It is decided that the learning Model is take a form of Tutorial Online (Tuton) which currently employed at UT using asynchronous approach. The Model which is developed in this Research is mixing asynchronous approach using in Tuton with synchronous approach currently using di Tutorial Webinar (Tuweb).

Steps in the research is depicted in Diagram 2.
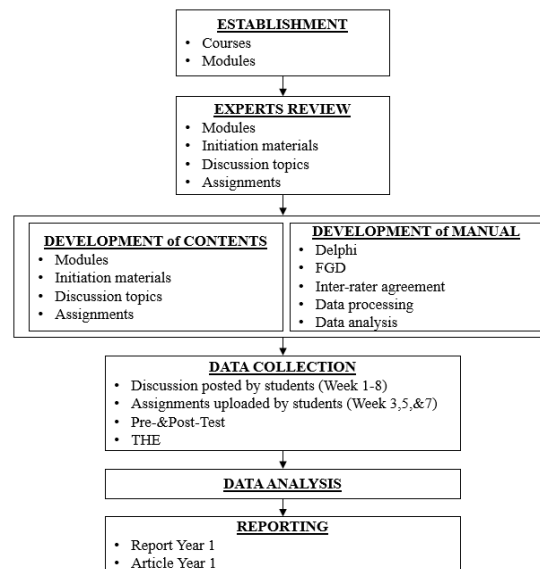
Diagram 2. Steps in the Research

Table 1. Steps, Activities, and Results

Steps	Activities	Results	Notes
			Establishment of:
• Courses	Discussion in Team to decide whichcourse will be used in the Research	Name of coursechosen: SIM &Pengambilan Keputusan (MIS & Decisionmaking process)	Course code: PKOP4422
• Modules	2 Cycles Delphi with 4 experts Deciding indicators in 3 domains for 4competencies for the course chosen	Indicators for 3 domain in 4 competencies ☐ Attachment 2	Using Guideline for Delphi developed by the Team (Table 2)
	2 Cycles Delphi with 4 experts Deciding which (3-5) modules from thechosen course could be used in the Research based on indicatorsnecessary	3-5 modules chosen ☐Attachment 2	
	Experts review Reviewing the (3-5) modules to be usedin the Research according to indicators required	Input to completing the (3-5) modules chosen based on the indicators	Using Table prepared by The Team

Steps	Activities	Results	Notes
		☐Attachment 3	
	Experts Completing (3-5) modules to be used in the Research based on results of experts review	The (3-5) modules are ready to use in learning process (Tuton) ☐Attachment 4	
Development of content:			
• Initiation materials (8 set)	Expert write and review 8 initiation materials in Tuton for chosen course relevant to 3 Ds in 4 Cs	8 Initiation materials relevant to 3 Ds in 4Cs ☐Attachment 4	Based on indicators developed by experts
• Discussion topics (8 set)	Expert write and review 8 discussion topics in Tuton for chosen course relevant to 3 Ds in 4 Cs	8 Discussion topics relevant to 3 Ds in 4Cs ☐Attachment 5	
• Assignments (3set)	Expert write and review 3 assignment in Tuton for chosen course relevant to 3 Ds in 4 Cs	3 Assignments relevant to 3 Ds in 4 Cs ☐Attachment 6	
• Conducting live discussion	Discussion with expert (synchronous)		
Development of guideline/guidance:			
• Delphi	Team develops guideline for (2-cycles) Delphi technique	Delphi Guidelines ☐Attachment 7	

Table 2. Indicators for Each Competency to be Used in Delphi with Experts

No.	DOMAIN	INDICATORS for COMPETENCY			
		CRITICAL THINKING	COMMUNI-CATION	COLLABO-RATION	CREATIVITY
	A set of demonstrable characteristics and skills that enable, and improve the efficiency or performance of a job.	Self-guided, self-disciplined thinking which attempts to reason at the highest level of quality in a fair-minded way. (Linda Elder, September, 2007)	A process of exchanging ideas, thoughts, knowledge and information such that the purpose or intention is fulfilled in the best possible manner (November 7, 2018 by Prachi M)	The action of working with someone to produce or create something.	Involves generating and applying ideas to create something of values. Students recognize opportunities to apply ideas in new ways. They are open to and play with ideas, take risks, and adapt to changing conditions. Students demonstrate optimism, initiative, and ingenuity
1	KNOWLEDGE	….	….	….	….
2	SKILLS	….	….	….	….
3	ATTITUDE	….	….	….	….

3   FINDINGS AND DISCUSSION

The Learning Model for this Research is a combination of synchronous and asynchronous learning.

These two learning modes are important for ODL student due to the ability to provide interaction

required in learning yet make it possible for ODL learning with flexibility. Meanwhile, basic model for the offered Model is Tuton.

Katalog Ut (2021) describes tuton as a mode of learning support system provided by UT to facilitate students in their study. Tuton run for eight weeks where students discuss one topic for each week, hence a total of eight topics chosen from the modules. These topics function as triggers for students to initiate learning, making them known as initiation materials. Apart from reading or learning initiation material, students will also get point if they actively engage in discussion(s) or if they submit assignments. There are three assignments in total for the whole duration of tuton.

All materials are prepared prior to tutor time and communication is conducted asynchronously. Students can post their opinion about certain topics and other students or tutor will response to it later. Both tutor and students are given log in names and passwords to log in in tuton. Students and tutors have assigned to specific class(es). UT provides manual on how to utilize tuton. It depends on the students how they want to utilize learning support services UT provided.
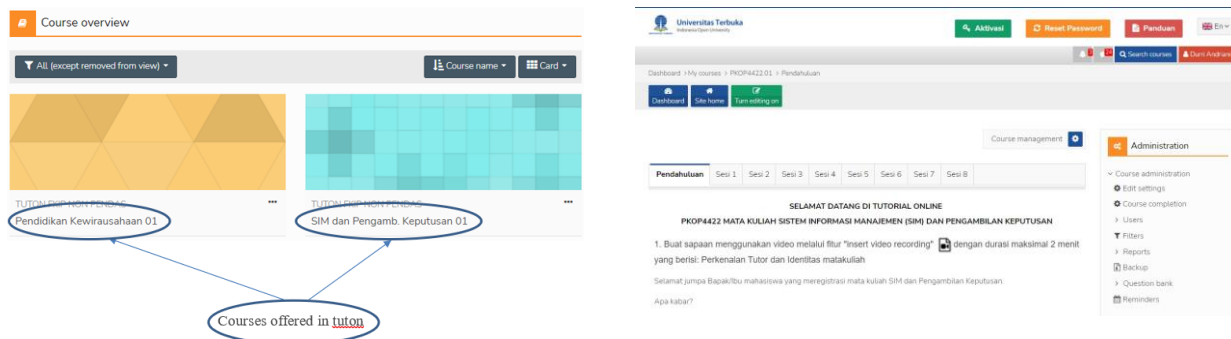
Figure 1.

Once students succeed in logging in to tuton class, they will find this page where information on the class is provided. Now students could click "Sesi 1" (Session1) where they are informed the date for the session. Different from first page, in each session, students are asked to fill out a presence report to indicate that their log in in certain week.

Figure 2.

In every session, students can find initiation material ("MATERI INISIASI") and topic to be discussed ("DIKUSI").
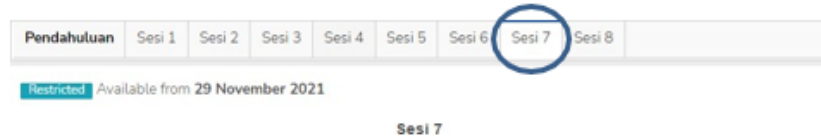
Figure 3.
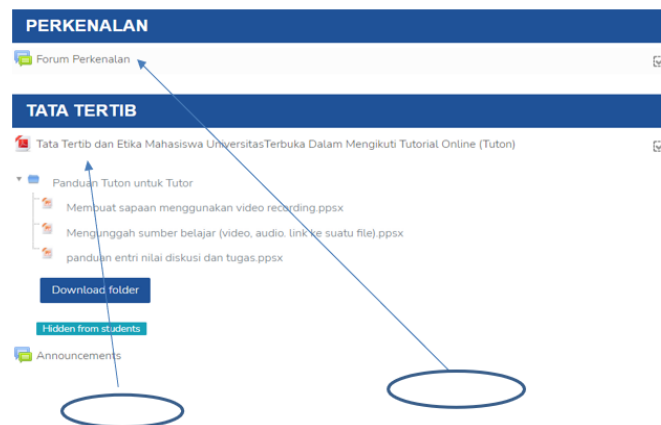
Figure 4.

At the same time, in this pandemic situation, UT has tutorial webinar (tuweb) where students sit together synchronously with tutor via TEAMS. They can discuss schedule topics while at the same time take a look at their assignments.
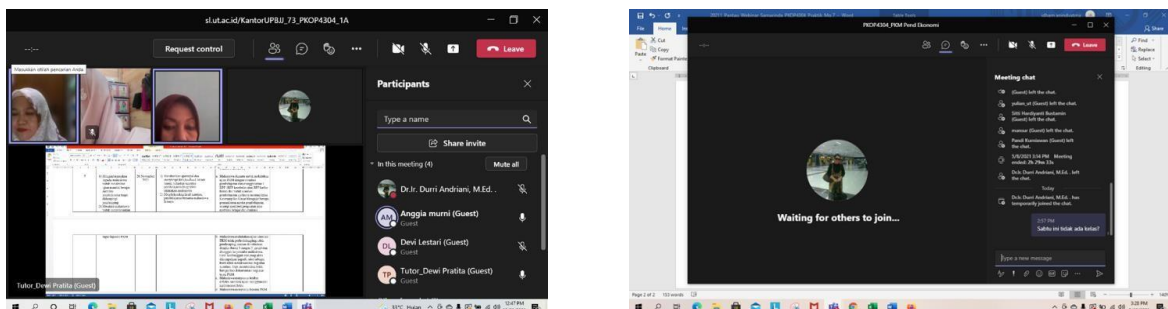
Figure 5.

However, tuweb is not free from constraints. For some areas where internet is a luxury, it could happen that tuweb class delayed 30 minutes or even an hour due to internet bad connection.

The plus and minus of tuton and tuweb is facts. The Team takes the plus of these two approaches and put it into **TUTON**+ where students get the benefit of learning from a pre- prepared materials and at the same time have opportunities to meet experts live.

*Diagram 3. **TUTON+** framework*
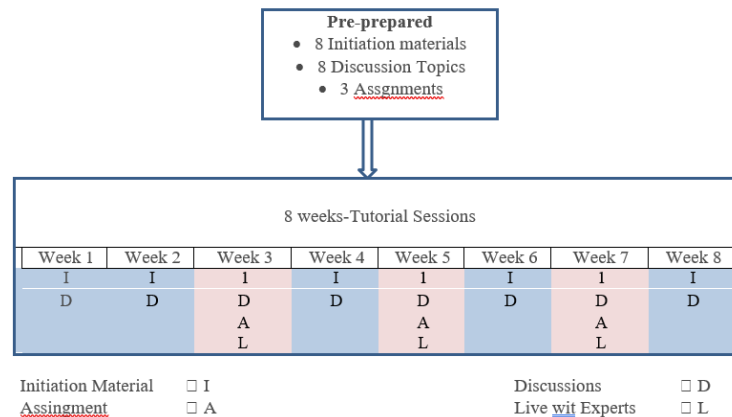
Here are steps to develop materials for **TUTON**+:

a. Development of guideline/guidance:

Because of the pandemic situation, it is decided that communication with experts is done through media, Internet that is. In order to optimally gain benefit from experts, in this pandemic situation, Delphi Technique is used. This technique enables the Team to gain most of the expert thinking since they are asked to provide the Team with insight on issues being researched. The Team then put together the experts' individual inputs and share the results to the experts to be further analyzed. Results of this Two-Cycle of Delphi Technique are significant to develop the Learning Model.

b. Deciding course to be developed

First step in developing The Learning Model is to choose which course should be used as a pilot. The experts agreed that the chosen course should pass this requirement.

- The course should have impact on industrial era

- Nature of the course should provide enough room for implementing 4Cs. While all of the courses offered should provide enough rooms for 4Cs, it could happen that some courses have no room for 4Cs.

- The course has already tuton in place. This is to make sure that the pilot could be conducted.

- The course has enough students that the tuton is running

- Tutor for the course has to be one of Team member

Team decided to choose "SIM & Pengambilan Keputusan" (MIS & Decision making Process) course. The course is one courses offered in Economics Education in Economics Education Study Program.

Figure 6.

c. Mapping for 3 domains in 4 competencies

Using Guideline for Delphi developed by the Team (Table 2), four experts, three form Universitas negeri Jakarta (UNJ) and 0ne former head of Economics Education Study Program at Universitas Terbuka, mapped indicators for the domain in 4Cs.

Table 3. Set of indicators explaining competencies in each domain is resulted from Two-Cycle

No	DOMAIN PENDIDIKAN	INDICATOR OF COMPETENCIES							
		CRITICAL THINKING		COMMUNICATION		COLLABORATION		CREATIVITY	
		1		2		3		4	
	mahasiswa mampu:								
1	KNOWLEDGE	1	menyampaikan materi yang benar	1	memilih diksi sesuai topik dan bidang ilmu	1	menangkap peluang untuk bekerjasama dalam mencapai tujuan dengan cepat	1	membandingkan kebenaran materi dengan tepat
		2	memberikan gambaran keadaan suatu masalah dengan benar	2	mengemukakan pendapat dengan jelas atas sebuah masalah berdasarkan teori yang relevan	2	bekerja sama untuk menyelesaikan suatu pekerjaan dengan efektif	2	menciptakan sesuatu yang baru yang bermanfaat
	mahasiswa terampil:								
2	SKILLS	1	mengevaluasi kinerja dan hasil belajarnya dengan kritis	1	mengartikulasikan pikiran dan ide menggunakan beragam mode komunikasi (lisan, tertulis dan nonverbal) secara efektif	1	memaknai aktivitas setiap orang di dalam kelompok untuk mendapatkan hasil optimal	1	mendemontrasikan gagasan atau aktifitas dengan benar
		2	merefleksikan kinerja dan hasil belajarnya dengan kritis	2	mengungkapkan pendapat, kritik, dan gagasan yang dimengerti pihak lain dengan efektif	2	membagi peran sesuai kemampuan serta kebutuhan kelompok dengan tepat	2	membuat kebaruan gagasan yang solutif

		mahasiswa bersikap:															
3	ATTITUDE	1	sopan dan santun dalam menyampaikan gagasan sesuai bidang ilmu	1	asertif dalam sikap dan gerak tubuh pada saat berkomunikasi melalui media apapun	1	positif dalam pengerian tugas kelompok	1	terbuka dalam melihat hal baru dan pandangan yang berbeda								
		2	komprehensif dalam memandang materi, masalah dan solusi yang dilihat dari berbagai sudut pandang yang berbeda	2	antusias, spontan, dan berani mengungkapkan pendapat berdasarkan data dan didasari ilmu yang relevan	2	penuh komitmen untuk mengikuti pedoman kerja kelompok dan berorientasi untuk mencapai tujuan kelompok	2	responsif dalam melihat hal baru dan pandangan yang berbeda								

d. Deciding which (3-5) modules from the chosen course

Experts and Team finally decide to develop materials for Tutons (see Table 4). The topics were weighed to its significance in term of achieving 4Cs targeted to be possessed by students by the end of the semester. Notwithstanding, it is risky to put pressures only in one course to make students have 4Cs. Nevertheless, in research setting where assumption is taken, the Team decide to go for developing the Model to be pilot in 2022.

Some of the "new" topics require a more engagement from students in order from them to have full advantages from it. The engagement, for example, force students to participate more actively in discussion or go finding learning resources to library or googling the Internet. I order to doing these, students must have some prerequisite competencies which UT have limited data on it. Therefore, in piloting the Model, close supervision will be conducted.

Table 4. Eight Chosen Topics based on 4Cs mapping

NO.	MODULe	Learning Activities (TOPIcs)*	Comptence/DOMAIN**												Tentative Title***	Assignment
			Critical Thinking			Communi-cation			Collaboration			Creativity				
			K	S	A	K	S	A	K	S	A	K	S	A		
1	Konsep Dasar Sistem Informasi	1. Pengertian Sostem Infoamsi	1, 3, 4, 5, 8,	2, 8, 9, 15, 17,	3, 4, 7,	2, 3, 6,	3, 4, 9,	2, 3, 4,	8, 11, 18	5, 8, 16,	1, 4, 6,	1, 4, 5, 10,	1, 4, 6,	1, 2, 3, 15	Sistem Informasi 4.0	1
2	Sostem Pendudkung {pengambilan Keputusan	2. Pendukung Pengambilan Keputusan	2, 5, 6,	3, 4, 8, 9, 15	2, 11, 13	2, 3, 7, 12	2, 4, 6 9,	2, 8, 13, 15,	4, 8, 10, 16, 18	2, 3, 4, 14	2, 3, 4, 5, 10, 13	1, 3, 4, 5, 7, 8, 10	4, 10, 11, 14, 15,	1, 2, 7, 13, 15	Sistem Pendukung Keputusan	
3	Keputusan Berdasarkan SIM	2. Penegmbailan Keputisan	1, 2, 9,	2, 3, 4, 8, 9, 11,	2, 3, 10, 11, 14,	2, 3, 4, 7,	1, 2, 3, 5,	4, 10, 11, 14,	3, 4, 5, 6, 11,	1, 2, 3, 4, 14,	3, 10, 11, 14,	1, 5,	10, 18,	3, 6, 7, 8,	Pengambilan Keputusan Disekolah	

		Berdasarkan SIM	13,												Selama Pandemi	
4	Pengembangan SI	1. Mpdel Pengembangan Siostem	1,2,7	4,9	2,3	2,3,7	2,3,5	4	4,6,11	1,2,4,5	3	1,3,5	10,18	1,2,3	Model Model Pengembangan Sistem	2
6	Dampak Etika & Sosial Pe,mnafaatan Sistem Informasi	2. Etika dalam Suatu Masyarakat Informasi	1,2,7,9,14,	4,8,9,10,	2,3,10,11,14,	2,3,7,	2,3,5,	4,10,11,14	4,6,11,	1,2,4,5	3,10,11,14,	1,3,5,10,	7,8,9,10,18,	1,2,3,	Permasalahan/ Kasus Etika dalam pengambilan keputusan	
7	Pengembangan SIM di Sekolah	2. Implementasi SIM di Sekolah	1,2,9	4,8,9,13	2,3	2,3,7	2,3,5	4	4,6,11	1,2,4	3	1,5	10,18	3	Implementasi Sistem Informasi Manajemen Di Sekolah	3
8	Pemanaafaatan TIK dalam Pendidikan	1. Pemanfaatan TIK sebagai Media Pembelajaran	1,3,4,5,	9,10,11,17,18,	3,4,7	2,3,6	4,9	2,3,4	2,6,7,	1,2,5,	10,11,14,	1,2,5,6,10,	1,4,6,	1,3,11,12,13,	Pemanfaatan TIK sbg Media Pembelajaran yang Efektif	

e. Development of content

Four experts are invited to review the quality of current PKOP4422 modules and its fulfillment to the 4Cs. Based on the results, several enrichments are done to perfect the modules. The enrichments come in four forms, as follows.

- Adding Initiation materials (8 set)

  Experts write and review 8 initiation materials in Tuton for chosen course relevant to 3 Ds in 4 Cs (Attachment 4). As a common situation, topics in modules are viewed outdate, hence the need to be updated. Moreover, examples and exercise in the modules is believed not to encouragement students to possess 4cs. Consequently, the initiation material then enriched:

  - Updated material

  - Examples that could motivate students to have 4Cs

    o Presented in a more interesting form

- Discussion topics (8 set)

Experts saw that discussion provided in the Tuton has not force students to build their collaborative competencies since approach used in the Discussion Forum are individual. Therefore, aside from adding topping of discussion to be more updated, the approach to the discussion is also changed. In two out of eight discussions in Tuton create to make students exercise their ability to collaborate and communicate effectively with other students.
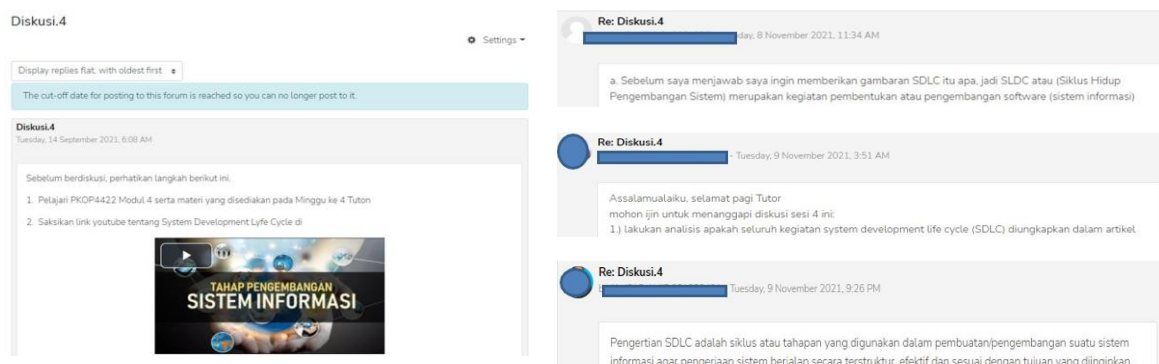
Figure 7.

However, students have not taken full advantage of the discussions, they seem to enjoy thinking for themselves and pass the opportunity to have discussion with their friend.

- Assignments (3 set)

Notwithstanding, assignments in the Tuton have not yet shown their capability to assess students' 4Cs. The four experts then develop assignment based on materials they develop in initiation materials and exercise in Discussions.

Figure 8.

- Conducting live discussion (3 times)

To provide synchronous learning in Tuton, this research conducts live discussion with experts. Tutor acted as moderator and students who is invited a week before, are encouraged to participate in the discussions. It is not mandatory for students to attend the discussions, but tutor is sure explain positive results if students join the live discussion. For students who can not join the live discussion, they can still watch the discussion since the discussion are recorded and the recordings are posted in the Tuton.

4 CONCLUSION

There are four points worth to research, namely:

- In order to facilitate students to have 4Cs, there is a need to evaluate learning model employed in UT. Tuton and Tuweb in UT each has pluses and minuses.

- Developing learning model to provide students with wider opportunities to poses 4Cs can be done using facilities already exist at UT

- It is proposed that UT develop a mixed asynchronous & synchronous learning model called **TUTON**+

- Experts play significant roles in developing materials needed for the proposed model.

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COMMUNICATION PATTERNS OF LECTURERS WITH TUTORS IN DISTANCE LEARNING

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Abstract

One of the study assistance services available at UT is Tutorial. In tutorials, learning activities are carried out under the guidance of a tutor as a facilitator. Tutors have very important functions, roles and positions in the implementation of tutorials, practice and/or practicum. This research was conducted to find out the communication patterns of supporting lecturers with tutors in increasing students' willingness to learn independently, especially the communication patterns of supporting lecturers with online tutors. This research is a qualitative research that is exploratory and clarification using a case study approach. The population in this study are all tutors who are registered at the open university. The samples in this study were online tutors registered at open universities. The results of this study are the communication patterns of supporting lecturers and Tutor Tuton consisting of open communication patterns, responsive communication patterns, appreciative communication patterns, constructive communication patterns, and egalitarian communication patterns. Communication between the supporting lecturer and the Tuton Tutor is established in a formal context that is oriented towards organizational interests and shows the form of the supporting lecturer's responsibility for the smooth implementation of the online tutorial. Communication between the supporting lecturers and Tutor Tuton also runs harmoniously between the supporting lecturers and Tutor Tuton by applying the principles of equality, fairness and equality.

Keywords: Pola Komunikasi, Sistem Pembelajaran Jarak Jauh, Tutor

1   INTRODUCTION

Distance learning (PJJ) is learning by using a medium that allows interaction between instructors and students. In PJJ between teachers and students do not meet face to face, in other words through PJJ it is possible for teachers and students to be in different places and even be separated by great distances. so it greatly facilitates the learning process.

At present, the distance education system has developed rapidly and become an integral part of the modern education system. Various countries in the world have used this distance education system as an alternative in an effort to expand people's opportunities to obtain education. In Indonesia, the implementation of the distance education system already has a formal legal basis with the inclusion of this system in the Law on the National Education System.

UT implements a distance and open learning system. The term distance means that learning is not carried out face-to-face, but uses media, both printed media (modules) and non-printed (audio/video, computer/internet, radio and television broadcasts). Students are required to study independently. Independent learning means learning on the initiative, with or without the help of others in learning. One of the principles of independent learning is being able to know when you need help or support

from another party. This understanding includes knowing when to meet with other students, study groups, administrative administrators at UPBJJ and tutors.

One of the learning assistance services available at UT is Tutorial. In tutorials, learning activities are carried out under the guidance of a tutor as a facilitator. This learning assistance service consists of 2 types, namely face-to-face tutorials (TTM) and online tutorials (TUTON). Both TTM and Tuton discussed and discussed matters that were considered difficult and very important for students to master. The material discussed in the tutorial activity concerns.

1. Essential competencies or important concepts in a course;
2. problems found by students in studying the module;
3. Problems related to student performance (practice/practicum) inside or outside the tutorial class; and/or
4. Problems related to the application of knowledge in everyday life.

TTM activities are managed by study groups (Pokjar). Pokjar is a means for Open University students to be able to build commitment and mutual agreement to help each other and mutually support the smoothness and success of studying at the Open University with or without the facilities of other parties. Pokjar can be in the form of Independent Pokjar or UPBJJ-UT Pokjar. Pokjar Mandiri is a Pokjar that was formed on the initiative of students independently and chaired by students. The UPBJJ-UT Pokjar was formed by the UPBJJ-UT to help provide services to a group of students and is coordinated by one Pokjar Management. The UPBJJ-UT Pokjar management is an individual whose role is to assist student study group activities based on the provisions set by UT. The Pokjar management is appointed and determined by the Head of the UPBJJ-UT based on a contract.

Meanwhile, TUTON is a student learning facility that is accessed online. Students interact with other students on the UT tutorial page, which is better known as the e-learning page.

Both TTM and TUTON, the learning process is assisted by educators known as tutors. Tutors have very important functions, roles and positions in the implementation of tutorials, practice and/or practicum. TTm and TUTON aim to help and motivate students in the learning process in order to broaden, deepen, and sharpen understanding in dealing with and solving problems in their independent learning. It's just that, TTM tutors communicate with Pokjar, online tutors communicate with subject lecturers at Central UT. Usually online tutor communication with supporting lecturers is done by utilizing online communication tools such as email and forming groups in the WhatsApp application.

In communication science, exchanging information as done by online tutors and supporting lecturers will eventually lead to the formation of a pattern of communication within the group itself. This pattern of communication runs continuously until the group goals are achieved. In the communication patterns that are formed as a result of interactions between group members, it will be seen the patterns and structures of communication that exist within the group, so that it can be seen how messages or information, especially those related to achieving group goals, are exchanged and disseminated within the group, and the roles what each individual in the group agrees with.

Figure 1. Elements and Communication Process
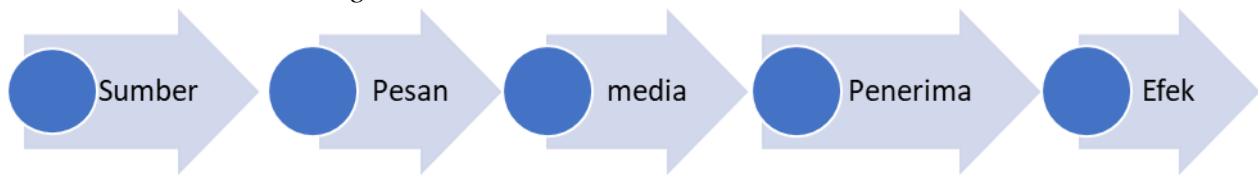
According to Setiawan (2000), there are several patterns of communication networks, namely chain patterns, Y, wheels, circles and all directions (Figure 1). Each of these network patterns has characteristics as described in table 1.

Figure 2. Communication Network Patterns
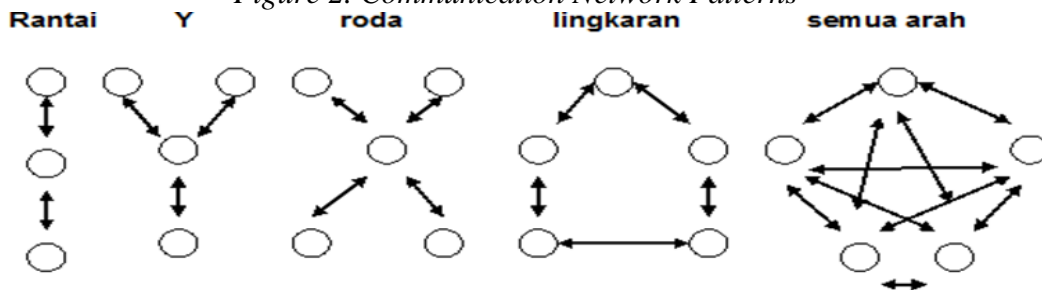
5   **Table 1. Characteristics of Communication Network Patterns**

	Rantai	Y	Roda	Lingkaran	Semua arah
Kecepatan	Sedang	Sedang	Cepat	Lamban	Cepat
Kecermatan	Tinggi	Tinggi	Tinggi	Rendah	Sedang
Timbulnya pimpinan	Sedang	Sedang	Tinggi	Tidak ada	Tidak ada
Moral	Sedang	Sedang	Rendah	Tinggi	Tinggi

In this communication network pattern, there are roles played by network members. Eriyanto in his book Communication Network Analysis mentions several roles of network members or in the terms of the book are actors, namely:Bridges yang berfungsi dua kelompok terpisah dalam suatu jaringan

a. Bridges that serve two separate groups in a network

b. Hubs are actors that have the most connections in the network

c. Cutpoints are actors that become the glue of the network, where without the presence of actors the network will split

This research was conducted to find out the communication patterns of supporting lecturers with tutors in increasing students' willingness to learn independently, especially the communication patterns of supporting lecturers with online tutors.

2   METHODOLOGY

This research is a qualitative research that is explorative and clarification using a case study approach. Exploratory research and clarification of a phenomenon or social reality. by way of describing a number of variables relating to the problem and the unit under study (Faisal.1992: 20).

Data collection methods used in this study consisted of documentary and interview methods.

1. Documentary data collection is carried out by examining and compiling documents/reports regarding the success of tutors who are academic respondents. then recorded according to the information needs based on research objectives.

2. Data collection by structured interviews. according to what was stated by Sulistyo (2006: 171) that structured interviews are interviews using a list of questions that have been prepared beforehand. Thus, an interview guide has been prepared which contains questions that are relevant to the research objectives. Interviews are also possible to be developed in order to dig deeper and detailed information as long as it is still in the context related to the research objectives.

The population in this study were all registered tutors at open universities. The samples in this study were online tutors registered at open universities who were members of the Whatsapp group made by teacher

3   FINDINGS AND DISCUSSION

3.1   The pattern of cummunication between lecturers and Tutor

This study aims to describe the pattern of communication between lecturers and Tutor Tuton. Communication pattern is a description of a communication process that describes the relationship between one communication component and another communication component (Soejanto,

2001:27). Another understanding of the pattern of communication is a form of relationship between communication participants in a process of sending and receiving messages.

Based on the results of this study, the communication patterns of supporting lecturers and Tutor Tuton consist of open communication patterns, responsive communication patterns, appreciative communication patterns, constructive communication patterns, and egalitarian communication patterns.

Figure. 3

3.2   Open Communication pattern

Patterns are synonymous with the activity of conveying important information, such as information about UT's and directions regarding the implementation of online tutorials, both from a policy and technical perspective. In addition to building trust, open communication patterns are carried out by supporting lecturers to Tutor Tuton to build togetherness, a sense of belonging, and to obtain useful feedback. This communication pattern does not take place in a short time, but there is continuity in each semester.

In general, most of the Tuton Tutors who were respondents agreed that the supporting lecturers conveyed directions openly about online learning. Even so, there were 3% of respondents who did not agree that supporting lecturers openly convey directions to tutors about online learning. According to one respondent, directives regarding online learning were not carried out by supporting lecturers, but were only conveyed through Tutor Tuton training and refreshments.

Communication between supporting lecturers and Tutor Tuton is not done face to face, but through internet-based media, such as *instant messaging* (IM) and e-mail. The most used medium is IM WhatsApp, because this media can support communication between a limited number of supporting lecturers and a large number of tutors. This communication pattern is carried out by creating WhatsApp *groups* (WA groups), both at the study program level or per-subject groups.

Figure.4
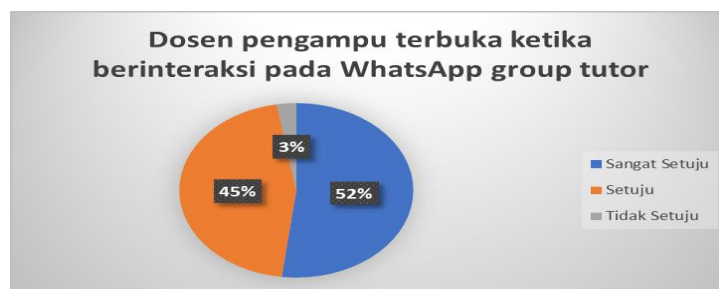
Communication between supporting lecturers and tutors in the WhatsApp *group* can take place in various patterns. Based on Figure 4.4, the majority of respondents (52%) strongly agree that supporting lecturers are open when interacting on WhatsApp tutor groups. This open communication pattern, for example, supporting lecturers actively provide the latest information regarding the implementation of Tuton. In addition, supporting lecturers are also open in submitting periodic evaluations of tutor performance, especially in relation to student discussion and assessment assessments.

Even so, there are 3% of respondents who disagree that the supporting lecturer is open when interacting with the WA *group* tutorThis generally happens to tutors who are members of large WA *groups* (not WA per subject).WA *group* has more heterogeneous characteristics, where the Tuton Tutors who join come from various subject areas, as well as the course lecturers as administrators. Due to its heterogeneous nature, tutors who are members of large WA *groups* usually do not get information from their supervisory lecturers, but from interdisciplinary lecturers. The nature of information exchange in this group is also more multi-directional compared to the WA *group* per subject, where Tutors often respond to questions from other Tutors regarding obstacles in implementing tutorials

3.3   The Responsive Communication Pattern

WA group as a medium for sharing information regarding the implementation of UT tutorials has a number of advantages, one of which is the possibility of two-way communication with immediate feedback. This characteristic allows various questions, both from tutors and supporting lecturers, to be responded to quickly. Based on the graph in Figure 4.5, the majority of respondents (56%) agree that the supporting lecturer responds quickly to questions given by the tutor on the Tutor's WhatsApp group.

Figure. 5

The most frequently asked questions by tutors in the WhatsApp group are regarding technical problems, where most tutors think that these problems should be forwarded to UT internal parties who understand the Learning Management System (LMS) system. In addition, tutors often ask questions about UT policies, such as assignment assessment criteria and discussions.

The most frequently asked questions by tutors in the WhatsApp group are regarding technical problems, where most tutors think that these problems should be forwarded to UT internal parties who understand the Learning Management System (LMS) system. In addition, tutors often ask questions about UT policies, such as assignment assessment criteria and discussions

Communication between supporting lecturers and Tutor Tuton is established in a formal context that is oriented towards organizational interests. Supporting lecturers, as internal parties of the UT organization, need to be responsible for the smooth implementation of the online tutorial. This responsibility is manifested in various activities, one of which is by establishing good communication with tutors in order to have good performance

Figure.6

Based on the graph in Figure 6, the majority of respondents strongly agree that supporting lecturers have a sense of responsibility towards tutors. This responsibility is closely related to the previous

discussion, namely when the supervising lecturer gives directions, responds to questions from the Tutor, to evaluates and provides input regarding the Tutor's performance.

Figure. 7
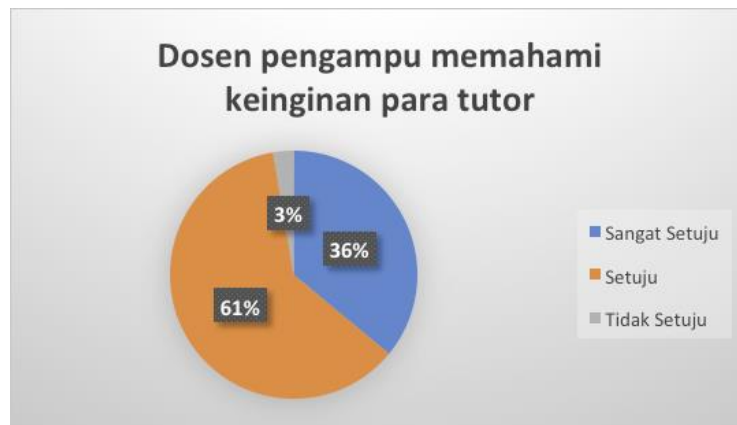
Figure. 8
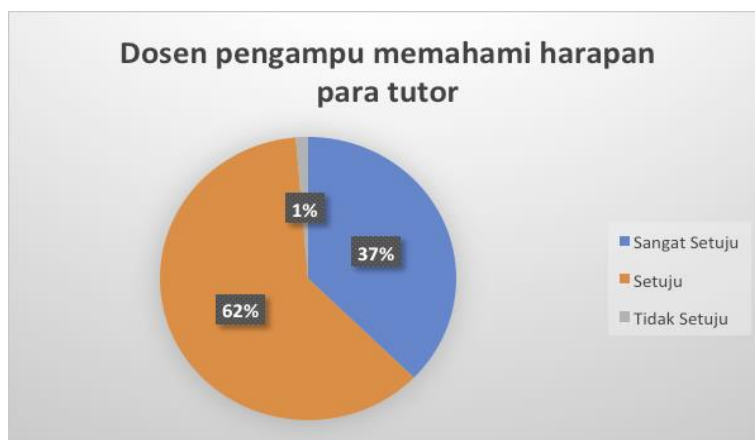
Based on the graphs in Figure 7 and Figure 8, the majority of respondents strongly agree that the supporting lecturers understand the wishes and expectations of the tutors.

3.4   Appreciative Communication Patterns

Figure. 9

Figure.10

Figure. 11

Based on the graph in Figure 9, most respondents agree that the supporting lecturers give appreciation to tutors, both those who always open means of communication with students, to tutors who always

motivate students, or who are active on e-learning sites. Even so, there were 12% of respondents who thought that the supporting lecturers had not given this appreciation.

3.5   Constructive Communication Patterns

Figure. 12
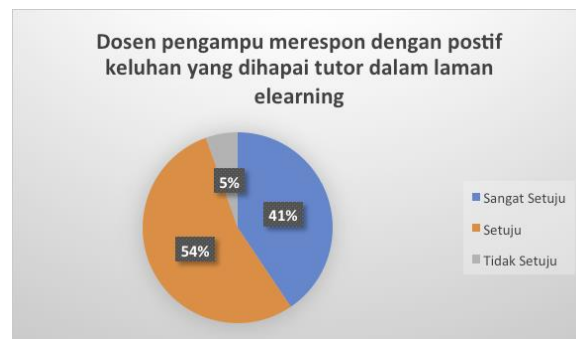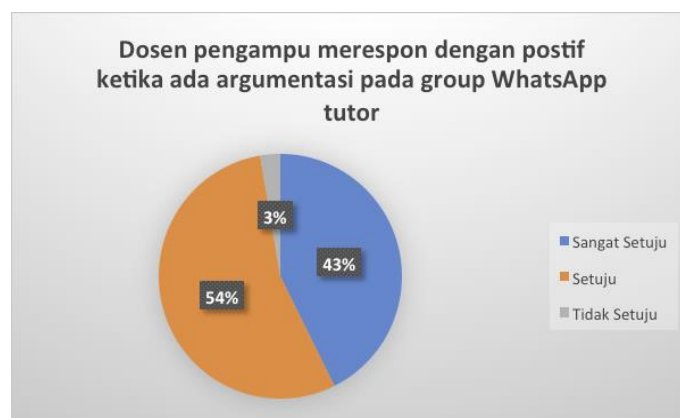
Dosen pengampu merespon dengan postif keluhan yang dihapai tutor dalam laman elearning

- Sangat Setuju
- Setuju
- Tidak Setuju

5% / 41% / 54%

Figure.13

Dosen pengampu merespon dengan postif ketika ada argumentasi pada group WhatsApp tutor

- Sangat Setuju
- Setuju
- Tidak Setuju

3% / 43% / 54%

Figure.14

Dosen pengampu merespon dengan postif ketika ada tutor yang berpikir krtisi pada group WhatsApp tutor

- Sangat Setuju
- Setuju
- Tidak Setuju

4% / 39% / 57%

Based on the graphs in Figures 16 and 17, the majority of respondents agree that the supporting lecturers treat all tutors fairly. In addition, the respondents also considered that the supporting lecturers had provided equal opportunities to all tutors without exception

3.6 Egalitarian Communication Pattern

Figure.15
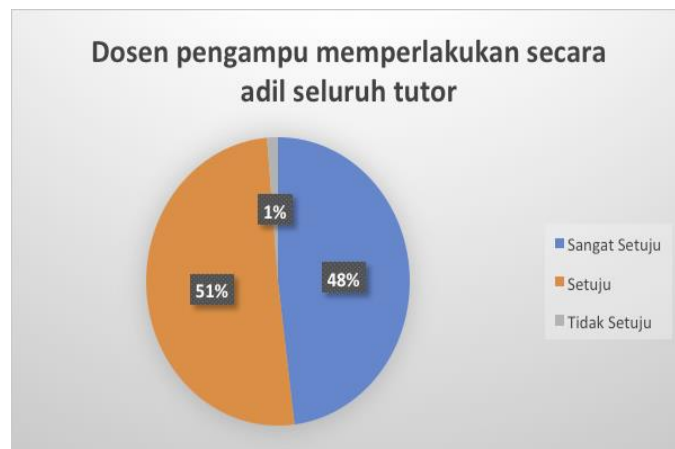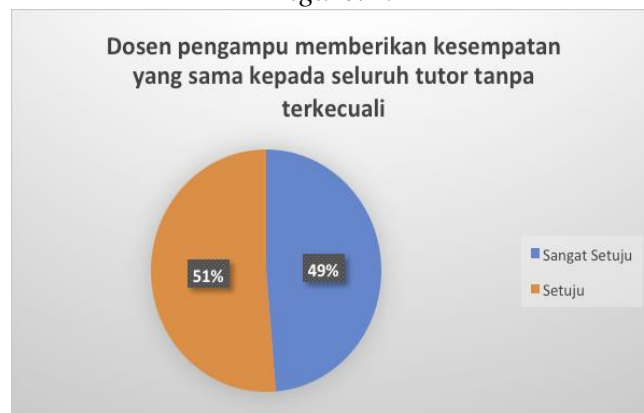
Dosen pengampu memperlakukan secara adil seluruh tutor

Figure.16

Dosen pengampu memberikan kesempatan yang sama kepada seluruh tutor tanpa terkecuali

Based on the graphs in Figures 16 and 17, the majority of respondents agree that the supporting lecturers treat all tutors fairly. In addition, the respondents also considered that the supporting lecturers had provided equal opportunities to all tutors without exception

4 CONCLUSION

Based on the results of the analysis and discussion of the data, the authors draw the following conclusions from this study:

1. Communication between the supporting lecturer and Tutor Tuton is established in a formal context that is oriented towards organizational interests and shows the form of the supervisor's responsibility for the smooth implementation of the online tutorial.

2. Communication between the supporting lecturers and Tutor Tutors runs harmoniously between the supporting lecturers and Tutor Tutors by applying the principles of equality, fairness and equality

3. Good communication between the supporting lecturers and Tutor Tutons has an impact on the level of activity and willingness to learn students

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THE NATURE, CAUSES, AND PRACTICES OF ACADEMIC DISHONESTY IN E-LEARNING SYSTEM: THE CASE OF UNIVERSITAS TERBUKA

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Abstract

In recent times, e-learning has become an integral part of the educational process in universities, and it is used in all forms of education particularly since the outbreak of the pandemic covid-19. The aim of the study was to investigate the nature, causes, and practices of academic dishonesty in the e-learning system at Universitas Terbuka from the teacher's and learners' perceptions and observations of student academic performance in the e-learning portal. The study was basically a survey that employed both qualitative and quantitative approaches and observation of student academic performance in e-learning to gather data. The subjects were 3 teachers and 100 students who were selected randomly from three study programs namely government science, business administration, and taxation. The result found that academic dishonesty specifically related to plagiarism in discussion and assignments are prevalent. The practices were caused by a lack of academic writing understanding, less reading motivation, and preferring shortcut ways. In addition, to curb the challenges faced in the learning process, teachers took strategy to student awareness by giving them a strict academic writing rule and an opportunity to correct their answers.

Keywords: academic dishonesty, e-learning, academic performance, study programs

1   INTRODUCTION

The system of higher education continuously changes, therefore, there is a requirement for the creation of new methods of training (Kalmykova, Pustylnik, & Razinkina, 2017). One of the world's leading trends aimed at solving the contradictions between the developing information culture and the traditional way of human education is the transition to lifelong learning, which forms the basis of the information society. Nowadays e-learning is becoming an essential part of higher education and it's applied in all forms of learning. It is not just about technological changes, the whole system of the educational process, formed over the centuries, is changing.

In the information era, the features of the personality formation conditions are determined not only by the intensive growth of the information volume but to a significant extent by the factors of a dynamic communicative environment, that transform forms of perception, thinking, and human behavior (Shipunova, Berezovskaya, Gashkova, 2017, p.58). Academic achievement is often used as an indicator of school quality because it is easily measurable using standardized tests, while other outcomes may be more complex and less tangible (SIDA, 2000). This means the quality of education can be determined by proper assessment of academic achievement measurements such as tests/ exams

and assignments. Scholars of education underscore the students' assessment strategies as a core part of insuring quality. Student assessment should be regarded as a complex, multidimensional activity that requires alignment, balance, and rigor to assure quality outcomes (Joughin, & Macdonald, 2004). To ensure rigorous assessment, academic cheating must be minimized. If there are unethical practices, like cheating in the process of administering such kinds of tools, the quality of education will be questioned as well. Academic cheating can occur at either the institutional or individual level. In institutional cheating, a higher education institution might attempt to inflate scores, perhaps to ensure that its students do well. This might happen in transnational programs where the awarding body is an external service provider. In such a case, it is in the interest of the local service provider to inflate scores to maintain market share. However, the negative impact on quality will be significant if the awarding body or the accrediting body does not have a rigorous quality assurance system to limit such practices.

Since the pandemic of *covid-19,* the use of e-learning systems has shifted the way students learn and teachers teach from conventional to information technology based. This change motivates the school to find out the proper way of student academic assessment related to the current method of learning and teaching. There have been many studies related to student academic dishonesty in conventional universities discussed in academic writing, yet since the use of information of technology appeared as the solution during and post-pandemic of covid 19 it is important to investigate academic dishonesty among students in the e-learning system used at Universitas Terbuka

The concept of Academic Dishonesty/ Plagiarism

Academic institutions are places where citizens are prepared for diverse needs of life and societal issues. We value academic integrity very highly and do not permit any forms of dishonesty or deception that unfairly, improperly, or illegally enhance a grade on an individual assignment or a course grade. We are aware, however, that new forms of cheating, plagiarism, and other forms of dishonesty may arise and therefore, we expect every student to interpret the requirement of academic honesty and integrity broadly and in good faith.

Plagiarism occurs when a person represents someone else's words, ideas, phrases, sentences, or data as one's own work (Higbee & Thomas, 2002). When submitting work that includes someone else's words, ideas, syntax, data, or organizational patterns, the source of that information must be

acknowledged through complete, accurate, and specific references. All word-for-word statements must be acknowledged through quotation marks,

unless academic dishonesty comes as a practice in the academic environment.

Types of Academic Dishonesty

Academic dishonesty may be categorized as exam cheating and plagiarism based on the nature of the acts. In cheating exams, Etter et.al (2006) state that we can have a list of activities including copying from others, having or using notes, formulas, or other information in a programmable calculator or another electronic device without explicit teacher review and permission, having or using a communication device such as a cell phone, pager, or electronic translator to send or obtain unauthorized information, taking an exam for another student, or permitting someone else to take a test for someone else and asking another to give you improper assistance, including offering money or other benefits.

Secondly, under plagiarism, practices like, giving or getting improper assistance on an assignment meant to be individual work, including in any assignment turned in for credit any materials not based on your own research and writing; this includes using the services of a commercial term paper company, using the services of another student and copying part or all of another person's paper and submitting it as your own for an assignment (Mitchell, 2008; Brimble & Stevenson, 2005).). In addition, acting as a provider of paper(s) for a student or students, submitting substantial portions of the same academic work for credit in more than one course without consulting both teachers (self-plagiarism), failing to properly acknowledge paraphrased materials via textual attribution, footnotes, endnotes and/or bibliography and citing non-existent sources (articles, books, etc.) are seriously considered as acts of plagiarism.

2 METHODOLOGY

The main objective of the study was to investigate the nature, causes, and types of academic dishonesty among students in the e-learning system at Universitas Terbuka. The subjects of the study were 100 students and 3 instructors from government science, business administration, and taxation study programs. The data was collected by employing two instruments namely, a questionnaire and an interview. The questionnaire is employed to 100 students and an interview was conducted with 3

instructors. The interview was designed to investigate the major reason for cheating, teachers' reactions, and further suggestions to curb the challenge. The questionnaire aims to collect data from students about their perception of the prevalence, types, causes, and practices of academic dishonesty in the university. In addition, the observation of students' academic performance in an e-learning system is undertaken to find out the type and nature of academic dishonesty among students.

3   FINDINGS AND DISCUSSION

The learning process at Universitas Terbuka is through a web-based tutorial (WBT). The learning process through web-based tutorial lasted for 8 sessions which include discussion, assignments on sessions 3, 5, and 7, and participation. Teachers and students interact intensively on this web-based tutorial called e-learning. Every question in the discussion and assignment provides clear instructions to forbid students from committing any plagiarism and cheating act of answering questions and the consequences of their disobedience.

Based on the teacher's experiences, observation, and student questionnaire, it is found that plagiarism and copy-paste are the most prevalent act happening in e-learning. In the discussion, a student can read and respond to the answer of other students but could not see the score of the answer given by the teacher. In the discussion, a student copied another answer from another student without any permission. However, in the context of the nature of academic dishonesty, it is found that another student responded to the person who copy the answer by giving the response to the reply box.

"I am sorry to respond to your answer. Your answer is the same as the answer of student x. Please give your personal answer or use your own language"

The results disclosed the reasons students committed copy-paste and plagiarism are:

1. Their lack of academic writing understanding. They do not know if they cited an article or writing from any sources such as journals or books that they must write the citation. Universitas Terbuka is an open university in Indonesia that accept all background of student without strictly being limited to age. As it has no university entrance examination like any other conventional university and is an open university, students are encouraged to be independent students. This automatically increases the number of students studying at Universitas Terbuka with the flexibility and opportunities it offer to society.

2. They ignore the academic writing rules. The student knows that the instruction is clear regarding plagiarism, copy-paste, and the consequences they get if committed the rules. However, they ignore it because they want to finish submitting the assignment and answer the question in the discussion without taking time to read, paraphrase, and do analysis.

3. In the discussion, copy-paste practices are frequently practiced as it is the easy way of answering the question without reading the source of references such as books or journals. It does not need much time and hard effort to do as the answers of all students are displayed in the discussion box. Students who want to copy may choose which answer they want.

4. Time scarcity is one of the factors that cause students from committing plagiarism and copy-paste. Most of the students who take their degree at these three study programs are purely a student, yet they work in any company or institution and study at Universitas Terbuka. This situation encourages them to be able to manage their time. Those who fail to manage their time for the study indicated committed academic dishonesty.

In tackling academic dishonesty, teachers always use the strategy to avoid the student from committing the rules. All teachers agree that reminders, sanctions, and opportunities are important components to curb the challenges teachers face in the e-learning system. The teacher explained to students that they must write the reference of the source if they cite the source from journals or books and give an example of how to cite. Teachers also warn students in the discussion and assignment box not to copy-paste the answers and convey what kind of sanction they would receive if they committed the rules. Therefore, teachers in the context of academic dishonesty give two chances to revise the answers and assignments of students.

Of the types, causes, nature, and teacher's strategies to curb the challenge of academic dishonesty in the e-learning system, it found it important to find out the strategy of academic dishonesty in the e-learning system. Despite being opened system it does not mean that students must ignore the important element of academic writing rules as a scholar. The study suggested university add such an important handbook of academic writing rules and guidelines for students in the e-learning system starting from semester one so that they are accustomed to writing an academic product correctly. This strategy also helps them in the process of finishing their final project before graduation.

4   CONCLUSION

Academic dishonesty in conventional universities related to the nature, types, causes, and practices have been widely elaborated in academic writing. In a conventional university, students and teachers are *faces to face* method in the learning process and practices of cheating in an examination are prevalent. In Universitas Terbuka which used the e-learning system, the types of academic dishonesty tend to relate to plagiarism and copy-paste. The open system and no physical contact with the teachers led students to the academic writing rules ignorance. Despite their ignorance, it is found that the student responded to a student who practices copy-paste in answering the question in the discussion. In curbing the challenges of academic writing in an e-learning system, teachers have done some important points such as explaining academic writing correctly, reminders, sanctions, and opportunities to revise the answer. Moreover, this strategy is not enough to curb the challenges, the study suggested another solution like adding another column in the e-learning system regarding academic writing rules and guidelines starting from semester one. This is important for improving student ability in academic writing and helping students to finish their academic project before graduation.

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DESIGN COURSE FEATURE ON E-COMMERCE APPLICATION

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Abstract

The development of information technology makes it easier for users to get information. One way to get information is to use internet facilities. E-commerce is a web platform to provide information on products owned by sellers and consumers can see the desired product and buy it online. The development of e-commerce business or online buying and selling in Indonesia has increased drastically since the last few years. This is because Indonesia is one of the countries with the largest internet users in the world. MSME business actors in the field online printing do not yet have a place to accommodate their business so that they can be promoted to the public and prospective cunsumers. In general, the problems faced by each MSME are not much different. MSME business actors have difficulty marketing their products to consumers. So that a solution is given by creating an e-commerce application that can accommodate MSMEs to market their products. In addition to designing e-commerce applications, we also create learning features (courses) on this web application. The goal is that MSME actors in addition to marketing their products can also be provided with learning modules to be able to improve the marketing of MSME products. Course design using a user experience questionnaire (UEQ). The step taken is by conducting a literature study. Next, analyze the characteristics of the application usage. Then analyze user needs to create features needed in course design. After that, the designing a prototype. Then do the testing with the UEQ test. After completing the testing, the solution design is carried out in order to produce a better application. In usability testing by measuring satisfaction level is in the level of 73%. While testing with a user experience questionnaire, the value of the application is below average. the pragmatic quality level with a mean level of 0.825, the hedonic quality level with a mean level of 0.7 and overall comparison to benchmark is below average. The test results become the basis for improving the solution design to produce a better product.

Keywords: course, e-commerce, MSME, UEQ

1 INTRODUCTION

MSMEs are one of the important sectors in the growth and development of the Indonesian economy . This is because the MSME sector can absorb various workers and can reduce level unemployment. MSMEs can change the economy by creating fields work especially for the unemployed and later aims to advance the economy and improve people's living standards. By because that the more the MSMEs that develop, the greater the existing economic growth.

Principal Economist Payment System Policy Department of Bank Indonesia Agung Bayu Purwoko stated that the value of e-commerce transactions increased because Indonesia has 338.2 million mobile customers, 175.4 million internet users, and 160 million active social media users. Bank Indonesia data states that e-commerce transactions in August 2020 rose to 140 million compared to last year which reached 80 million transactions and August 2018, namely 40 million transactions. Not only transactions in e-commerce, digital banking transactions have increased especially for mobile banking transactions which in August 2020 reached 12 million transactions, an increase

compared to August 2019 of 8 million transactions.

Research conducted by Rahmat Fadli Istanto (2013) With the implementation of the Mobile Commerce Application it can assist sellers in processing goods ordering data, customer data, and confirmation of delivery of goods carried out by Muslihudin (2017) Business-to-consumer (B2C) system in its delivery serves as a database system and means of transactions via the internet that utilize web technology. Research conducted by Ananto Widodo and Suharnawi which discussed the creation of an E-Commerce application for selling web-based goods on CV. Laboindo Intimedika Semarang uses the Web Engineering method. The end result of this research is the creation of an E-Commerce application to increase sales, as well as facilitate the buying and selling of goods. The existence of this digital economy makes it easy for people to buy and sell without having to meet in person and to maintain security during the current pandemic. In addition, the strategy that can be carried out is to innovate existing products according to the needs and desires of current consumers (Narto & HM, 2020).

MSMEs really need a change with the existence of digital marketing. Digital Marketing is marketing using electronic media or the internet. Marketplace activities cover many things, to differentiate E-marketplaces are divided into 4 parts, namely: (Kasmi, 2017) B2B (Business To Business), 1) where the two companies conduct business transactions in run its business; 2) B2C (Business To Consumer), this definition means that e-marketplace transactions are transactions where buyers are individual consumers; 3) C2C (Consumer To Consumer), here consumers sell directly to each other through electronic advertisements or customer sites; 4) C2B (Consumer To Business), in this category individuals sell goods or services to companies.

There are lots of facilities in selling online, for example through a marketplace, e-commerce or online shop. The three online sales media are different. Online shop is a marketing media that sells personal products that are usually offered on social media such as Instagram, Facebook, TikTok and so on. E-commerce is usually a website or application that sells personal brands. While the marketplace is an application or website that accommodates various products from many sellers (dewaweb, 2021). Marketplace is currently one of the most popular online marketing places.

Based on the above problems, it is necessary to design a user experience regarding online marketing learning, especially in the use of various kinds of marketplaces. The method used in this research is User Centered Design. User Centered Design is a method in developing interactive systems that focus on humans and users. This method is used to help solve problems in designing solutions for

marketplace learning applications. In designing the application, ten end users and two experts will be interviewed. The use of this user-focused method is carried out so that it can match what users want, especially MSMEs and later can help MSME users who are still stuttering about technology to be able to easily use MSMEs by providing interesting steps and also details in various kinds of marketplace uses.

Based on research on designing user experience marketplace learning during a pandemic, there were several similar studies, namely a journal entitled "UI/UX Design using the UCD (User-Centered Design) approach on the Thriftdoor website" which explains the use of the User Centered Design method in its design. This journal also discusses changes in new trends, namely traditional selling which is replaced by electronic trading. This electronic trade will change people's lifestyles to be more modern (Setiaji, 2020).

User experience is the interaction that users make with an application. This User Experience is one of the things that is seen in knowing how comfortable users are in using existing products. These products can be in the form of applications, websites, services and so on. If the features in the application are good enough but user satisfaction is poor, then it is considered that the user experience in the application is bad. User experience value can be achieved by looking at various gals starting from graphic and interface design, marketing, as well as good science design so that the user experience value is good. However, besides usability, the user experience also has a method which according to Peter Morville is seven important aspects that influence the user experience which are explained using Honeycomb with seven aspects (Morville, 2004).

2 METHODOLOGY

The design of this application has several stages. These stages use the user centered design method which can be seen in Figure 2.1
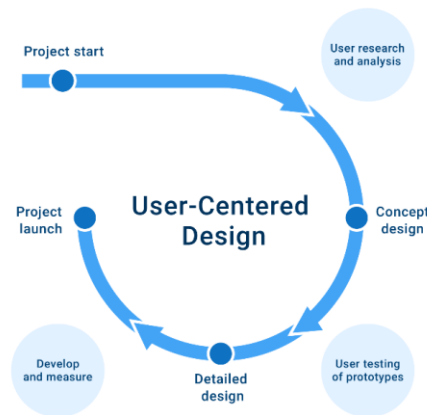
Figure 2.1 Diagram flow Study

This study uses the User-Centered Design (UCD) method which is centered on the user by creating a marketplace sales site and also adding course features on the web. This method consists of five stages of design. The first stage is planning the UCD process to meet user desires, followed by the second stage, namely determining the context of use by identifying the users involved. At this stage, determining the needs of users and organizations, then identifying user needs and analyzing tasks from the baraprinting.net marketplace information site. The third stage by designing the solution changes the requirements into a blueprint system consisting of layout design and user interface mock-up design. The last stage is to evaluate the proposed solution by calculating the usability level.

2.1 User-Centered Design Process

This study uses an implementative design type which will produce a solution design in the form of a design starting from analysis to high-fidelity prototype in accordance with the existing problems, namely learning design. marketplace . Method in study this will involve element user experience so that it uses the user centered design method in the application design process. Evaluation of this product will later calculate the level of usability .

2.2 Analysis Context Use

Usage context analysis is an analysis stage to determine the characteristics of stakeholders and users. This usage context analysis is carried out by conducting interviews with user and also stakeholders. Analysis of this context of use will result in a data which later used for reference in carrying out the

next stage in the research. The results of this analysis are in the form of interviews that used in making persona, user journey maps . Analysis is also done Needs Users by analyzing what the needs of users and what users want. This analysis was carried out after conducting interviews with users of the marketplace learning application. What is done to find out the content needed by users can be analyzed using User journey maps which contain information about what just which has skipped user, identification duty and also destination as well as to do identification system.

2.3 Manufacture Design Solution

At the stage of making the solution design for the learning design of the marketplace application , it involves several things that involve stakeholders in creating the content in it. The design of this solution is in the form of a storyboard, architecture information, user flow, wireframe and screen flow, mockup, and prototype

2.4 Evaluation Design Solution

At this stage an evaluation of the existing solution design is carried out. This evaluation is carried out by testing what deficiencies exist in designing marketplace learning applications for MSMEs. Test which conducted this used by testing the three aspects of effectiveness, efficiency, and user satisfaction (ISO 9241-210, 2010). This test was carried out by five prospective users who would later use the marketplace learning application for MSMEs.

3   FINDINGS AND DISCUSSION

3.1.1 Identification Characteristics User

At this stage, several stages are carried out, namely the creation of user personas and also Empathy Maps. This stage aims to find out in detail what users need for marketplace learning applications with users, namely MSME entrepreneurs who are new to using the marketplace. Because of this, a simple and easy-to-use application is needed in learning so that users can easily use the application.

This application is used by users, the majority of whom are MSME entrepreneurs and people who want to become MSME entrepreneurs. they should get an application that is simple and not too complicated. In interviews, several users have tried learning applications such as skill academy and coursera. This marketplace learning application will be similar to that application.

3.1.2. Analysis and Specification User

After identifying users from interviews and generating after making charms and empathy maps. Then further, specifications are made regarding the terms and needs required by the user. These requirements must be met for the solution design process. In addition, other information is needed for the design of the solution design.

The needs that must be met are summarized in a content requirement. The content needs are: 1) there is material about learning various marketplaces that are used to find out how to use and market products; 2) the existence of a discussion forum in which it can raise the complaints they experience and can also make comments on the complaints experienced by others; 3) there are recommendations for a suitable marketplace for the product category to be sold; 4) there is a continuing learning feature that can continue reading unfinished material; 5) there is a store of the most preferred material and can also store the material you want to read; 6) there is popular content, namely content that is most often searched for in the application; 7) there are chats with experts in various marketplace fields and also digital marketing

3.1.3 Design Solution

3.1.3.1 Storyboards

Storyboard is a series of stories depicted visually so that it can make it easier for users to understand the message or meaning in it. The marketplace learning application is an application in which there are various kinds of learning services in using the marketplace to how to trade in the marketplace. So that the making of the storyboard refers to the data that has been obtained from various MSMEs that have been interviewed.

Figure 3.1 Home View

3.1.3.2 Information Architecture

Information Architecture is a chart that is used to make it easier for users to find out what is in an application. Apart from that, with the Information Architecture , users can easily easy get information which is in the application

3.1.3.3 Wireframes

Wireframes is something framework basic in applications or websites. Wireframe can also be referred to as a blueprint or a detailed description of a plan that describes the form and core functions that are needed there is in a screen page application (Hadwiger, F., Hamm, B., Vitols, K., & Wilke, P. (2017).

Screenflow is a flow of how to design solutions that will interact with users. Screenflow will consist of pages that are in the application and interact with one another to become a certain process in the marketplace learning application. On Screenflow into the application which is marked by the presence of two onboarding screens which will show a little about the application. After that, at the last onboarding, the user can press the login button and later the user will be referred to the account login page.

3.1.3.4 Mockups

A mockup is a design with higher precision with information in the form of images, colors, typography, and content that can no longer be in lorem epsum form. This mockup provides a visual effect like a real form in the application with a visual design that has been applied to a real product so that it is like a finished product. Figure 3.2 is a mockup of the homepage that the user will see after the user has successfully logged in or registered.
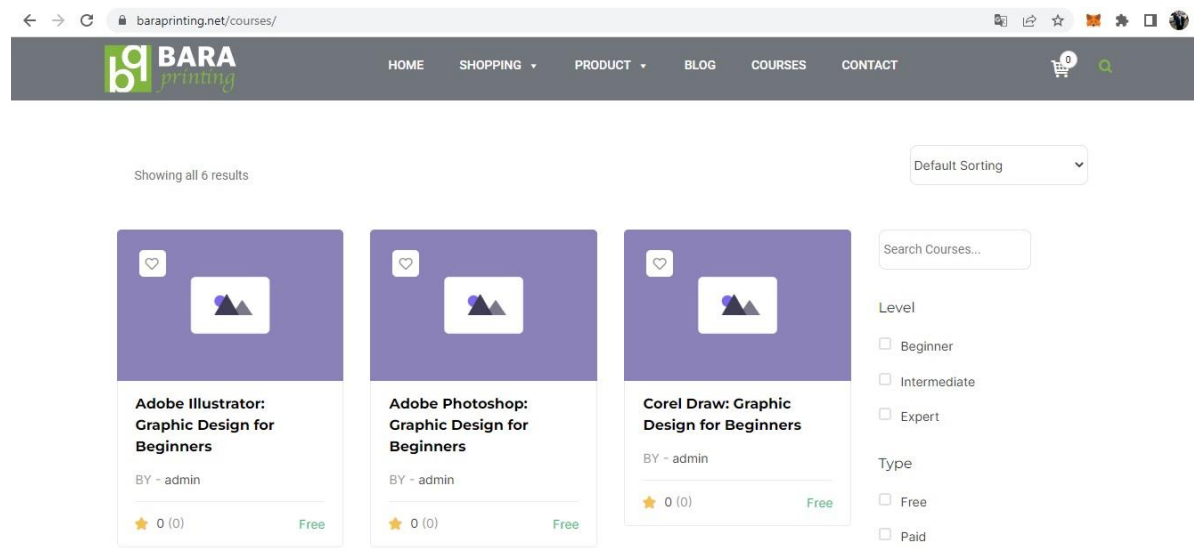
Figure 3.2 Mockup Course

3.1.4. Testing and Evaluation

The tests carried out in testing this marketplace learning application are by using the usability testing method. The usability testing method will later be used as a measurement of whether the design in the application is useful or not

3.1.4.1. UEQ (User Experience Questionnaires)

Data

This data was obtained from 10 respondents who are MSME business owners.

Table 1 Data

No	Items
	1	2	3	4	5	6	7	8
1	1	6	4	5	3	4	3	5
2	5	5	4	5	2	3	4	5
3	6	3	2	5	5	6	7	4
4	5	6	6	4	4	6	6	4
5	4	4	4	5	5	5	4	5
6	6	4	4	4	6	6	7	7

7	6	6	6	4	3	4	4	3
8	7	6	4	5	5	3	5	4
9	5	6	6	5	4	6	4	5
10	6	5	5	4	6	6	5	5

Confidence Interval

Table 2 Confidence Intervals per Item

Confidence interval (p=0.05) per item						
Items	Means	Std. Dev.	N	Confidence	Confidence interval	
1	1,100	1,663	10	1.031	0.069	2,131
2	1,100	1,101	10	0.682	0.418	1,782
3	0.500	1,269	10	0.787	-0.287	1,287
4	0.600	0.516	10	0.320	0.280	0.920
5	0.300	1.337	10	0.829	-0.529	1,129
6	0.900	1,287	10	0.797	0.103	1,697
7	0.900	1.370	10	0.849	0.051	1,749
8	0.700	1.059	10	0.657	0.043	1.357

Tabel3Confidence Interval per Scale

Confidence intervals (p=0.05) per scale						
Scales	Means	Std. Dev.	N	Confidence	Confidence interval	
Pragmatic Quality	0.825	0.613	10	0.380	0.445	1,205
Hedonic Quality	0.700	0.978	10	0.606	0.094	1.306
Overall	0.763	0.515	10	0.319	0.443	1.082

Benchmark

The measured scale means are set in relation to existing values from a benchmark data set.

The table shows that the results of data processing using UEQ indicate that the application is below average. Judging from the level of pragmatic quality with a mean level of 0.825, the level of hedonic quality with a mean level of 0.7 and overall comparison to benchmark is below average.

Table 4 Benchmark figure scale

Scales	Means	Comparisson to benchmarks	Interpretation
Pragmatic Quality	0.825	**Below average**	50% of results better, 25% of results worse
Hedonic Quality	0.7	**Below Average**	50% of results better, 25% of results worse
Overall	0.76	**Below Average**	50% of results better, 25% of results worse

Table 5 Benchmark figure scale quality
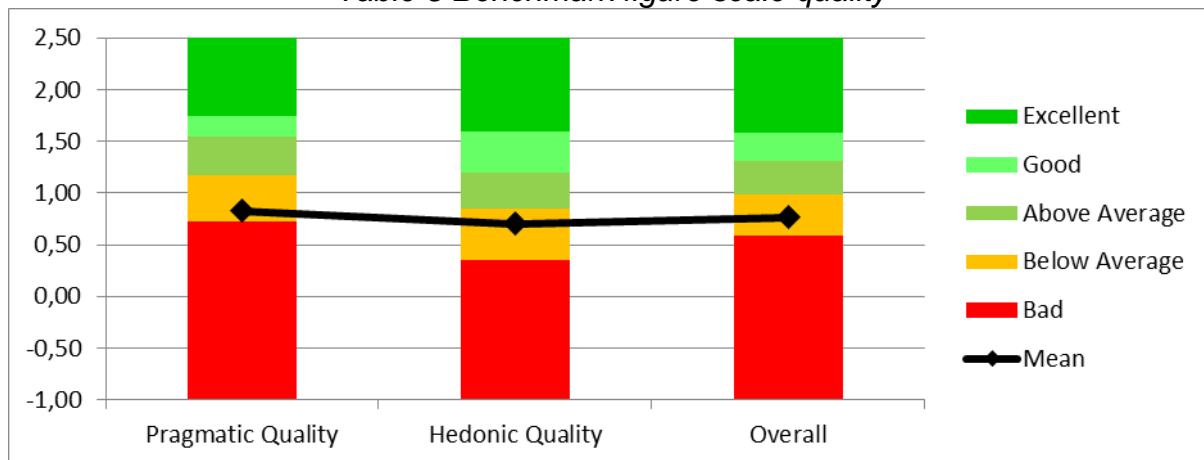
3.1.4.2. Test Usability Aspect Satisfaction

Satisfaction testing is a test that calculates the level of user satisfaction in using the design of learning applications marketplaces. Aspect this calculated by filling out the questionnaire SUS (System Usability Scale) which has 10 questions with a scale of 1 to 5. The questions are arranged into positive and then negative questions. After getting the SUS results, the next step is to do calculations based on the data that has been obtained. Calculation Satisfaction with SUS value which used. Results calculation it generates aspect satisfaction as big 73 % which is still in level B, good and included in the acceptable category. The calculation of the satisfaction aspect can be seen in Table 6

Table 6 Calculation Score SUS Aspect Satisfaction

No	Assessment Aspect	Respondent									
		1	2	3	4	5	6	7	8	9	10
1	I will use this system again	3	3	4	3	3	3	3	2	3	3
2	This system is complicated to use	3	3	0	4	3	3	3	0	4	3
3	This system is easy to use	3	3	3	3	3	3	3	3	3	3
4	I find this system quite confusing	3	3	4	4	3	3	3	4	4	3
5	I think the features in this system are working properly	3	3	4	5	3	3	4	4	3	3
6	I need someone else's help to use this system	2	4	3	3	4	2	3	2	3	4

No											
7	I feel other people can easily use this app	3	3	4	3	3	2	3	3	3	2
8	I feel there are a lot of inconsistencies in this system	3	3	3	2	2	3	3	4	4	4
9	I feel there are no obstacles in using this system	3	3	3	3	3	2	3	3	3	3
10	I need to adapt in using this system	2	2	2	2	1	1	2	2	3	1
Total Score		28	30	30	32	28	25	30	27	33	29
Score x 2.5		70	75	75	80	70	63	75	68	83	73
Average		73									

3.2 Discussion

After carrying out usability testing and also UEQ, users will be asked questions regarding opinions and suggestions regarding the application design that was made. The existing opinions and suggestions are used to make improvements regarding the design solutions that have been made. In addition, the repair or origin of the problem is also obtained from the usability testing analysis. The list of recommendations can be seen in table 6.7

Table 7 List of Recommendation Repair

No	Origin Problem	Details Problem	Solution Repair
1	The Home page does not show the learning course menu	there is no sign that distinguishes the learning menu	Added a different menu icon

2	There is no discussion forum with fellow students and material providers	there are no chat rooms to hold discussions with fellow users and teachers	added a discussion forum in the application

4   CONCLUSION

Based on study which has conducted Regarding the user experience design of marketplace learning applications, the first conclusion can be drawn from the analysis of user needs in the Design of Marketplace Learning Applications by interviewing business users. The results of interviews with these users produce some of the desired features in designing this application. The features desired by users are comparison features of various marketplaces, material features accompanied by video and writing short, Feature search Theory, feature chat with experts. The needs of these users are based on the sales made. Second, the solution design results in the Matketplace Learning Application are used to make it easier for users who want to learn about the marketplace. Initial solution design results form design visual, wireframe, and screen Flow.

After everything is formed, the mockup and prototype will be continued. Making a solution design is obtained from an analysis of user needs interviews. After the solution design has been completed, there is an evaluation about design solution the. Third, testing on Marketplace Learning Application Design is carried out using usability testing and UEQ (User Experience Questionnaire). In testing usability testing by measuring effectiveness, efficiency, and satisfaction. At the level of satisfaction of 7 3 %. While testing with a user experience questionnaire produces an application value that is below average. Judging from the pragmatic quality level with a mean level of 0.825, hedonic quality level with a mean level of 0.7 and overall the comparison to benchmarks is below average. The results of the test are carried out to improve the solution design so that the results are better.

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LEARNING MODEL OF FOOD PRODUCT ENTEPRENEURSHIP COURSE IN FOOD TECHNOLOGY PROGRAM

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Abstract

Technology Study Program, Universitas Terbuka provides food product entrepreneurship courses to support one of the learning outcomes of food graduates who have entrepreneurial abilities. In this course, students are expected to be able to develop food business ideas, practice to developed food-based products that are commercially viable, and arrange business feasibility proposals. The learning model for food product entrepreneurship courses uses online practice through elearning.ut.ac.id which is held for 2 months. There are 8 sessions in this online practice where in each session consists of initiation material, enrichment material, discussion with tutors, independent practice, quizzes, and 2 assignments for the 5th and 7th sessions. In first, students determine the food product business idea and practice of developing commercially viable food products. In the second task, students will make a business feasibility study proposal. In this assignment, activity business of student documented in the video. To obtain input related to the learning process, a survey was conducted using a questionnaire for all tutors. As many as 61.5% of tutors assessed that the material on e-learning, the learning process, discussion questions, and assignments was good. Total 69.2% Interaction between tutors and students is good. All tutors stated that there was a need for online guidance in the learning process with a frequency of 2-4 times. As many as 62% of tutors stated that there were at least 3 assignments in this course. The materials that need to be added in this course are the food product certification process (halal PIRT), business negotiation techniques, and business analysis.

Keywords: business, entrepreneurship, food, model, tutorial online.

1 INTRODUCTION

Entrepreneurship is a form of community creativity in dealing with day-to-day challenges. Entrepreneurship is a chance to combine innovation, opportunity, and knowledge application in business (Sutanto, 2020). There are several factors to consider when starting a business in the food industry, including quality, regulation, and marketing. Some foods and food products are perishable or perishable. Food is made of organic materials that can be harmed by physical, chemical, and biological factors (Kumar et al., 2017). Treatment is required during processing to extend the shelf life of the food product. Various techniques, including temperature, physical, and chemical treatments, can be used to extend the shelf life of a product. Quality includes visual aspects in addition to shelf life. product flavor and benefits (European Commission, 2022). To make a profit in business,

the food products sold must correspond to the tastes and price ranges desired by consumers. Entrepreneurs may encounter difficulty in marketing their products. The key to a successful product is effective marketing..

A good product can fail due to ineffective marketing. One of the contributing factors is a lack of knowledge about how to properly'market' the product. If a good product is not accompanied by appealing and persuasive 'advertising,' it will be difficult to attract buyers, causing obstacles in selling the product, resulting in a loss (Ryynänen & Hakatie, 2014). Advertising skills must be learned, especially in trades that focus on the virtual/digital world. Aesthetic food product photography techniques and digital marketing techniques can be learned. Regulation is another impediment to successful food entrepreneurs. A food product that will be circulated in Indonesia must follow the food regulations that have been made by the relevant authorities such as the Food and Drug Administration (BPOM, 2022). Many cases of food withdrawals by BPOM are due to the fact that many producers do not understand how legal distribution permits are for food products in Indonesia. Knowledge of how to trade food products in accordance with applicable regulations in Indonesia needs to be known.

One of the missions of the Food Technology Study Program (TP), Department of Agriculture, Faculty of Science and Technology, Open University (UT) is to disseminate the results of the study of food science and technology in educating the community. TP UT students have been equipped with the knowledge and skills to deal with the food industry in general. Entrepreneurship programs are also implemented in the curriculum to spur the entrepreneurial spirit of TP UT students. However, in practice and when applied in practice, specific constraints often arise when the student is involved in the industry. The Food Technology Study Program designed a course called Food Product Entrepreneurship (PANG4417) which focuses on food-based business development competencies. Business in the food sector has great potential, since ancient times until the end of time there will always be. Compared to other types of businesses that exist and then disappear due to changing times, the food-based industry continues to grow rapidly. The food industry in the last 10 years has continued to increase, various types of food are widely circulated and sold in the community and exceed human expectations in previous times. In addition, the position of the food industry such as food and beverage has long been recognized as a very important business sector in Indonesia. The various roles of the real food and beverage industry in the economy. Starting from the share in the formation of GDP, the ability to absorb labour and a significant share in the total export value.

Besides, the existence of the food and beverage industry itself is one of the alternative efforts to overcome poverty in Indonesia. Like other industries in Indonesia, the food and beverage industry consists of large, medium and small industries. The number of small and micro industries is relatively large. The growth of the food and beverage industry reached 9.23% in 2017, 7.91% in 2018, 8% in 2019 and 3%-4% in 2020 (Vidyatmoko, 2020)

Food product entrepreneurship courses are structured so that students can practice food product entrepreneurship. This 4-credit course discusses the entrepreneurial aspects of food products from the technical, technological, production, regulatory, human resources, marketing, financial aspects to the preparation of business feasibility proposals. In this course, students will practice commercial food product entrepreneurship, starting from exploring business ideas, determining target markets, designing food products, and marketing products, and at the end of this course, students will be asked to make a business feasibility presentation. The research aims to describe the implementation of the entrepreneurship practicum that has been carried out by the food technology study program and the feedback provided by the tutor in charge of this course.

2 METHODOLOGY

This research was conducted with a descriptive analysis of the implementation of entrepreneurial practices that have been carried out so far. Then to find out feedback related to learning, it is done by giving questionnaires to all tutors.

3 FINDINGS AND DISCUSSION

3.1 Learning model food product entrepreneurship course

The Food Product Entrepreneurship Practice (PANG4417) is structured so that students can carry out entrepreneurial activities in the food sector, starting from making food products to be sold, making business feasibility proposals, to implementing business activities. In this practice, it begins with exploring the potential and character of an entrepreneur in students. Students can learn the characters needed to become an entrepreneur. Continued with the process of exploring food-based business ideas. Here, students can express their business ideas in the form of a business model canvas. Students are also directed to start making food products to market trials. Students are also given knowledge about the aspects that need to be prepared to set up a business, starting from aspects of production, marketing, human resources, and finance as well as risk management. At the last stage, students can

prepare business feasibility proposals, make food product businesses, arrange communication and negotiations in selling food products. The Food Product Entrepreneurship course is designed with a practical approach so that it is not only theoretical but emphasizes the activities of making products and selling them systematically. The practice begins with a discussion of business idea design, implementation and evaluation of the business to the preparation of a business feasibility proposal addressed to potential investors. The learning of food product entrepreneurship courses is carried out through online practice or abbreviated as praton. with the following conditions: Praton is held in 8 sessions. There are 2 tasks in the 5th and 7th sessions. The total value comes from praton assignments where the weight value of Task 1 is 40% and Task 2 is 60%. The stages of the ongoing learning process will begin with the provision of the main material, then proceed with a discussion in the discussion forum, and close with independent practice at the end of the session stage.

3.2 Material

The materials given for this course at each meeting are:

• Introduction to Entrepreneurship

• 2nd Week Meeting: Food-Based Business Development

• 3rd Week Meeting: Strategy and Business Planning

• 4th Week Meeting: Production Planning

• 5th Week Meeting: Financial Planning

• Week 6 Meeting: Marketing and Sales Planning

• 7th Week Meeting: Business Feasibility Proposal Preparation

• Week 8 Meeting: Communication and Business Negotiations

The formulation of achievements in the learning process and the scope of the material provided from sessions 1-8 are described in table 1.

Table 1. Formulation of learning outcomes and material coverage

No	Learning outcome	Material
1.	Able to explain the concept of food product entrepreneurship and explain the success of business ventures	Learn the definition and concept of entrepreneurship, self-potential analysis and entrepreneurial character

2.	Able to develop potential ideas and design business stages for the food business that will be developed.	explain the design of food business development, determine potential food business ideas to be developed, and be able to explain the components of product attributes
3.	Able to explain strategic management and formulate strategies in the food business	Learn about strategic management, types of business planning, identification of the internal and external business environment in business, and formulating strategies in the food business. Then formulate strategy, implement strategy, evaluate strategy
4.	Able to plan production materials, production equipment needs and production processes.	Learn about the planning of production materials, production equipment and production processes as well as the functions and objectives of production planning, determining production locations, formulating production costs, planning production processes and controlling production
5	Able to explain the functions of financial management, budget planning in the food business and financing in the food business	Learn about the functions of financial management, budget planning in the food business and financing in the food business, making financial reports, preparing financial budgets and investing in the food business
6	Able to apply marketing strategies in the food business	Learn about the marketing function in the food business, the application of the marketing mix in the food business, the food industry market, marketing strategies and food product marketing research
7	Able to make business feasibility proposal	Learn about the function of a business feasibility proposal and the components in a business feasibility proposal as well as financial and non-financial aspects
8	Able to apply business communication, and negotiation in the food business	Learn about the form and function of business communication, business communication processes and negotiations in the food business

There are 2 tasks that must be done by students, namely task 1, practical task, 2 pieces consisting of: Task 1 in the form of a report on the manufacture of food products and Task 2 in the form of a business feasibility proposal. Some important discussion points in the assignment are described in table 2. There are 2 tasks that must be done by students, namely task 1, practical task, 2 pieces consisting of: Task 1 in the form of a report on the manufacture of food products and Task 2 in the form of a business feasibility proposal. Some important discussion points in the assignment are described in table 2. In this course, various potential food products have been produced (Figure 1).

No	Assignment	Material
1	Task 1	• Describe commercial food business opportunities • Selection of business ideas by weight • Outlining the developed business idea • Develop product attributes • Describe the stages of the business being carried out • Describe the stages of the production process • Describe the need for raw materials, auxiliary materials, and packaging used • Documenting the food products made • Describe market trials • Describe the obstacles faced
2	Task 2	Prepare a business feasibility proposal by taking into account several aspects • Product,Technological engineering, environment, competition, industry, business model, strategy, Marketing and Sales Strategy, Production/Operations, Management and HR, Intellectual Property, Regulatory/Environmental Issues, Risk Factors, Timing Considerations, Financial Projections, Capital Strategy, Documentation Final Recommendation
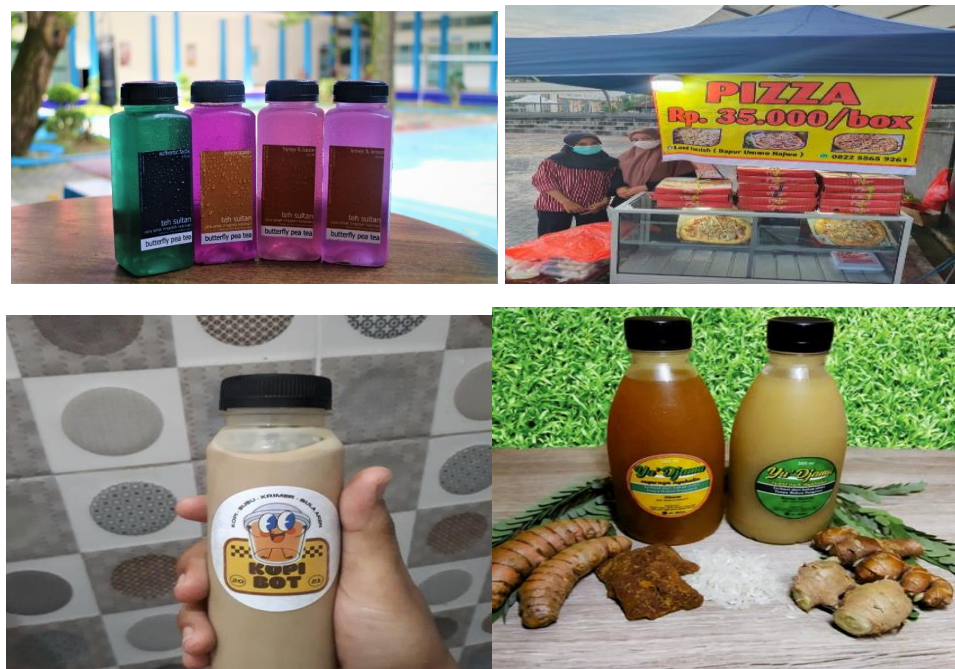
Figure 1. Food entrepreneurship products that have been developed

Based on the questionnaire distributed to all tutors, it was stated that As many as 61.5% of tutors assessed that the material on e-learning, the learning process, discussion questions, and assignments was good. Total 69.2% Interaction between tutors and students is good. All tutors stated that there was a need for online guidance in the learning process with a frequency of 2-4 times. As many as 62% of tutors stated that there were at least 3 assignments in this course. The materials that need to be added in this course are the food product certification process (halal PIRT), business negotiation techniques, and business analysis. Some of the tutor's inputs are that there should be 3 assignments, There is a gap during the discussion because not all students have discussions, Attendance, discussions may be given a value so that they are intense and creative, Webinar sessions need to be reactivated for student enrichment

4   CONCLUSION

As many as 61.5% of tutors assessed that the material on e-learning, the learning process, discussion questions, and assignments was good. Total 69.2% Interaction between tutors and students is good. All tutors stated that there was a need for online guidance in the learning process with a frequency of

2-4 times. As many as 62% of tutors stated that there were at least 3 assignments in this course. The materials that need to be added in this course are the food product certification process (halal PIRT), business negotiation techniques, and business analysis.

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DISRUPTION : MOBILE DIGITAL LIBRARY IN INDONESIA

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Abstract

In the disruptive era of the industrial revolution 4.0 as it is today, there are almost no difficulties in fulfilling information. Good information that is educational or information that is entertainment. Information also takes various forms, both in the form of writing to information in the form of videos that we can easily get. In this era of information dissemination, there are many things in life that must change in order to continue to exist and not be eroded by the times. Self-adjustment and capacity building need to be done so as not to be left behind and always be efficient. One of the professions that is engaged in the information sector and really needs to adapt to the conditions of this era of disruption is the librarian.

Technological disruption is defined by Millar, Lockett, Ladd (2017) in Mardiana (2018) as technology that can potentially create innovation disruptions in products, services or business processes at every level, such as industrial structure, industry segmentation and social systems (changes in social relations).

The presentation of this study was carried out in a descriptive narrative and qualitative in-depth in explaining the discussion of the study. Narrative-descriptive and qualitative styles try to construct reality, and understand the meaning that interprets its meaning so that it is necessary to pay attention to processes, events and authenticity (Somantri, 2005). Disruption and development of information technology today has affected libraries. This development can be seen from how technological disruption has made many applications, not only e-commerce, but also mobile libraries eventually emerge. In Indonesia, the application of mobile libraries is quite common, both in public libraries and university libraries.

Keywords : Disruption, Digital Library, M-Library

1   INTRODUCTION

In the era of digitalization as it is today, the development or dissemination of information is growing fast and rapidly.The development of digitalization has an impact on access to information that is so easy and fast. We can access this information through the devices we have. The information we need can be accessed from anywhere and anytime. Of course, with internet access that is connected via the smartphone that we have. Ease of access to information in this digital era, brings many social changes in life.

Along with the development of information technology, a globalization is created which is characterized by an explosion of information. The development of this information was preceded by the development of supporting tools or what we know as "Gadgets". There are many tools that we

can use and access through a network that makes the information spread so much and we receive it quickly. Ease of accessing information without being limited by distance, space, and time is one of the mainstays in today's era. Too easy and the amount of information circulating makes us have to be able to select, sort, and manage information that can really be accounted for and information that is only passing wind or temporary reading.

In the disruptive era of the industrial revolution 4.0 as it is today, there are almost no difficulties in fulfilling information. Good information that is educational or information that is entertainment. Information also takes various forms, both in the form of writing to information in the form of videos that we can easily get. In this era of information dissemination, there are many things in life that must change in order to continue to exist and not be eroded by the times. Self-adjustment and capacity building need to be done so as not to be left behind and always be efficient. One of the professions that is engaged in the information sector and really needs to adapt to the conditions of this era of disruption is the librarian.

Advances in science have resulted in increasingly sophisticated technology and brought about many changes. The development of information technology is growing rapidly day by day. This development has disrupted many aspects of human life, including the library. Ease of accessing and obtaining information is no longer limited by time and space. As a result, the library, which was once a source of information and knowledge, could be threatened with its existence if it does not make changes.

Whether we realize it or not, the phenomenon of disruption has brought extraordinary changes. These changes pose a number of increasingly complex challenges and new problems. Libraries are required to continue to strive in adopting digital technology to meet the information needs of users. If the library only survives with the conventional system, it is very likely that the library will be abandoned by users and this can affect the function of the library in the future.

The current challenge for libraries is how libraries can transform and make friends with technology so that users continue to take advantage of the services in the library. Today's people's lives are inseparable from mobile phones or smartphones, it can be seen that currently the number of mobile phone users is increasing from year to year. Based on a survey from Hootsuite and We Are Social, the total population of Indonesia currently reaches 274.9 million people. When there are 202.6 million internet users, it means that 73.7% of Indonesian citizens have been touched by surfing in cyberspace.

Figure 1: source https://andi.link/hootsuite-we-are-social-indonesian-digital-report-2021/
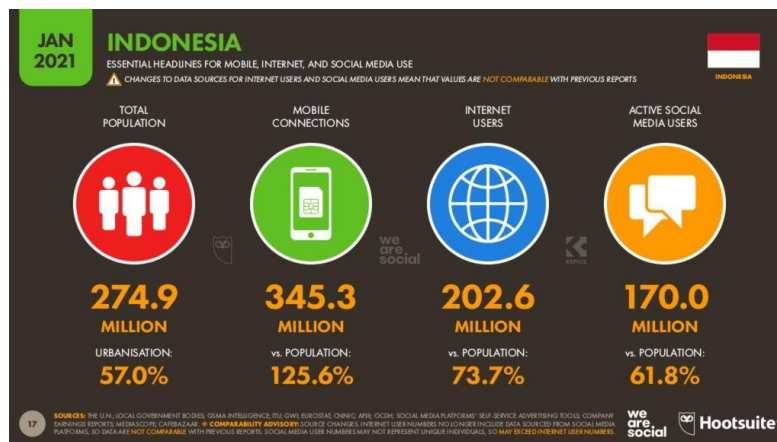
This makes Indonesia the fourth largest number of smartphone users in the world (Newzoo, 2020). We often encounter this phenomenon that someone can have more than one handphone depending on their needs. This phenomenon then gave rise to the idea of developing a library with a digital library approach. Mobile Library, also known as M-Library, is a platform that allows users to access all collections and services owned by the library with one click on their respective mobile phones. Based on this description, it is necessary to study more deeply about what Mobile Library actually is and how it is implemented in libraries.

2 METHODOLOGY

The presentation of this study was carried out in a descriptive narrative and qualitative in-depth in explaining the discussion of the study. Narrative-descriptive and qualitative styles try to construct reality, and understand the meaning that interprets its meaning so that it is necessary to pay attention to processes, events and authenticity (Somantri, 2005). The data analysis used in this study consists of data collection (collection/acquire data), data reduction/processing (process data), data analysis (analyze data) and data visualization (data visualization) supported by information technology personnel (information technology / IT personnel) and business personnel (business personnel) as shown in Figure 2 (Erl et al, 2015) below:
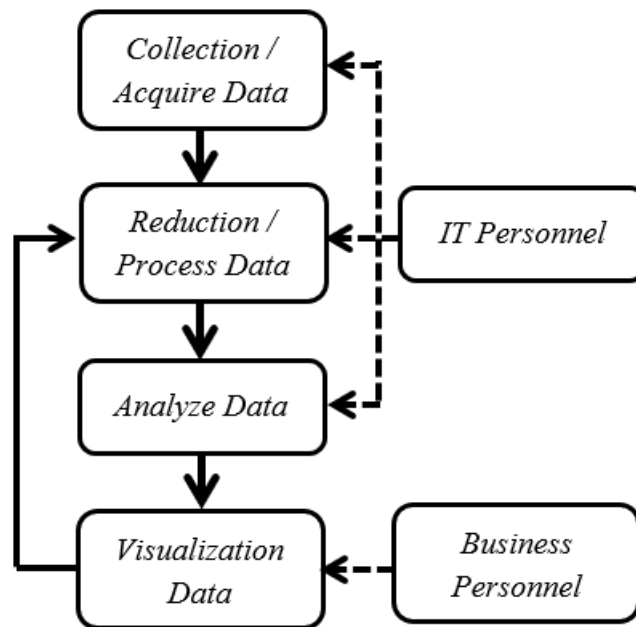
Figure 2 : Model Processing Flowchart

The method in writing is required as a preparation flow for searching, processing, and data analysis. Management principles are built from a valid data foundation and develop according to the concept pattern of model processing flow and data visualization (Figure 1.) Study of literature and other supporting references that are integrated as a basis descriptive and predictive data of scientific studies (Jennex, 2009; Wolfert et al, 2017).

3 FINDINGS AND DISCUSSION

3.1 Disruption

In language, disruption means disruption or chaos; disturbances or problems that interrupt an event, activity, or process (disturbance or problems which interrupt an event, activity, or process). The main reason for the disruption that can be seen from the changes that occur directly in the economic sector of the business, so that those who do not use this method will leave the ecosystem and as a result, business people who still use the old methods and systems will lose the competition.

The early history of the formation of the term industrial revolution 4.0 originated in Germany at the 2011 Hannover fair, the event included various robotic technologies, 3d printers, and other technologies. Industrial revolution definition 4.0 is very numerous and varied because many researchers use and develop the term industrial revolution 4.0. In essence, the term 4.0 is the speed of data access and the availability and ease of information integrated with the internet. The 4.0

industrial revolution as it is today or better known as the era of disruption is a challenge in itself, especially for the world of education, it is inseparable from distance higher education. In this era of disruption, a lot of technological sophistication will shift the existence of human resources (HR). Only human resources who master information technology and who are able to adapt to existing developments will be able to survive. In his book (Kasali, 2017: 34), states that disruption is the same as innovation which is directly proportional to the threat to the "incumbent". (Rogers, 2015) states that innovation is "an idea, practice, or object perceived as new by the individual." (an idea, practice, or thing that is considered/perceived as new by the individual).

The problems described above describe the era of disruption, but disruption is not solely influenced by technological advances. Not just online a library service or startup business. But it is also influenced by the financing model down to culture and even ideology (Kasali, 2017). Information services in the library are not only in print but also digitally. Even for distance higher education it is not only physical visits but also library visits in cyberspace or on the internet. In Kasali (2017) it is said that there are at least five characteristics of the era of disruption. First, there are cost savings in jobs that become simpler (simple). Second, there is an increase in product or service quality. Third, it has the potential to create new markets. Fourth, products or services become more accessible and accessible to users. Fifth, make everything smart, accurate and time-saving. However, it is not only the changes that have occurred in business and the economy, but the main changes from the emergence of disruption, namely since the presence of digital technology, which has changed the system globally. So that it can be said that all sectors have experienced disruption, including education. The development of digital technology is able to replace human work. Digital platforms are capable of transforming production, distribution and advertising in media

 Technological disruption is defined by Millar, Lockett, Ladd (2017) in Mardiana (2018) as technology that can potentially create innovation disruptions in products, services or business processes at every level, such as industrial structure, industry segmentation and social systems (changes in social relations).) In relation to changes caused by technological disruption, these changes result in the previous product, service or process becoming ineffective, for example a product is not created anymore (discontinuity), or technology is no longer used or provided

According to Priyanto (2018), disruption is a major change that produces efficiency and can cause problems, especially for those who are unproductive and unable to keep up with change. The impacts of this disruption include: (1) soaring prices for information sources; (2) the emergence of media

options for accessing information; (3) a shift in the use of conventional library resources; and (4) shifts in user needs.

One of the causes of disruption in libraries is due to the emergence of digital library technology developments. In the past, to look for references, articles, books or journals, you had to go to the library and/or bookstore. Now big data or mahadata serves everything. "Anything" information, various themes and topics, is available in eBooks, e-Journals, on SlideShare pages, SlidePlayer, academia.edu, as well as blog posts, "strewn" on various internet pages or websites and blogs.

Therefore Kargbo (2005) in Nasihuddin and Suryono (2018) said that the use of digital technology for library transformation must be followed by the enthusiasm of librarians in providing information services to the public. For example, librarians are required to be able to increase utilization, organize, preserve collections and disseminate knowledge, both local knowledge, community knowledge, and socio-economic knowledge.

3.2 Digital Library

According to Sismanto quoted by Subrata (2008) explains that a digital library is a system that has various services and information objects that support access to these information objects through digital devices. Digital libraries do not stand alone and their collections are not limited to electronic documents as a substitute for printed form, the scope of the collection extends to digital artifacts that cannot be replaced in printed form.

Susanto (2010) explains that a digital library or digital library is a library that has a large collection of library materials in digital format that is stored on a server computer, and can be placed locally, or in remote locations, but can be accessed quickly and easily through computer network.

Rodliyah (2012) explained that basically the notion of a library can be defined differently depending on each perception. There are those who focus on understanding access and retrieval of digital library contents where this perception comes from computer expert researchers. While other opinions that come from professional librarians place more emphasis on the aspects of collection, processing and digital library services. In Meaning, Achmad (2006) quoted by Saleh (2010) concluded that in a digital library there are several important elements that need attention, including:

    a. Digital libraries are organizations with a special purpose. In general, the goal of developing digital libraries is to collect, manage, store information or library materials in digital format.

    b. For collections served by digital libraries, namely digital collections.

c. Digital library accessible via network. This means that digital collections are placed in one place, which can then be accessed via a network, be it a LAN, WAN, intranet, or the Internet.

d. Digital libraries require staff with specialized skills. This is a necessity for librarians to have special expertise in addition to their previous expertise, especially in the IT field.

But unfortunately there are still many people who are confused about distinguishing digital libraries from bookless libraries. It should be noted that if these two things have differences, a digital library is not a bookless library. If a digital library is usually a development from a conventional library, which already has a good system then develops its digital system. Physically, digital libraries do not need to have a building or physical structure because everything is digitally systemized. Meanwhile, to build a bookless library, a building or physical building is needed. The collection is all electronic; nothing is printed, to access the collection, users need certain devices such as personal computers which are usually provided from the library or laptops.

3.3 Mobile Library Concept and Application (M-Library)

The term Mobile Library according to Fatmawati (2012) comes from the word mobile device, which is abbreviated M, which means cell phone and Library/Libraries, which means library. In this definition it is explained that the mobile library is the integration between mobile devices and libraries. The mobile device acts as a supporting tool in conveying information and helping users to reach certain services in the library.

In m-libraries.info (2011) cited by Nasution (2016) explains that the scope of M-Libraries is described as very broad, that is, any initiative that allows the use of mobile devices in the library can be included. Some of the scopes included in the concept of m-libraries include:

a. Accessing library contents or collections through mobile devices, for example access to e-books, e-journals, e-databases, and other special collections that allow mobile access.

b. Library text messages via SMS to answer questions or provide information to library users.

c. Build a "mobile interface" for the library website or library catalog

d. Using "QR codes" to connect electronic collections that can be accessed via mobile devices.

e. Library staff or librarians use mobile devices in the library to support questions around them

f. Build a mobile-based application (dedicated mobile app) to provide access to library collections or contents to users.

g. Utilization of "augmented reality" in the library by using a camera on a mobile device.

h. Using mobile devices to interact with activities in the library such as extending collection loans, checking service locations, ordering collections, performing tasks via mobile devices.

Talking about digital libraries, Fatmawati (2012) also explained that currently issues related to the m-library concept have emerged, namely where there has been a shift from traditional nomads to modern nomads. Modern nomads are people who move around but can study and work anytime and anywhere. So mobile technology has clearly influenced users so that they become modern nomads. According to Fatmawati (2012) in its application, there are 3 important points that are key in integrating the system via mobile, namely:

a. Integrating content with services (Integrating content with services)

b. Developing innovative applications (Developing innovative applications)

c. Ensure that the library is part of the institution's mobile strategy (Ensuring that the library is part of the institution's mobile strategy).

Figure 3 : M-Library from UGM
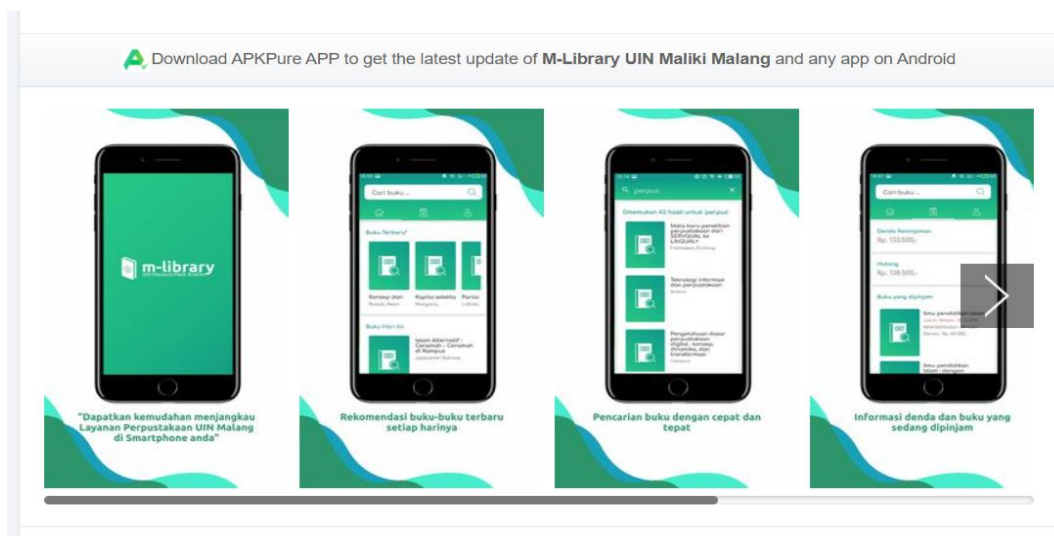
Figure 4 : M-Library from UIN Maliki Malang

As quoted in lib.unair.ac.id (2017) that in Indonesia itself there are already several Higher Education Libraries that have made mobile library applications including UGM, UI, UNSYIAH, DIY Regional Library and Archives Agency (BPAD) and many more. Following are some examples of m-library applications that have been implemented in several university libraries in Indonesia. Basically some of the core features that are usually found in mobile libraries include:

1. Log In
2. Member Registration
3. Circulation
4. Management of Members and Digital Collections
5. Log Out

4   CONCLUSION

Disruption and development of information technology today has affected libraries. This development can be seen from how technological disruption has made many applications, not only e-commerce, but also mobile libraries eventually emerge. In Indonesia, the application of mobile libraries is quite common, both in public libraries and university libraries. Some things that need to be considered in building and designing mobile libraries include applications that cannot be operated optimally. In this case librarians as HR in the library must understand from the start the concept of the mobile library, then make careful planning and finally be able to evaluate it. Even though this

mobile application has been realized, the next step that should not be skipped is promotion and routine maintenance that must be carried out. It is intended that this application can be widely known, then it can be used optimally by library users.

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THE CONCEPT OF E-LEARNING MANAGEMENT INFORMATION SYSTEM (SIM ELEARNING-UT) IN LEARNING AT UNIVERSITAS TERBUKA

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Abstract

In Universitas Terbuka e-learning, there is already a schedule for eight sessions for undergraduates and twelve sessions for postgraduates. So far, e-learning is complete regarding learning schedules, discussions, assignments, and webinars, but it is not integrated, and tutors don't know if they don't see e-learning. The research aims to develop the concept of Universitas Terbuka E-Learning Management Information System (SIMelearning-UT), so that the learning process is more orderly and effective to inform and integrate web- or mobile-based e-learning for tutors to quickly identify e-learning activities for students to be carried out. This study uses qualitative methods using primary data based on the author's experience in carrying out e-learning activities and secondary data based on literature and journal studies. This study uses a requirement analysis and design feature. The results of this study are SIMelearning-UT concept with the expectation e-learning activities can run smoothly because tutors quickly know the schedule and carry out activities via mobile and the web.

Keywords: integrated, e-learning activities, effective

1 INTRODUCTION

E-learning is the practice of providing knowledge and instructions to people through computer networks, typically the internet (Wang et al., 2010). Since the pandemic, distance learning using e-learning has become the best alternative in various learning activities at multiple levels of education (Alqahtani & Rajkhan, 2020). On the other hand, Universitas Terbuka (UT), as an open and distance university, have been running e-learning-based education for a long time and has become an example for other universities during the pandemic.

E-learning at the Universitas Terbuka (UT) consists of 8 sessions for undergraduates and 12 sessions for postgraduates. Monitoring e-learning for each session for undergraduate and postgraduate has a different approach. Monitoring of postgraduate e-learning programs by observing the implementation of web tutorials includes class and material management by tutors, interactions between tutors and students, student activity in web tutorial (tuweb) classes, mastery of learning media, giving tutorial assignments, ability to use tutorial web applications such as Microsoft Teams, as well as other supporting facilities.

During the tuweb monitoring, the monitor observed the implementation of the tuweb related to class management and mastery of tutor materials; giving tutorial assignments; interactions between

students and between tutors and students; knowledge of tutors in using learning media; the skill of tutors in the use of tuweb applications and student activity in meetings. Monitors also get various information through interviews with tutors to get impressions and messages, as well as including problems found in implementing the tuweb. This provides information on the implementation of the tuweb to UT as well as feedback to UPBJJ for the upcoming tuweb.

Universitas Terbuka e-learning tutors can administer up to four courses, including undergraduate or postgraduate. A large number of e-learning courses causes the need for e-learning learning management through an integrated information system and makes it easier for tutors. The form of e-learning management is viewing and providing value for discussions, assignments, tutoring, and monitoring student e-learning activities. Sometimes, tutors forget to open e-learning to assess discussions, formative questions, and student assignments. On the other hand, students do not carry out e-learning activities on time, so many incidents of missing student activity checks, especially asynchronous activities.

Besides assessing e-learning asynchronously, tutors should also monitor webinars in graduate and undergraduate programs. From e-learning and webinar monitoring, it is necessary to develop an application that combines the two applications so that tutors can remember the activities of the e-learning session and monitor activity updates. System application development can mean compiling a new system to replace the old system or improving an existing one (Nur, 2019). The compiled application unites or synergizes and is a reminder for tutors to manage e-learning.

This study conducted a literature review of three studies related to e-learning at Universitas Terbuka. According to research by Rahmat et al. (2019), information, system, and service quality positively and significantly influenced user satisfaction. UT has implemented comprehensive e-learning with high success rates. This success was from the technical aspects of system quality and service quality. Effectively, this success came from system usage, user satisfaction, and net results. Research conducted by Suhardi & Hariawan (2020) regarding the use of e-learning in universities shows: (1) The Open University has long been known for distance learning, and the e-learning platform makes the Open University very able to adapt to changes, both when dealing with the future or the covid-19 pandemic; (2) the e-learning evaluation process involves the Universitas Terbuka academic team during the lecture process by becoming a guest account and monitoring to ensure the lecture process has been carried out correctly; (3) some students have not taken full advantage of e-learning because

the network access in their area is not well connected to the internet, and some students use low-spec gadgets; (4) Constraints are accessing a slow network because the LMS server is congested. Research conducted by Zuhairi et al. (2019) about Supporting students to succeed in open and distance learning at the Open University of Sri Lanka (OUSL) and the Universitas Terbuka (UT) Indonesia. Success in distance learning is one major challenge for open universities to respond to the expectations of students and stakeholders. The study is expected to improve our understanding of student support in distance learning, in which analysis is based on good practices, challenges, and room for improvement of both OUSL and UT.

The three studies above discussed the impact of e-learning on the distance learning process and opportunities to improve e-learning. This study will discuss improvements in how tutors manage and monitor e-learning. This research is expected to analyze and crate features to facilitate tutors to manage e-learning with SIMelearning-UT.

2   METHODOLOGY

The research method used is descriptive and qualitative with a case study method. Sugiyono (2017) explains that qualitative research is descriptive because the data is in words or pictures and does not emphasize numbers. Based on the opinion of Yin (2012), the case study is a suitable method if the main question of the research relates to how and why. In addition, case studies are also used if the researcher has only a few opportunities to control the events to be investigated and if the research focuses on contemporary phenomena in real-life contexts (Noviyanti & Djunaedi, 2021).

The study of primary data through data collection techniques with observations and interviews with e-learning tutors was supported by the study of secondary data through literature studies. The data obtained are then used in system development with requirements analysis and feature design. The phenomenon to be studied is the problem of e-learning management and tutor monitoring. Problem phenomena will be described systematically, factually, and accurately.

3   FINDINGS AND DISCUSSION

3.1   Requirement Analysis

E-Learning at UT is divided into two types: online tutorials (tuton), which are carried out asynchronously, and web tutorials (tuweb), which are carried out synchronously by utilizing third-party applications such as Zoom, Microsoft Teams, or Google Meet.

Postgraduate e-learning consisting of 12 sessions with each session starting from: An introductory session containing greetings, introduction forums, tutorial activity designs and tutorial activity units; Session 1 consists of an introduction forum, session 1 attendance, material and discussion 1; Session 2 which consists of channeling forums, materials and discussions 2; Session 3 which consists of an introduction forum, the material includes practice questions 3, Tuweb 1 activities which consist of attendance, discussion and Tuweb links; Session 4 consisted of introductions, attendance, material and practice questions 4, discussion 4 and assignment 1; Session 5 consisted of introductions of tutors greeting and explanation of material, attendance, material and practice questions 5 and discussion 5; Session 6 which consisted of the tutor greeting and briefly explaining about the material, materials and exercises for Question 6, Tuweb 2 activities, namely the presence of Tuweb 2, discussion 6 and Tuweb links; Session 7 consisted of the tutor greeting and briefly explaining the material, material and practice questions 7, discussion 7 and task 2; Session 8 consisted of the tutor greeting and briefly explaining the material, attendance, material with 8 practice questions, and 8 forum discussions; Session 9 which consists of the introduction of the tutor and a brief explanation of the material, attendance, materials and practice questions for the 9th, Tuweb 3 which consists of attendance, discussion 9 and link to the Tuweb meeting; Session 10 which consists of introduction of the tutor and a brief explanation of the material, 10 practice materials and questions, 10 discussions and 3 assignments; Session 11 which consists of introduction of the tutor and a brief explanation of the material, attendance, material and practice questions 11, forum discussion 11; Session 12 consisted of introduction of tutors and brief explanation of attendance, materials and practice questions 12, tutor evaluation questionnaire, Tuweb 4 activities consisting of attendance, discussion 12 and link to Tuweb meetings.

E-Learning for undergraduate programs which is less than postgraduate only consists of 8 sessions, namely: An introductory session consisting of an introduction forum and publication system for students; Session 1 consisted of the introduction of the tutor and a brief explanation of the material, attendance, initiation material, enrichment material, discussion 1 and formative test 1; Session 2 which consists of an introduction forum, audience, initiation material, enrichment material, discussion 2 and formative test 2; Session 3 which consists of a tutor introduction forum and a brief explanation of the material, attendance, initiation material, enrichment material, discussion 3, task 1 and formative test 3; Session 4 consists of introduction, attendance, initiation material, enrichment

material, discussion 4 and formative test 4; Session 5 consisted of introductions of tutors greeting and explanation of material, attendance, initiation material, enrichment material, discussion 5, task 2 and formative test 5; Session 6 which consists of the tutor greeting and briefly explaining the material, initiation material, enrichment material, discussion 6 and formative test 6; Session 7 consisted of the tutor greeting and briefly explaining the material, a Tutot evaluation questionnaire for initiation material, enrichment material, discussion 7, assignment 3 and formative test 7; Session 8 consisted of the tutor greeting and briefly explaining the material, attendance, initiation material, enrichment material, discussion 8 and formative test 8. This semester, specifically for the course of scientific work (karil), UT conducted tuweb four times out of eight sessions. The recapitulation of e-learning activities for postgraduate and undergraduate programs is described in table 1.

Table 1. Recapitulation of UT e-learning activities

Program	Discussion	Assignment	Tuweb	Formative Test
Undergraduate & Diploma	Session 1-8	Session 3,5,7	Session 2,4,6,8 (karil)	Session 1-8
Postgraduate	Session 1-12	Session 3,5,7,8	Session 3,6,9,12	Session 1-12

In general, e-learning command arrangements already exist in each course consisting of an e-learning system, namely dashboard, home site, current, turn editing, course management, and administration, which consists of course administration to manage tutorial activities. The current e-learning and course management menus are presented in Figures 1 and 2.
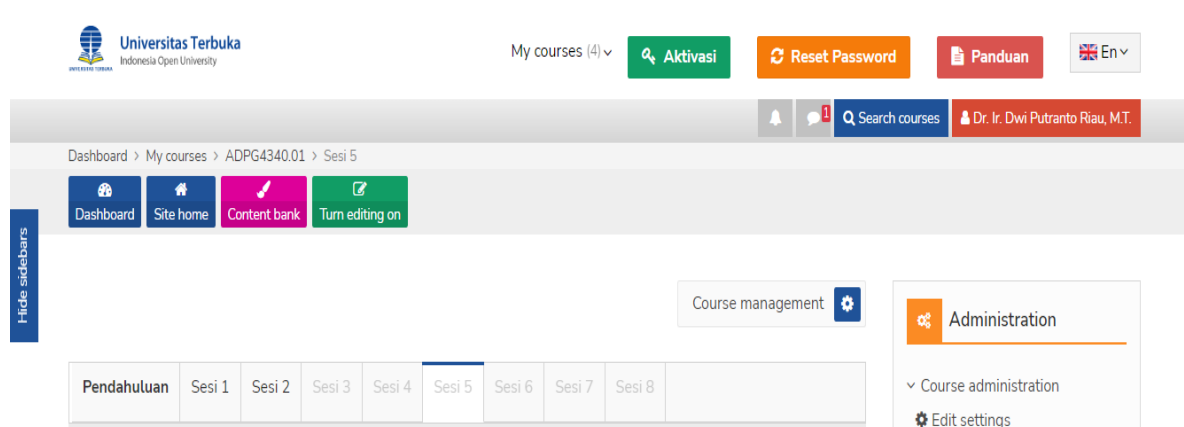
Figure 1. UT e-learning menu
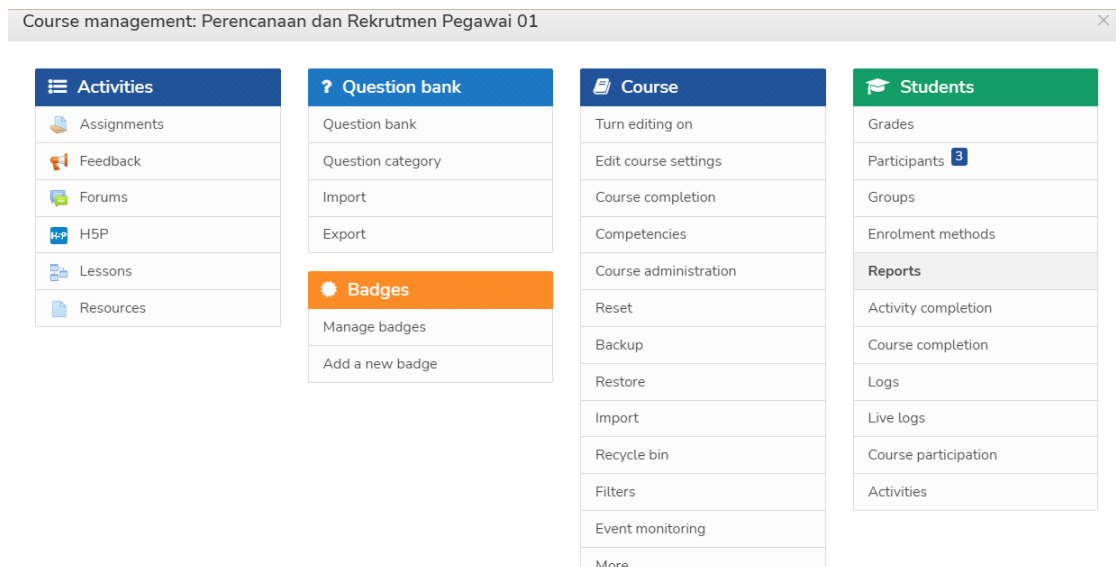
Figure 2. Course Management Menu

E-Learning for lecturers who work as online tutorial tutors or dual tutors (tuton and tuweb) is given a maximum of four courses for each undergraduate, diploma, and postgraduate level. Lecturers are also tasked with monitoring the implementation of tutorials for a course in postgraduate and undergraduate programs at UPPBJ throughout Indonesia.

3.2 SIMelearning-UT features based on requirement

The implementation of tutors and monitoring requires a management information system for lecturers so that the implementation can be remembered and clicked on a system to be directly connected to the UT e-learning and monitoring system. The management information system concepts that can be proposed in table 2 are as follows:

1. The UT E-Learning Management Information System (SIMelearning-UT) integrates UT e-learning and tuton monitoring in undergraduate/diploma, postgraduate, or combined tuton monitoring programs.

2. The menus in the SIMelearning-UT program are the four courses in the e-learning for each tutor and the tutor monitoring course.

3. There is a reminder menu for tutors who have not done assessments in discussion sessions, assignments, or formative tests.

4. *The e-learning and monitoring system will include a list of course tables containing attendance, discussion of assignments and tutor tutors that have not been filled in, and reminders for tutors to do.*

Table 2. List of proposed e-learning and monitoring features for each course

Program	Student Attendance	Discussion	Formative Test	Tasks	Tuweb	Monitoring
Undergraduate - ADPU4338 - etc	√	√	√	√	√ (karil)	√
Postgraduate - MAPO5303 - etc	√	√	√	√	√	√

A more detailed description of SIMelearning-UT activities is in table 2, and use case in Figure 3. Use case describe activities and information that tutors can do on SIMelearning-UT. Tutor pada SIMelearning-UT mendapatkan informasi hasil rekapitulasi aktivitas tiap mahasiswa di e-learning. SIMelearning-UT features include: view student attendance report, view student discussion activity, view student test result, view student assignment report, view student tuweb activity, and monitoring resume activity. These features are expected to increase the awareness and effectiveness of tutors in running synchronous and asynchronous tutorials.
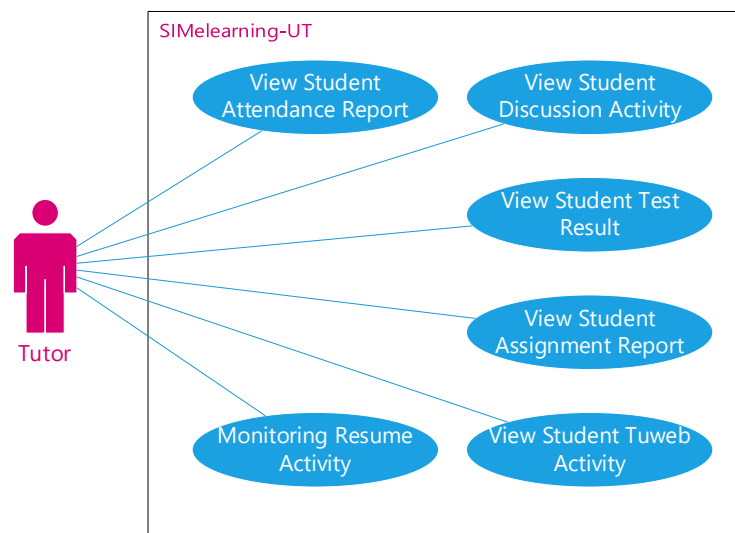
Figure 3. Use case SIMelearning-UT

4   CONCLUSION

SIMelearning-UT is designed to assist tutors in checking and reminding absent students, discussions, formative tests, assignments, tutoring, and monitoring schedules. The concept of SIMelearning-UT use case describes activities and information tutors can do: view student attendance reports, view student discussion activity, view student test results, view student assignment reports, view student

tuweb activity, and monitor resume activity. These features are expected to increase the awareness and effectiveness of tutors in running tuton and tuweb for undergraduate and postgraduate in UT.

ACKNOWLEDGEMENTS

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IMPLEMENTING THE THEORY BUSINESS RECORD IN DISTANCE LEARNING IN THE BUSINESS PROCESS OF THE BALQIS TRAVEL GROUP

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Abstract

Universitas Terbuka is a Distance Open University (PTTJJ) with the concept of independent learning. Students are required to be independent in the entire learning process, but the university still provides mentoring facilities according to student needs. For example, students can take use of the module/RBV. One of the students succeeded in applying the theory in the RBV ASIP4314 Business Records. The theory is implemented in the business process of the Balqis Travel Group. The Balqis Travel Group is a realization of the local business that needs to be developed in order to be competitive. The research design used to experiment with qualitative methods. Students are asked to apply the theory of Business Records that are adapted to the needs and the latest technological developments. The results showed that there was a real change before and after the implementation of the experiment. The Balqis Travel Group archives are more organized, accessed in real-time, quick to retrieve, attractive appearance, varied content, integrated promotions.

Keywords: Business recod, distance learning, balqis travel group

1   INTRODUCTION

The Open University is a Long Distance Open College (PTTJJ) with the concept of independent learning. Students are required to be independent in the entire learning process. As a higher education institution, UT is responsible for educating students so that competence increases both soft skills and hard skills. So that students have the readiness to open new jobs, elaborate knowledge, experiences, and student interests while studying at UT. One of the courses that discuss business archives is ASIP4314. This course discusses business records management in government and private organizations. Management of Business Records includes Corporate archives, types, and formats, as well as the application of archival theory and record administration in an organizational context. So that through the Business Records course, students are expected to be able to understand and be able to apply archival theory and Archive Administration or Records in the context of organizations both government and private institutions.

The role of business archive courses as a foundation of student knowledge is very important, they learn how to search literature, and manage business records or archives, and some of the core courses of the study program in supporting entrepreneurial success. In general, archives and records cannot be said to be just a by-product of the company's activities in achieving its goals. As we all know that

today's business activities are increasingly complex and the level of regulation (regulation) in our society is also increasing. This causes the number of records that must be arranged and organized within the company to grow exponentially which causes the complexity of the requirements for the record-keeping system. With increased activities within the company, automatically the creation and receipt of transaction documents will increase, which is an indication that the records created, received, and collected are also increasing, so they need better storage and management. Collected records and archives can be said to be the center of corporate memory (corporate memory).

A good system will support efficiency and accountability through the creation, management, and retention of appropriate, reliable, accessible, and durable evidence of the implementation of company activities. Every organization or institution, both government and private, or individuals will create archives. Because archives are recorded information that is created (intentionally created), collected, and maintained in the context of carrying out organizational operational activities. Most government and private organizations have different systems to monitor or control their archives.

Then with the development of the organization, people pay more attention to and feel how important an archive is, not only to support legal activities and responsibilities but also to start how to manage it efficiently for the benefit of the company's activities in the future. Finally, archives are mission-critical business resources. Archives need to be managed because they are an added value to the business, organizational assets, and both government and private institutions, not just accountability. Of course, as a foundation for managing business records as a result of organizational activity transactions. Another understanding is said that archives are carriers, products, and documentation of business transactions (business transactions).

Along with the development of the internet, many online systems have been built, which allow anyone to access it from anywhere and get the latest information. One service business that prioritizes service is the travel agent business, which requires accurate and fast information technology assistance. People's travel needs, which previously only needed transportation tickets such as airplanes and trains, are starting to develop into hotel bookings, car rental services, and holiday packages, to support all types of payments.

LITERATURE REVIEW

As in the journal written by Roger Dow, a president and CEO of the United States travel association, entitled "Travel Effect: A Call to Lead, a Means to Do So" there are at least 6 things that make traveling necessary and have many benefits. , namely: relieving stress, reducing the risk of disease, building and strengthening bonds of brotherhood, eternal learning, adding insight, and building a soul of leadership within. Balqis Travel Group is here as a form of business realization in responding to challenges and business opportunities that are so wide open where we are here to take part in fulfilling the demands of the wider community in traveling and not only selling tickets but also the concept of travel and facilities and all payments. This gives the sense that business records are recorded information in any form that is created in carrying out activities. Business archives have limited properties and cannot be accessed by other companies because they are still active archives.

From this, it can be seen that travel companies must also have archives as a historical source for the formation of a company. This understanding can be developed in the context of the company and is called a corporate record. Corporate records: records are produced and retained by a business in the process of acting as a corporation, as a self-regulating body in its administration, organizations, and operations as a legal business. So that further if it is noticed that the archive is the center of corporate memory (corporate memory), because the archive provides evidence of activities and decision materials as well as elements needed in accountability.

In addition, archives also support policy formation and decision-making, protect company interests, and the rights of employees, customers, and citizens, and help companies to conduct their business and deliver their services consistently and fairly. The travel agent business also requires an Android application and an autopilot website. Times have changed, and the way of doing business has also changed. With an autopilot website, online reservations and correspondence are now very possible using computer and internet facilities. So that the transactions created are correspondence, invoices, and receipts, in electronic form. This causes the company to carry out activities in handling business records created as a result of activity transactions. An autopilot website where consumers can make bookings and issues directly on the website without the help of operators and we can also make prices cheaper than other websites. The travel website will work 24 hours, from morning to morning. All reservations that occur on the website run automatically thanks to this autopilot website.

Recorded information created, stored, and maintained by an organization in the course of carrying out its business activities. Managing business records and archives requires a system that is by the

needs and standard principles to achieve efficiency and economy. The type of records created in an organization will depend heavily on its substantive and facilitative functions, vision, mission, goals, and corporate context. TR. Schellenberg explains activities that carry out substantive functions, it will be evident that the records created are different from one to another. This means that each organization will produce different types of records. While the types of records that are facilitative, at least almost all companies create and collect them, such as archives related to laws or regulations, public relations, marketing, personnel, finance, and production.

2 METHODOLOGY

The Open University is a Long Distance Open College (PTTJJ) with the concept of independent learning, students are required to be independent in the entire learning process. One of the students successfully applied this theory in RBV ASIP4314 Business Archives. The theory is implemented in Balqis Travel Group's business processes. Balqis Travel Group is a local business realization that needs to be developed to be competitive. The research design used is an experiment with qualitative methods. Theory of Business Archives adapted to the needs and latest technological developments.

3 FINDINGS AND DISCUSSION

Law No. 8 of 1997 is an organizational document for both the government and private institutions consisting of records, bookkeeping evidence, and financial administrative support, which is evidence of the existence of rights and obligations as well as the business activities of a company. The results showed that there were real changes before and after the experiment was carried out. Correspondence, real-time transactions, and Balqis Travel Group's social media accounts have become more organized and have become an attraction for customers. Every transaction has promos, cashback, and lower prices. The advantages of being able to exchange credit for money, Umrah packages, and the most complete transactions throughout Indonesia. Deposits can use rupiah, ringgit, Singapore dollars, USD dollars, and Hong Kong dollars.

Balqis Travel Group already has a business establishment law that is a profitable business or a business that can also be classified as a private organization, business activities will provide an overview of document transactions and users and stakeholders (shareholders) handled and served in the company concerned. Then, Balqis Travel Group has been integrated with the autopilot website and android application. An autopilot website where consumers can make bookings and issues

directly on the website without the help of operators and the Balqis Travel Group can also make prices cheaper than other websites. The travel website will work 24 hours, from morning to morning. All reservations that occur on the website run automatically. Record formats are divided into paper and non-paper. Paper can be both loose and bound. Meanwhile, the current non-paper record formats are very varied and numerous. We can view and search for documents that are owned both at home and at work. Because it has weak physical characteristics, the storage and handling of this type of archive must be careful and careful. Business records have limited access for both government and private organizations.

Therefore, the company's internal policies must be made to comply with the provisions. For the company to develop its activities, product marketing is needed through advertising and offering conveniences that can be utilized by clients.

Image 1
Risk-Based Business Licensing

Image 2

Balqis Travel Group website *http://balqistravelgroup.com*
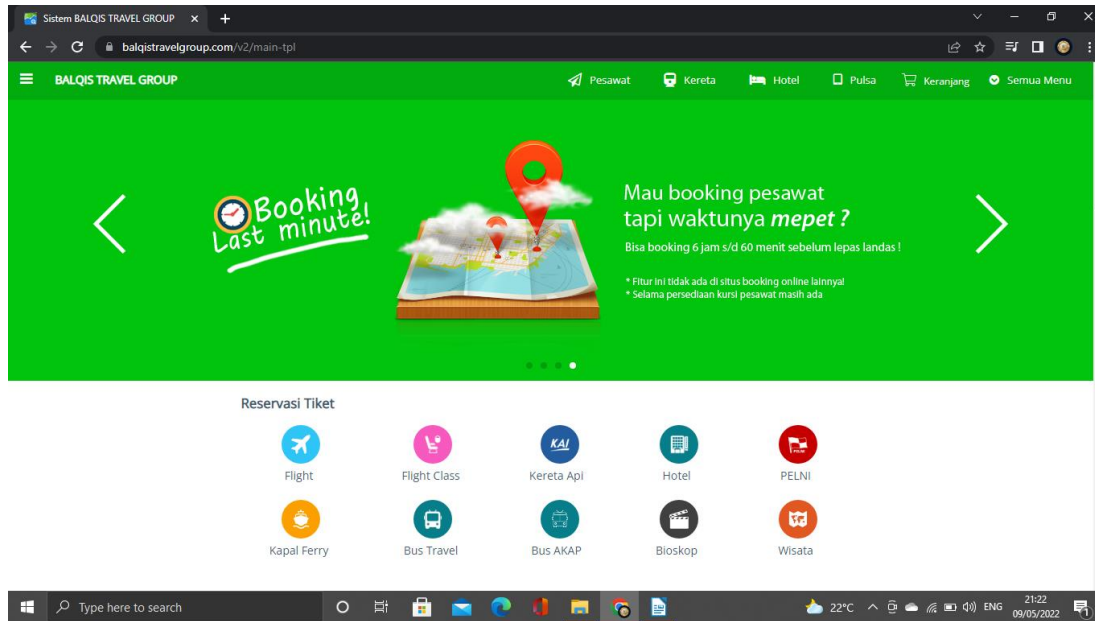
Image 3

Balqis Travel Group Android Application *http://bit.ly/BalqisTravelGroup*
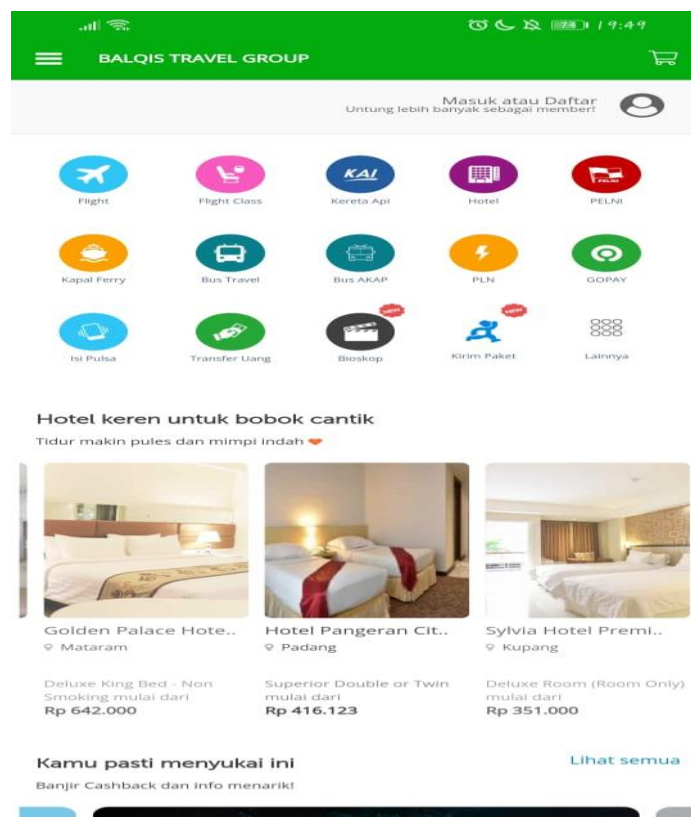
Image 4

Instagram account *https://instagram.com/balqistravelgroup?igshid=YmMyMTA2M2Y=*

Twitter account *https://twitter.com/balqistravelgrp?t=99-uVkrlHxfrtZuYko50Bg&s=09*

Image 5

Banners

4   CONCLUSION

The Open University is a Long Distance Open College (PTTJJ) with the concept of independent learning. Students are required to be independent in the entire learning process. As a higher education

institution, UT is responsible for educating students so that competence increases both soft skills and hard skills. So that students have the readiness to open new jobs, elaborate knowledge, experiences, and student interests while studying at UT. One of the students successfully applied this theory in RBV ASIP4314 Business Archives. The theory is implemented in Balqis Travel Group's business processes. Balqis Travel Group is a local business realization that needs to be developed to be competitive. In general, archives and records cannot be said to be just a by-product of the company's activities in achieving its goals.

Therefore, the internal policies of both government and private organizations must be made to comply with the provisions. The results showed that there were real changes before and after the experiment was carried out. Correspondence, real-time transactions, and Balqis Travel Group's social media accounts have become more organized and have become an attraction for customers. Every transaction has promos, cashback, and lower prices. The advantages of being able to exchange credit for money, Umrah packages, and the most complete transactions throughout Indonesia. Deposits can use rupiah, ringgit, Singapore dollars, USD dollars, and Hong Kong dollars. Balqis Travel Group already has a business establishment law that is a profitable business or a business that can also be classified as a private organization.

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WHAT MAKES A DIFFERENCES STUDENT ACADEMIC RESILIENCE IN OPEN AND DISTANCE LEARNING?

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[1, 2, 3]*Universitas Terbuka (INDONESIA)*

Abstract

This study aims to analyze the academic resilience of students with open and distance learning systems. Implementing open and distance learning is not without obstacles, students who choose this learning model must have the ability to manage their learning both individually and in groups. Students are required to be able to manage their learning independently, starting by determining learning schedules, and solving learning problems that may be encountered in the process of completing their studies. Preliminary studies conducted by the authors show that the number of non-active students at the Indonesia Open University reaches more than 50%. Non-active students are those who temporarily stop their lectures. Students choose not to continue their studies for a while due to several things, including; (1) economic constraints, (2) time constraints, and (3) personal constraints (demotivation). This research is an exploratory research design that will reveal the academic toughness of students based on the type of service, joining study group, student motivation, cumulative grade point average, and duration of the study. Quantitative data was obtained using the academic resilience scale created by Benishek, et al (2004) and modified according to the research context, then distributed online to 705 Indonesia Open University students. Differences in students' academic resilience using open and distance learning methods occur based on their affinity with the study group (Sig 0.001), age (Sig 0.031), and the purpose of enrolling in college (Sig 0.038). Other aspects measured in this study, namely the type of service, last education, last GPA, and semesters taken did not show significant differences. Students who join study groups have higher resilience than those who do not join. Students who join study groups have social support in the form of fellow students who can discuss the same problems. The study group can also act as intermediaries between students and universities, considering that the location of students is far from the university representative offices in the province. Student age is also a differentiator of academic resilience possessed by students with open and distance learning. Younger students have higher academic resilience. This is due to their ability to control when facing learning problems considering that in the last 3 years almost all learning modes have been carried out online. The last thing that distinguishes the academic strength of students who take open and distance learning is the initial goal when studying. The student's motivation that have the highest to the lowest average are motivating the families, adding knowledge, getting a degree, career promoting, and killing the time.

Keywords: academic resilience, open and distance learning

1 INTRODUCTION

Academic resilience has long been an issue in education. A student starts the lecture process with a goal, but along the way, students need toughness to complete their studies. Academic resilience is the dynamic ability of students to succeed in studies despite experiencing many disturbances or pressures and problems (Sembiring, M., et al, 2021).

Indonesian Open University is the first State University to implement an open and distance learning system. The open learning system means that UT does not impose restrictions on age, year of diploma, study period, registration time, and frequency of taking exams (Tim, 2019). The term distance means that learning does not have to be done face-to-face, but uses media, both print media

(modules) and non-prints (audio/video, computer/internet, radio broadcasts, and television) (Tim, 2019). The learning system implemented by UT opens the widest opportunity for the nation's children to be able to receive higher education, both people who have difficulty accessing educational facilities and people who have limited time to attend lectures on a regular basis.

Learning at UT applies an independent learning model, where students are required to be able to manage learning activities independently or without intensive guidance from lecturers. Independent learning can be done individually or in groups, both in study groups and in tutorial groups (Tim, 2019). To support student learning success, UT provides students with the option of being able to take online, offline, or blended study assistance (a combination of online and offline).

Students who have registered as new students at UT will be given the opportunity to choose the desired study assistance, namely online tutorials (tuton) and face-to-face tutorials (TTM). Online tutorials (tutons) are a type of fully online learning aid. Students who choose tuton will conduct online learning in virtual classrooms, starting from the provision of materials, discussions, assignments, and exams. Face-to-face Tutorial (TTM) is a learning aid in the form of face-to-face learning classes that will be guided by a tutor. As with ordinary lecture classes, TTM can be a place for discussion between fellow students in aspects related to teaching materials or others. The implementation of the TTM is handled by the local UPBJJ-UT assisted by the managers of study groups (pokjar) spread across cities/districts.

Implementing distance learning is not without obstacles, students who choose the independent learning model must have the ability to manage their learning both individually and in groups. Preliminary studies conducted by the author show that there are several obstacles in completing lectures with the independent learning model, including (1) being less able to understand lecture material with online tutorial methods, (2) Difficulties in the learning process that cause students to experience demotivation. The Open University called registered students who did not continue the lecture process for various reasons as sleeping students. The percentage of non-active students at the Open University is 45%. This high enough number illustrates that there are unresolved obstacles in the learning process. In the research of Sheard and Golby (2007), it is stated that academic success is influenced by internal factors and external factors. Internal factors include academic self-efficacy, setting educational goals, learning motivation, academic toughness, etc.

Resilience is a combination of an attitude of life consisting of courage and motivation to do something difficult or go through adversity, strategic work to turn stressful situations from potential disasters into growth opportunities (Maddi 2006). Resilience is a set of beliefs held by a person regarding himself and his interactions with his environment, emphasizing the importance of involvement rather than isolation, control over powerlessness, and challenge rather than a threat. Research has shown that hardiness is one of the factors influencing effective coping leading to good health and improved performance (Maddi 2005). Resilience has been conceptualized as consisting of three attitudes, namely commitment, control, and challenge. If someone is strong in commitment, they believe in staying involved with the events and people around them, no matter how stressful they are. For them, it was a waste of time to retreat into seclusion and isolation. If someone is strongly in control, they want to continue to influence the outcomes that are happening around them, no matter how difficult. According to them, it is a mistake to allow themselves to slip into helplessness and passivity. If they are strong in challenges, they see pressure as part of normal life and opportunities to learn, develop, and grow in wisdom (Maddi 2005, 2006). Toughness is the stage to survive under pressure (Maddi, 2006).

A tough person always tries to finish what he has started, no matter how difficult the path he has to go through. In the higher education environment, the toughness of learning is proven by the consistency of students in the lecture process until they finally get graduation. Non-active students at the Open University consist of students who do not register for their courses in the current semester (on leave) and students who no longer continue their studies at the Open University. The number is quite large, it is interesting to study how the level of academic toughness of students with open and distance learning and what factors cause it.

Much research on academic resilience has been carried out in higher education settings. One of them was carried out by Jannah, et al (2021) at Syiah Kuala University (USK). Jannah, et al (2021) examined academic toughness in bidikmisi program students at USK and it was found that academic toughness in bidikmisi students was at a moderate level. Another research was conducted by Wardani (2020) at Maranatha Christian University (UKM). The research subjects were 237 new students, and the research aimed to create a model of the relationship between transformational coping, social support, and psychological well-being. Wardani (2020) states that the variables in his research are

related, but academic toughness in the context of psychological well-being can be studied separately without involving the direct outcomes, namely transformational coping and social support.

Research on academic resilience in open and distance learning settings has not been discovered by the authors. Therefore, this research is new academic resilience research with open and distance learning settings, where there are different characteristics in it.

2   METHODOLOGY

2.1. Research Design, Site, and Participant

The research design is exploratory research using a quantitative method approach involving 705 Open University students from various study programs and types of services. Respondent data in this study are as follows.

2.2. Data Collection

Quantitative data was collected through online questionnaires which were distributed via messages to student communication groups. The questionnaire used in this research is the academic toughness questionnaire (Benishek, et al, 2005) with 3 aspects namely commitment, control, and challenge. The total number of questions in the questionnaire is 35 items, but after testing the validity and reliability of the measuring instrument, 2 items are invalid (question number 7 "I experience severe disappointment every time I fail in one semester" and number 13 "When I get a bad grade, I told my closest friends") so that a total of 33 questions were used as the database for further data processing.

2.3. Data Analysis

The collecting data was analyzed using SPSS by conducting different tests on affiliation with study groups, service status, age, final education, GPA, course goals, and time taken to study.

3   FINDINGS AND DISCUSSION

This study aims to analyze what factors cause academic differences in students with open and distance learning systems. In the following, the research data is presented.
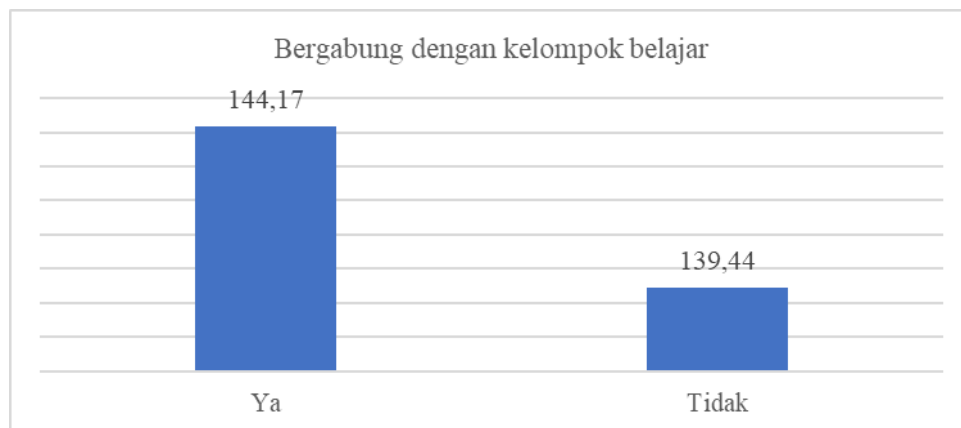
Figure 1. The level of student academic resilience based on joining the study group

Figure 1 shows the average value of academic toughness of students who join working groups of 144.16 (number of respondents 572) and those who do not join working groups 139.44 (number of respondents 133). After the different tests, it was found that there was a difference in academic toughness between these two groups of students (Sig 0.001).
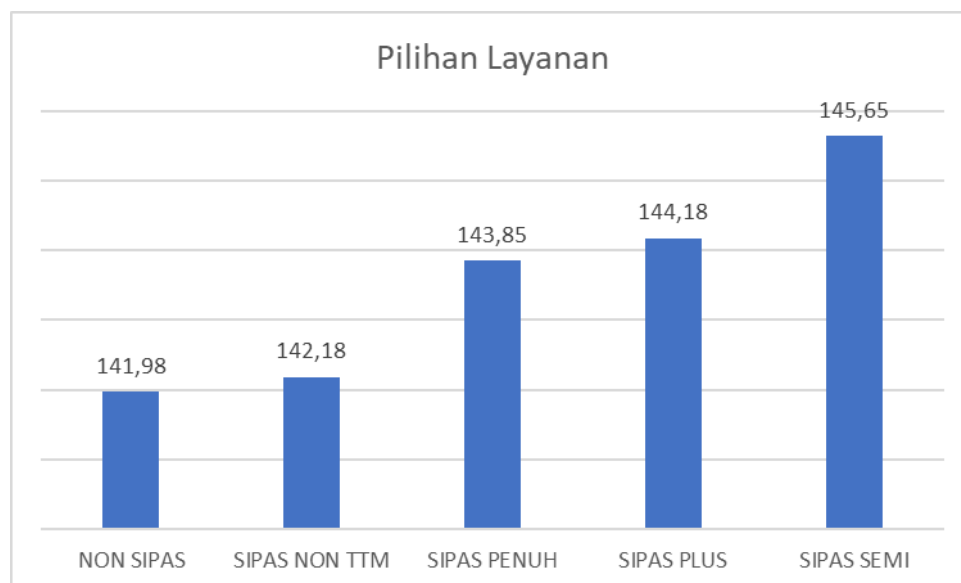
Figure 2. The level of student academic resilience based on course package

Figure 2 shows the average value of student academic toughness with various choices of learning services. Students who chose non-SIPAS services had an average academic toughness of 141.98 (220 respondents), non-TTM SIPAS students had an average academic toughness of 142.18 (153

respondents). Full SIPAS and SIPAS plus and semi-SIPAS students respectively have academic toughness scores of 143.85, 144.18, and 145.65. Then a different test was carried out and the result was that there was no difference in the value of academic toughness between students of different services (Sig 0.143).
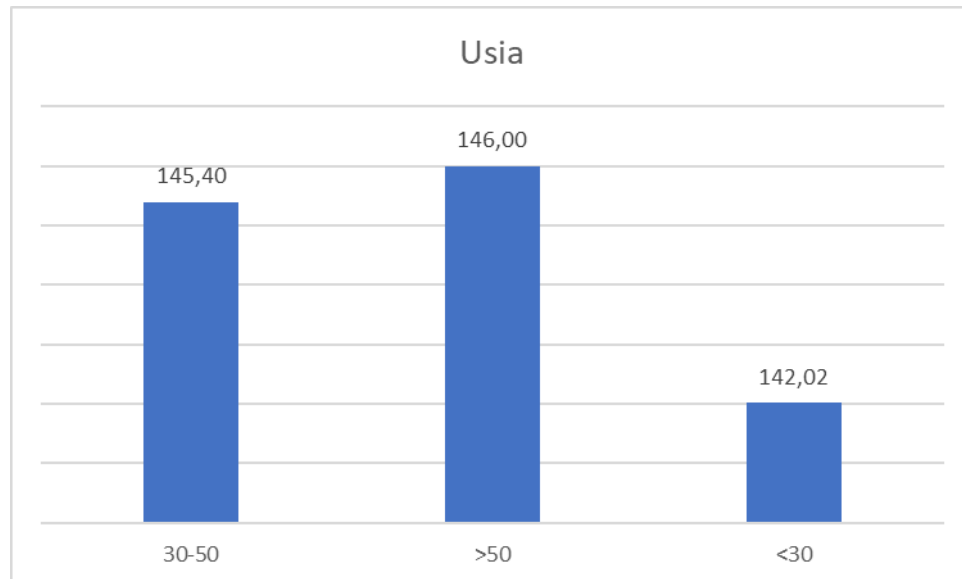
Figure 3. The level of student academic resilience based on age

Figure 3 shows the average value of students' academic toughness in several age groups. Students under the age of 30 have an average academic toughness score of 142.02. The student group aged 30-50 years has an average academic toughness score of 145.40 and the student group over 50 years old has an average academic toughness score of 146.00. Then a different test was carried out and the results showed that there were differences in the value of academic toughness between groups of students of different ages (Sig 0.031).
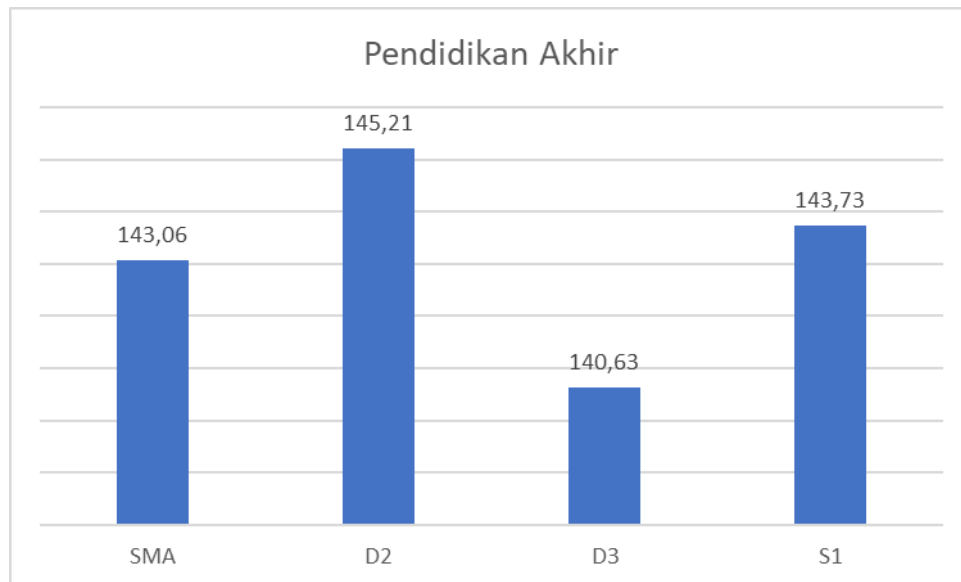
Figure 4. The level of student academic resilience based on the past education's level

Figure 4 shows the average value of students' academic toughness with various students' last educations before taking lectures at UT. Students who have previous experience as students in D2, D3, and S1 respectively are 145.21, 140.63, and 143.73. Fresh graduate students from high school have an average academic toughness score of 143.06. Furthermore, a different test was carried out and the result was that there was no difference in the value of academic toughness between students from SMA, D2, D3, and S1 (Sig 0.798).
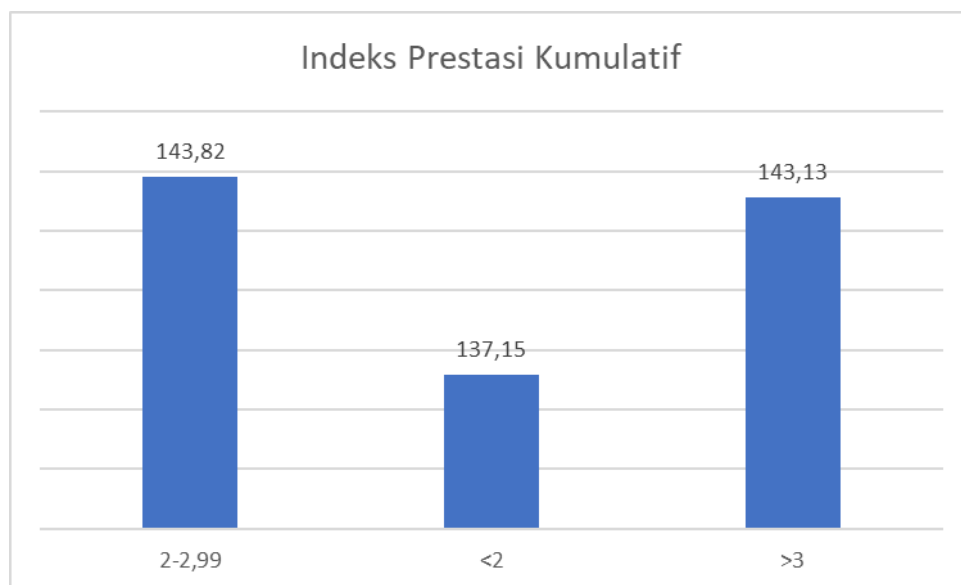
Figure 5. The level of student academic resilience based on student's GPA

Figure 5 shows the average value of student academic toughness in several groups of students with GPA <2, 2-2.99, and >3. Students with GPA <2, have an average academic toughness score of 143.82. The student group with a GPA of 2 – 2.99 has an average academic toughness score of 137.15 and students with a GPA > 3 have an average academic toughness score of 143.13. Then a different test was carried out and the results showed no difference in the value of academic toughness between groups of students with different GPA (Sig 0.231).
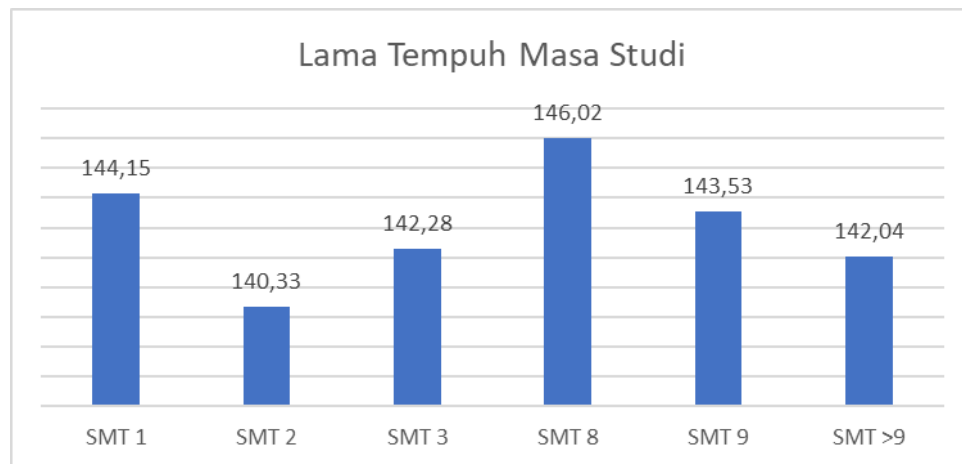
Figure 6. The level of student academic resilience based on time taken for study

Figure 6 shows the average value of student academic toughness with various lengths of study at UT. Students who are in their first semester have an average academic toughness score of 144.15, 140.33, and 142.28, respectively. Meanwhile, students who are in their final semester, even more than 9 semesters, have the following average academic toughness scores of 146.02, 143.53, and 142.04. Then a different test was carried out and the results showed that there was no difference in the value of academic toughness between students with different lengths of study (Sig 0.066).
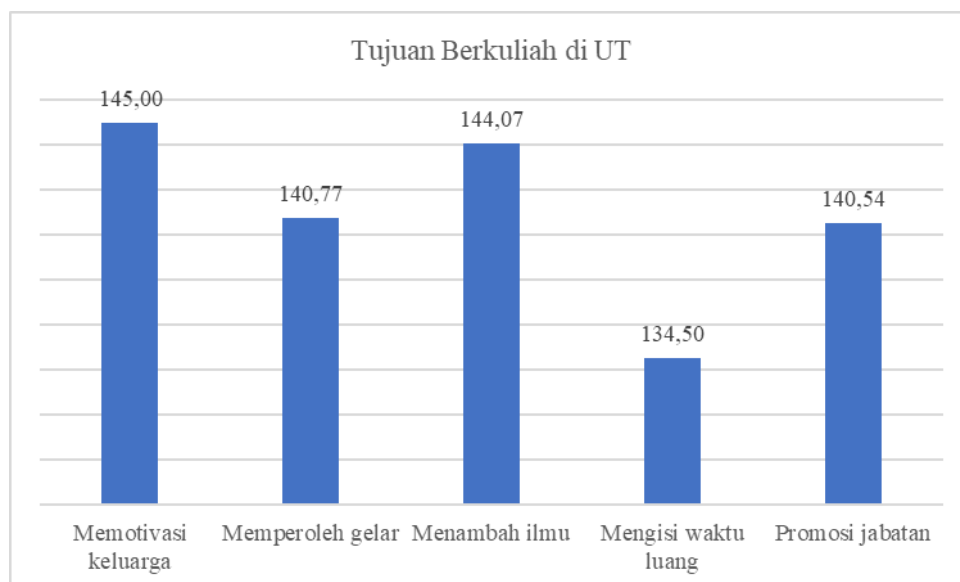
Figure 7. The level of student academic resilience based on student's objective

Figure 7 shows the average value of academic toughness of students with various objectives when starting their studies at UT. Students who aim to "motivate families" have an average academic toughness of 145.00 (number of respondents 14), and students who aim to "get a degree" have an average academic toughness of 140.77 (number of respondents 149). Students who aim to "add knowledge", "fill their spare time", and to "promote positions" have an average academic toughness score of 144.07, 134.50, and 140.54, respectively. Furthermore, a different test was carried out and the result was that there were differences in the value of academic toughness between students with different purposes of studying at UT (Sig 0.038).

4   CONCLUSION

Based on the findings of this study, it was found that differences in the value of academic toughness were found in groups of students who joined study groups and did not join study groups. Pokjar is an abbreviation of "study group" which consists of a group of students and is managed by several administrators. Students who choose to take distance learning are scattered in different areas and do not meet each other in the same class. When problems occur related to the learning process, students ask questions and seek information through existing communication channels. Pokjar is a group of students who build commitment and mutual agreement to help each other and support each other smoothly and successfully study at the Indonesia Open University with or without the facilities of other parties. Pokjar management is needed to help provide administrative services and information

about the Open University to students who need it. In the perspective of open and distance education, Pokjar can be positioned as a form of social support where students can convey all their problems to Pokjar, and Pokjar will help solve these problems to the University. Research on social support for academic hardiness is often done, a new finding in this study is that in distance learning, social support can come from Pokjar. The type of social support felt by students when they joined the Pokjar was in the form of companionship support, namely support that includes the availability of groups to spend time together. This support causes a person to feel that he is part of a group where members can share with each other.

In addition, differences in the value of academic toughness are also found in students of different age groups. The researcher divided the students into several age groups, namely <30 years, 30-50 years, and >50 years. The number of respondents available in each group was not the same, so the researchers used the Kruskal Wallis test to test the differences in academic toughness scores in the three groups. Several studies on academic toughness show that there is no relationship between age and academic toughness. Academic toughness can be measured from adolescence to adulthood, but does not show significant differences in different age groups. The findings in this study are a novelty, especially in an open learning system, where UT has students of various ages.

Chyung (2007) studied graduate students completing online university courses. Chyung found that older students (ages 40-57) posted on discussion boards more often than younger students (ages 22-39). But while the older students in the study were more active on the asynchronous web-based discussion boards, the younger students felt more confident about their ability to learn in an online environment by the end of the course. The two groups of students performed similarly, on average, in the final exams.

DiBiase and Kidwai (2010) conducted a mixed methods study of adult professionals (ages 22-65) and undergraduate students (ages 19-30) taking online geography courses. The researchers found that mature professionals spent more time communicating online and spent more time logging into learning management systems than relatively younger undergraduate students. Mature professionals, on average, score significantly higher on quizzes than undergraduates.

Other researchers have noted that older students devote more time to experiential learning (Raidal & Volet, 2009). According to these researchers, older students are more likely to go beyond what is

required for class to explore new material and ideas that have occurred to them as a result of their experiences in university courses.

Furthermore, what distinguishes student's academic toughness is the purpose of studying at UT. The purpose of studying is closely related to one's motivation when deciding to start the learning process in college. Wentzel and Brophy (2014) explain that motivation is a theoretical construct used to define initiative, direction, intensity, persistence, and quality of behavior, especially behavior that has a goal direction.

When prospective students enroll at the Open University, they are required to fill in their study goals with five choices, namely motivating their family, obtaining a degree, increasing knowledge, filling in free time, and promotion. Students who choose different study destinations have different academic toughness. The average academic toughness of students who have the goal of "motivating the family" while studying at UT is the highest among the others. The purpose of studying at UT that students choose can be interpreted as something they want to achieve and this spirit accompanies them during the lecture process at UT. Wisudawati, et al (2017) explains that there is a significant influence between motivation and toughness. The toughness training conducted in the experimental group was concluded to be able to increase achievement motivation in students.

The family environment is where a person is educated from the start, and where the values that are believed by family members are shared. Motivating the family is an external motivation that comes from the family environment and is the most enduring motivation in distance learning (Hartnett, 2019). This can explain why students who have a college goal "to motivate families" have the highest average academic toughness among the others.

This study provides an overview of the differences in the level of academic toughness of students who take part in open and distance learning, namely the integration of students in pokjar, age, and purpose of studying at UT. Further research can be carried out with qualitative methods that explore what forms of support affect the level of student academic toughness.

ACKNOWLEDGEMENTS

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FACTORS THAT INFLUENCE BASIC CHEMISTRY STUDENT SATISFACTION WITH INTERACTIVE LEARNING VIDEOS USING FACTOR ANALYSIS

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Abstract

Learning video media is one of the supporting media used to increase students' motivation in carrying out the learning process and can increase teacher satisfaction in the world of education. This study aims to analyze the factors that affect student satisfaction with interactive learning videos using descriptive statistical analysis and inferential statistics (factor analysis) and research data derived from filling out questionnaires for students taking the Basic Chemistry course (KIMD4110). The research scale used is the Likert scale with a total of 146 respondents who have filled out the questionnaire and consists of 15 indicators. Based on the level of satisfaction of participants, it was found that 12 of the 15 indicators of students gave an appreciation of agreeing and strongly agreed with a percentage of more than 80%. Whereas the other 3 indicators gave an appreciation of 68-75% and based on factor analysis formed 2 factors representing 15 indicators that affect satisfaction students to the (KIMD4110) interactive learning video namely the structure of video content and video innovation quality.

Keywords: factor analysis, learning video, online learning, student satisfaction

1   INTRODUCTION

Many universities are adapting and innovating using online media in delivering teaching to their students. According to (Dumford & Miller, 2018) there is a significant relationship between taking online learning systems and the involvement of students in the first year and above. Many students take online learning and are more involved in quantitative thinking than if they take part in collaborative learning.

According to (Alawamleh et al., 2022) shows that students prefer face-to-face classes compared to online classes because for them online classes have many obstacles such as low understanding of the content of the material, motivation, communication that exists between instructors and students, and their feelings of isolated when participating in online learning. Therefore teachers are encouraged to be more interactive with their students, for example applying various other media that are used optimally in conducting learning such as video, audio, online group instant messaging, and in parallel using online platform channels, email, and so on.

According to (Beheshti et al., 2018; Wardhana & Muhammad, 2021) Most students revealed that online learning with video media is a great way to increase their motivation in listening in addition

to using audio media and can improve learning outcomes and can increase teacher satisfaction in education..

According to (Indrawari et al., 2020)states that teachers must be able to increase their professionalism through the development of learning media so that the development carried out can answer students' problems in the learning process such as making appropriate and fun learning video designs. This learning video is expected to serve as a guide for them to carry out learning both in the business and industrial world later.

Based on some of the results of the studies above, it can be concluded that the online learning system will be more effective if the online learning system is video-based because it will improve student learning outcomes. The effective use of video as an educational tool can be increased by considering three elements, namely how to manage cognitive content in videos, how to maximize student engagement with videos, and how to promote learning from videos. One university that is also developing learning videos is the Univeritas Terbuka (UT) (Hasanah et al., 2022).

Several interactive learning videos produced by UT are distributed to students, including by linking the videos to the student tutorial application page. Students who take part in online tutorials and have studied the contents of the material and videos linked on the UT e-learning page are asked for a certain period to respond to learning videos, especially in Basic Chemistry courses (KIMD4110). This response is used as evaluation material in the development of interactive learning videos for other subjects and as a way to improve the quality of interactive learning videos at UT. This study aims to analyze students' perceptions of interactive learning videos and establish latent factors that influence student satisfaction with interactive learning videos for Basic Chemistry courses (KIMD4110) using factor analysis.

2   METHODOLOGY

The research was conducted at the Univeritas Terbuka (UT) using a quantitative approach. The research respondents were students who took the Basic Chemistry course (KIMD4110) using an online questionnaire linked to the UT eLearning application in April-June 2022 and a total of 146 respondents who responded to the survey consisting of 15 variables. After the data was collected, descriptive and inferential statistical analysis was carried out, for inferential statistics using factor analysis. Descriptive statistical analysis is used to analyze the results of research on students' perceptions of interactive learning videos and factor analysis is used to establish latent factors that

influence student satisfaction with interactive learning videos for Basic Chemistry courses (KIMD4110). Data characteristics and assessment criteria from this study can be seen in tables 1 and 2.

Table 1. Characteristics of Research Data

No	Variable	Scale	Category
1	Content		
2	Destination		
3	Interaction		
4	Motivation to learn		
5	Collaborative		
6	Case study		
7	Application	Ordinal	1 = strongly disagree
8	Video Size		2 = disagree
9	Letter		3 = neutral
10	Language		4 = agree
11	User Friendly		5 = strongly agree
12	Ease to Access		
13	Menu		
14	Information		
15	Independence		

Table 2. Assessment Criteria

Interval Class			Criteria
1,00	-	1,79	Very Bad
1,80	-	2,59	Bad
2,60	-	3,39	Enough
3,40	-	4,19	Well
4,20	-	5,00	Very good

Table 1 is the characteristics of the data with a total of 15 variables, this variable is used to analyze students' perceptions of interactive learning videos and establish latent factors using factor analysis. Meanwhile, table 2 shows that there are 5 classes of assessment criteria intervals.

3 FINDINGS AND DISCUSSION

The following is a descriptive statistical analysis which can be seen in Figure 1.
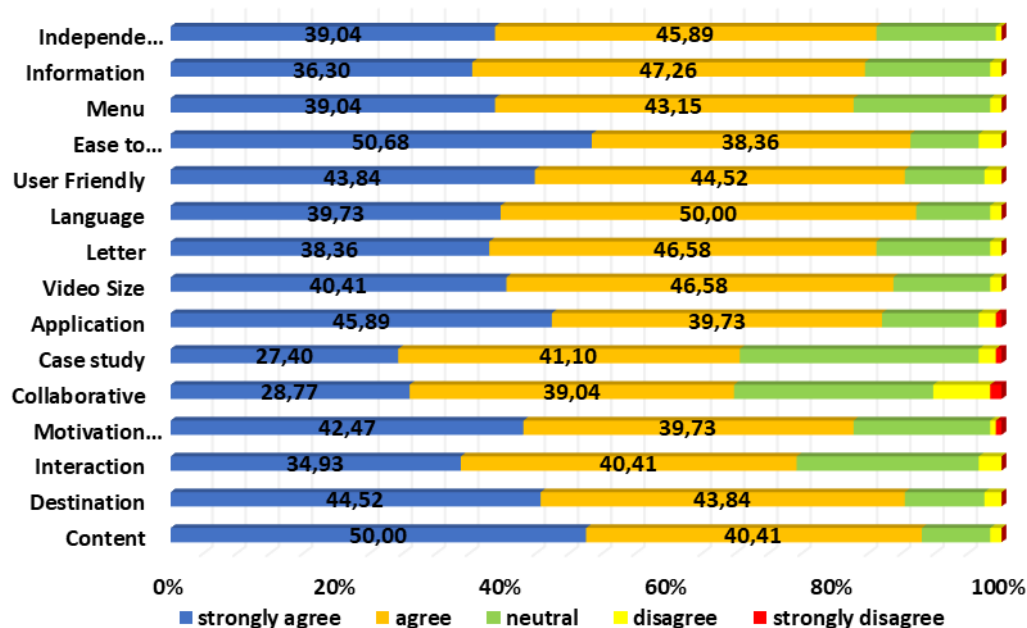
Figure 1. Percentage of assessment criteria on all variables

Based on the level of satisfaction of participants in figure 1, it was found that 12 of the 15 indicators of students gave an appreciation of agreeing and strongly agreed with a percentage of more than 80% yaitu Content, Destination, Motivation to learn, Application, Video Size, Letter, Language, User Friendly, Ease to Access, Menu, Information, and Independence. Whereas the other 3 indicators gave an appreciation of 68-75% yaitu Interaction, Collaborative, and Case study.

Validity and Reliability Test

The instruments in this study were tested for validity and reliability. The validity test is used so that the instruments in this study are valid. The results of the validity test decision if $r_{count} > r_{table}$, then the conclusion is that the item is valid and vice versa. The reliability test was carried out to test the consistency of the targets as measured by the Cronbach alpha formula. In general, Cronbach's alpha value is greater than 0,7, meaning it is reliable, and if the α value is high, it indicates that the items in the study are highly correlated (Shrestha, 2021).

Table 3. Validity Test

No	Variables	R Count
1	Content	0,762
2	Destination	0,748
3	Interaction	0,726
4	Motivation to learn	0,767
5	Collaborative	0,680
6	Case study	0,665
7	Application	0,628
8	Video Size	0,780
9	Letter	0,789
10	Language	0,853
11	User Friendly	0,799
12	Ease to Access	0,743
13	Menu	0,786
14	Information	0,808
15	Independence	0,833

Table 3 explains that the validity test of data is declared valid if the value of rcount > rtable, it is known that the value of rtable = $r_{146-2 = 144}$ = 0,1625. Based on Table 3 the values of all variables have r_{count} > r_{table}, it can be concluded that the 15 variables are declared valid.

Table 4. Reliability test

Cronbach's Alpha	N of Variabels
0,945	15

Table 4 explains that the reliability test of data is stated to be reliable if the alpha value is > 0,7. In Table 4 it is found that the alpha value = 0,945 > 0,7. So it can be concluded that the 15 variables are declared reliable.

Tabel 5. KMO and Bartlett's Test

Kaiser Meyer Olkin Measure of Sampling Adequacy.		0,918
Bartlett's Test of Sphericity	Approx. Chi-Square	1780,902
	df	105
	Sig.	0,000

Table 5 can be seen that the feasibility test of a variable in factor analysis is carried out by looking at the results of the KMO and Bartlett's Test values. In Table 5 it can be seen that the value of KMO =

0,918 > 0,5 and Bartlett's Test of Sphericity (Sig.) 0,000 < 0,05 so it can be concluded that this factor analysis technique can be continued.
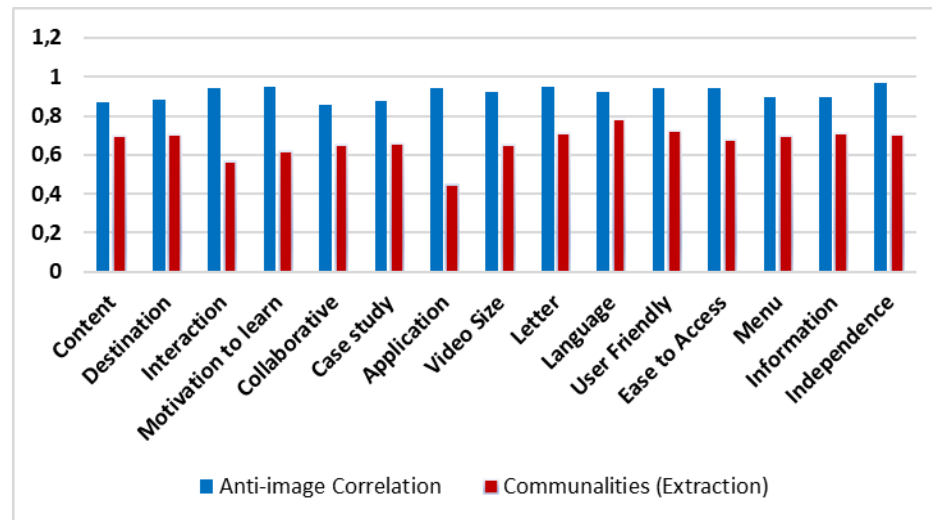
Figure 2. Anti-image Correlation and Communalities

The results of the anti-image correlation in Figure 2 are used to determine which variables are appropriate for use in factor analysis, provided that the resulting MSA value is > 0,5.   Based on Figure 2, it is found that the MSA values for all variables are > 0,5, so it can be concluded that the 15 variables are feasible for factor analysis. In addition, when viewed from the Extraction value, all variables have an Extraction value > 0,5 so it can be concluded that all variables can be used to explain factors.
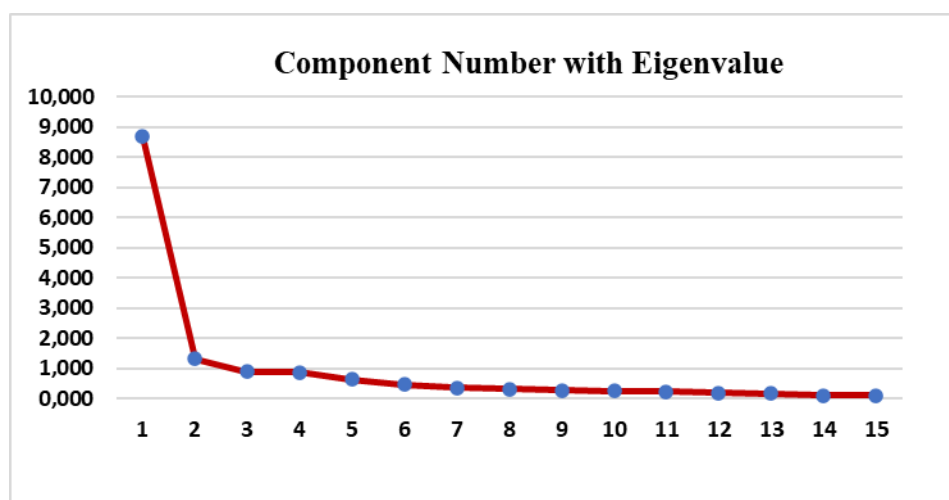
Figure 3. Scree Plot

Figure 3 the scree plot results show that the number of factors formed is 2 (two) component points that have an Eigenvalue > 1 so that 2 factors can be formed in the data.

Table 6. Rotated Komponen Matrix

Variables	Component	
	1	2
Content	0,376	0,748
Destination	0,335	0,769
Interaction	0,419	0,626
Motivation to learn	0,489	0,619
Collaborative	0,204	0,780
Case study	0,179	0,792
Application	0,635	0,200
Video Size	0,732	0,345
Letter	0,786	0,303
Language	0,787	0,407
User Friendly	0,787	0,320
Ease to Access	0,795	0,210
Menu	0,787	0,285
Information	0,770	0,341
Independence	0,647	0,537

Table 6 it can be explained that the 15 variables above are divided into 2-factor groups with the group division as follows:

1. Factor group 1 has a strong and positive correlation with the variables Application, Video Size, Letter, Language, User Friendly, Ease to Access, Menu, Information, and Independence. This factor can be called the video innovation quality factor

2. Factor group 2 has a strong and positive correlation with the variables Content, Destination, Interaction, Motivation to learn, Collaborative, and Case study. This factor can be called the structure of video content.

Table 7. Transformation Matrix Components

Components	1	2
1	0,780	0,626
2	-0,626	0,780

Table 7 shows the correlation value in components 1 and 2 of 0,780 and because the 2 components have a correlation value of > 0,5, the 2 factors formed are worthy of being summarized into the variables analyzed.

4   CONCLUSION

Based on the level of satisfaction of participants, it was found that 12 of the 15 indicators of students gave an appreciation of agreeing and strongly agreed with a percentage of more than 80%. Whereas the other 3 indicators gave an appreciation of 68-75%. The results of the analysis using factor analysis obtained 2 groups of latent factors that influence student satisfaction with interactive learning videos for Basic Chemistry courses (KIM4110), namely Group 1 is called the video innovation quality factor which consists of the variables Application, Video Size, Letter, Language, User Friendly, Ease to Access, Menu, Information, and Independence. Factor group 2 is called structure of video content which consists of the variables Content, Destination, Interaction, Motivation to learn, Collaborative, and Case study. This factor can be called the structure of video content.

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INTENTION TO ENROLL IN A MASTER DEGREE OF TOURISM AT OPEN AND DISTANCE LEARNING UNIVERSITY IN INDONESIA

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Abstract

This study aims to examine the the students' intention to enroll in a master degree of tourism at Open and Distance Learning University in Indonesia. We use four motives that possibly detremine their intention, namely: personal development, social support, career enhancement, and academic fit. Using a convinience sampling method, we collected 332 respondents which 197 of them are active-senior college students, 94 of them are finished their bachelor's degree, and 41 of them are finished their master's degree. The results show that personal development, social support, career enhancement, and academic fit are positively effect their intention to enroll in a master degree of tourism for all the group of respondents. As for the group of senior-college students and bachelors, the results show that social support, career enhancement, and academic fit important consideration factors, instead of personal development. These results have implication that the college students and bachelors do not yet pursue a higher level of Maslow's Hierarchy of Needs, namely self-actualization when considering enrolling in the magister program of tourism. The main factors of motivations are to pursue safety (academic support), belonging (social support), and esteem (career enhancement). It means that the university may consider these factors when designing master program curriculum if he positions the college students and bachelors to become their key customers.

Keywords: Open and distance learning, personal development, social support, career enhancement, academic fit, behavioural intention

1 INTRODUCTION

In Indonesia, tourism industry has grown and developed dramatically since 1960s. This sector has a very large impact in the economic, political, social and cultural fields (Ayu et al., 2020). Tourism has been considered as an industry that is capable of giving prosperity and bliss for many people (Setiawan & Wiweka, 2017). The industries employ more than ten million Indonesians. These factors have led the Indonesian government to increasingly focus on the development of the tourism sector (Yusuf, Samsura, & Yuwono, 2018). However, the development in the practical sphere has not yet balanced with the growth of human resources qualities in the tourism sector. Improvements in human resources and bureaucracy have not been strongly voiced. There is a fairly prominent impression that our attention is mainly focused on quantitative aspects, such as foreign exchange, job opportunities, tourist visits and so on. While qualitative aspects, which include positive changes in the quality of human resources, tend to be ignored (Kusworo & Damanik, 2002; Anugrah & Sudarmayasa, 2017). Cyntara (2019) explained that many business doers or human resources come from non-tourism formal background.

According to a report from the Central Statistics Agency, in 2019, most of the tourism labor (57.3%) attained low levels of education (elementary and junior high schools) (Bachrun, 2020). The number of tourism workers who complete higher education (diploma and undergraduate programs) was only 7.07%. Therefore, in Indonesia, the current number of tourism labor who graduated from higher education is still scarce. Previous studies suggest that many graduates from tourism institutions chose to leave tourism careers (Ahmad, Rashid, & Shariff, 2014; AlBattat & Som, 2013) or even failed to enter the tourism-related industry. This phenomenon happens due to the perception of low satisfaction of profession, poor work environment and wage, and the turnover amongst staff that are too frequent (Anandhwanlert & Wattanasan, 2017; Sibanyoni, Kleynhans & Vibetti, 2015; AlBattat, Som, & Helalat, 2014). This phenomenon happens due to the tourism industry's image as an "escape plan" by those who do not have qualified skills in other sectors (Brien, 2004). Consequently, the tourism sector is often inadequate to fit human capitals' best supply within the nation. Meanwhile, the inadequate and unqualified human capital leads to the poor image of tourism industry (Pitso, 2018). This dilemma is a challenge for tourism policymakers in guaranteeing candidates' appropriateness with the required level, especially for preparing Indonesia to compete at the international stage and achieve the targeted aspirations (Rosyidi, 2021).

Therefore, to support the growing tourism activities and to fulfil the increasing needs for human resources in the tourism industry, a number of schools have been established at higher education levels, by both the public and private sectors. Back in the day, tourism in Indonesia is a new science and has been recognized by the Indonesian Ministry of National Education in 2008 (Setiawan & Wiweka, 2017). Pitana (2012) stated that the formal recognition of tourism as an independent science in Indonesia is a result of all tourism interest functionaries. Several universities have opened undergraduate and graduate programs in tourism. Although such bachelor's degree programs in tourism are intended to offer academic degrees, many of them remain mostly based on vocational purposes (Yusuf, Samsura, & Yuwono, 2018).

However, Master Degree Programme of Tourism in Indonesia is still lack. According to BANPT (2021), Indonesia only has 11 (eleven) master degree programme of tourism. This is not comparable to the human resource needs in the tourism sector in Indonesia. The level of higher education is the key to improving the quality of existing human resources. The higher the level of education possessed, it is hoped that the quality of human resources will also be better. But in reality today

there are still many Indonesians who have low education, it can be proven that in a small scope there are still few undergraduates who continue their studies to the Master and PhD levels (Pramana et al., 2021).

According to The Directorate General of Population and Civil Registration of the Ministry of Home Affairs noted that only 822.47 thousand people or 0.3% of Indonesia's population had education up to the master's level in June 2021. This case is in line with students who want to enroll in Master of Tourism degree. Murniati (2012) explained that the tourism and hospitality institution failed to equip the students with the required knowledge, skills, and competencies as most of tourism-related programs are not relevant to the industry's requirements. Therefore, tourism and hospitality educators need to facilitate their students with the curriculum program which suits to industry expectation. Lakhal, Khechine, and Mukamurera (2021) also added in order to attain academic and professional goals, distance learning in higher education is the right choice. In addition, online learning is as effective as conventional learning (Cavanaugh and Jacquemin 2015; Kumar et al. 2019). At any particular time, student would have more or less of an intention to continue toward an online learning postgraduate programme including in master of tourism field (Jepsen & Neuman, 2010). Thus, there are many factors may influence students to make decision to go further study (Chong et al., 2014).

Lee (2017) stated that students choose distance learning higher education because they meet flexible schedules and the program provides better access for students who cannot attend face-to-face classes bescause of personal or professional responsibilities. More broadly, the factors of student persistence in online courses in higher education have been studied by several authors (Gazza and Hunker 2014; Laurie et al. 2020; Lee and Choi 2011; Muljana and Luo 2019; Xavier and Meneses 2020). Elango, Vongura, and Srifah (2018) explained that distance education is likely to have the power to change the educational landscape. Hence, their study determined the factors influencing intention to study via online education and showed the result that social influence have a positive significant impact on usage intention of online education.

Various studies learned about factors influencing student intention enrollment in distance learning higher education (Mulatya, 2012; Dadigamuwa & Senanayake, 2018; Baki, Birgiren, Aktepe, 2021; Lakhal, Khechine, & Mukamurera, 2021; Guat, 2022; Sakka, 2022). However, there are still very rare research about open and distance learning study in tourism. Especially, research in open and distance learning of master in tourism study program is none. Therefore, this study take a step at

addressing the lack of research on the factors which influence student intention to enroll in master degree programme in Indonesia. This study investigates of what factors influence students' intention to enroll in Tourism Master Degree.

2   METHODOLOGY

2.1 Survey design

This study took a survey to investigate behavioral intention to enroll in a master's degree of tourism programs. The survey items were developed were on the motivations of prospect students to enroll the program at an open and distance university in Indonesia, as the project was conducted for use in a particular context that considering the development of postgraduate of tourism programs. The survey was composed of closed-ended items, including aspects of behavioral intention and student's motivations, namely: personal development, social support, career enhancement, and academic fit. The items were rated using a 4-point Likert scale with values that ranged from 1 (strongly disagree) to 4 (strongly agree). Some questions were used to garner further insights into respondents' views about their willingness to pay, learning delivery, and the student service office location. The latter part of the survey was composed of demographic items.

2.2 Data collection and data analysis

Once the survey was developed, to check face validity, a pilot study was performed with a select group of respondents from the field of tourism that included 10 students and 5 faculty members and then sent the valid e-questioners by blasting email to the active undergraduate students and alumni. The e-questioners are also sent to our networks.

3   FINDINGS AND DISCUSSION

3.1   Demographic profile and academic preferences of the respondent

This study reached he number of male respondents is higher than females. They are categorized into five age groups. The highest proportion are respondents in the below 25 age group, followed by those aged 25-30, which shows that more young people as respondents. As for education level, most respondent senior college students and bachelor, which accounts for 87.65%. Most of the respondents earned approximately Rp 1.000.000 – Rp 3.000.000 per month. It may be said that most of their earnings are low compared to the general national income level. This is partly because 20.48% of respondents are government employees, 30.72% of their age below 25 years, and 59.34% of

respondents are senior college students. The profile is relatively matched with the characteristics of students at Open and Distance Learning University in Indonesia.

Other than that, in the academic preference of the respondent, Table 1 shows that the top three study fields that most like by respondents are tourism destination, tourism industries, and tourism plans. Most of respondents prefer online learning that enhance with job training. Their preferences are reasonable for students at Open and Distance Learning University. Job training will enhance their tutorial sessions which mostly are delivered using online and distance learning.

Table 1. Academic Preferences

Characteristics	Categories	Frequency	Percent
Field of Study	Tourism Destination	138	21.50%
	Tourism Industries	123	19.16%
	Tourism Plans	101	15.73%
	Tourism & Hospitality Entrepreneurship	92	14.33%
	Hospitality & MICE	60	9.35%
	Sustainability Tourism	49	7.63%
	Tourism Policy Studies	44	6.85%
	Gastronomy	21	3.27%
	Others	14	2.18%
Learning Delivery Mode	Offline	43	12.95%
	Online	243	73.19%
	Hybrid	46	13.86%
Learning Activity	*Job Training*	175	25.11%
	Field Trip	120	17.22%
	Project	82	11.76%
	Assignment	96	13.77%
	Tutorial	172	24.68%
	Take Home Exam	48	6.89%
	Others	4	0.57%

Table 2 shows that 83.73% of respondents are willing to pay for regular program at price Rp5.000.000,00-Rp9.000.000,00 per semester. However, 73.2% of respondents are willing to pay for regular program at price Rp1.000.000,00 - Rp20.000.000,00 per semester for extra programs. It may be said that their sensitivity to price is relative to the benefit of the program, especially for a master program.

Table 2. Willingness to Pay

Characteristics	Categories	Frequency	Percent
Willingness to pay at Rp 5.000.000 - Rp 9.000.000/semester for regular programs	Yes	278	83.73%
	No	54	16.31%
Willingness to pay at Rp 5.000.000 - Rp 9.000.000/semester for additional programs, such as certification, student exchange, etc.	Yes	243	73.20%
	No	89	26.80%

3.2 Validity and Reliability

The validity of each construct was examined by comparing the correlations of each item of questionnaire to the total score of the items. Table 3 shows that each item of questionnaire for the construct of personal development, social support, career enhancement, academic fit, and behavioral intention are valid.

Table 3. Correlation Validity of Instruments

Constructs	Items of Instruments	Correlation value	Conclusion
Personal Development	PD1-To gain more respect from others.	0.787**	Valid
	PD2-To gain more self-confidence.	0.800**	Valid
	PD3-To achieve my educational goal.	0.778**	Valid
	PD4-To improve my English skill.	0.730**	Valid
Social Support	SS1- To gain more respect from family	0.830**	Valid
	SS2-To fulfill family's expectation	0.858**	Valid
	SS3- To support full from family.	0.740**	Valid
	SS4-To act in accordance to social values.	0.703**	Valid
Carrer Enhancement	CE1-To get promoted to a higher position.	0.883**	Valid
	CE2-To remain competitive and professional in the business field.	0.904**	Valid
	CE3-To earn higher compensation.	0.872**	Valid
	CE4-To provide opportunity for more challenging work	0.899**	Valid
	CE5-To establish a wider connection	0.791**	Valid
Academic Fit	AF1-The program has a high grade of accreditation	0.809**	Valid

	AF2- The program has a good image and reputation program	0.839**	Valid
	AF3- The program has a good social environment	0.866**	Valid
	AF4-The curriculum contains of student international exchange program	0.828**	Valid
	AF5- The curriculum contains of relevant certifications	0.870**	Valid
	AF6- The curriculum contains of destination stewardship skills	0.844**	Valid
	AF7- The curriculum contains of political and ethical skills	0.799**	Valid
	AF8- The curriculum contains of human resource skills	0.831**	Valid
	AF9- The curriculum contains of dynamic business skills	0.819**	Valid
Behavioral Intention	BI-I am highly motivated to enroll the postgraduate program of tourism	0.879**	Valid
	BI2- I may change my study even after enroll the postgraduate program of tourism.	0.783**	Valid
	BI3- Any subject related to tourism for post graduate program is interesting.	0.813**	Valid
	BI4-I may have joyful experience by enrolling the postgraduate program of tourism.	0.853**	Valid
	BI5-I am highly interested to enroll the postgraduate program of tourism at The Open and Distance University.	0.875**	Valid

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4 presents the value of Cronbach Alpha of the behavioral intention, personal development, social support, career enhancement, and academic fit are above 0.70. That means the instruments are reliable.

Table 4. Reliability of Instruments

Constructs	No items	Cronbach's Alpha	Conclusion
Personal Development	4	0.767	Reliable
Social Support	4	0.785	Reliable
Carrer Enhancement	5	0.920	Reliable
Academic Fit	9	0.945	Reliable
Behavioral Intention	5	0.893	Reliable

3.3 Result and Discussion

Table 5 presents the result of hypotheses testing of motivational factors to enroll in the postgraduate program of tourism. We estimate the model using 2 different groups of respondents. The Column (1) of the Table 5 presents the results for the group of senior-college students and bachelor's degree, meanwhile the column (2) of the Table 5 presents the results for the group of all respondents, including senior-college students, bachelor's degree, and master's degree.

Table 5 result of hypotheses testing

Variables	The respondents are senior college students and bachelor degree (1)			All respondents (senior college students, bachelor's degree, and master's degree) (2)		
	Coef.	t	Sig.	Coef.	t	Sig.
(Constant)	-1.668	-1.652	.100	-1.544	-1.605	.110
Personal Development	.149	1.487	.138	.165	1.866	.063**
Social Support	.196	2.642	.009***	.170	2.518	.012*
Career Enhancement	.433	5.592	.000***	.458	6.737	.000*
Academic Fit	.168	3.890	.000***	.154	4.006	.000*
R Square			.556			.551
Adj. R Square			.550			.545
F. Stat			89.594			100.258
Sig.			.000			.000
N			290			332

***) **) *) significant at the 0.01 level; 0.05; 010.

Table 5 shows that personal development significantly affect their intention to enroll in the master program of tourism for all the group of respondents, but do not significant for the group of senior-college students and bachelors. These results show that social support, career enhancement, and academic fit important consideration factors, instead of personal development for senior college students and bachelor's degree respondents. These results explain that the college students and bachelors do not yet pursue a higher level of Maslow's Hierarchy of Needs, namely self-actualization when considering enrolling in the magister program of tourism. The main factors of motivations are to pursue safety (academic support), belonging (social support), and esteem (career enhancement). Their intentions are driven to enroll in the program by the desire to enhance, attain, or retain the many

conditions that support these fundamental satisfactions as well as by a few more intellectual aspirations.

As predicted, social support, especially family support, positively related to their intention to enroll in the master program of tourism. Since the contribution of tourism industry to the gross domestic products in Indonesia is low (4.7% in the year 2019 or before pandemic), this industry has not been become development strategic priority. Becoming a professional or person in this industry has not, yet, become a popular job. Hence, social support increases the intention to enroll in the master program of tourism. Moreover, tourism education, importantly in the higher education sector, is lacking behind due to tourism as an academic field has just been declared on 31 May 2008 in Indonesia (Suwena, 2007).

As for career enhancement that positively related to their intention to enroll in the master program of tourism, this finding suggests that intention to enroll in magister tourism program becomes a way to establish their self-esteem. They develop their self-esteem as they get promoted to a higher position, remain competitive and professional in the business field, earn higher compensation, provide opportunity for more challenging work, and establish a wider connection after having a magister degree of tourism program.

Academic fit is also positively related to their intention to enroll in the master program of tourism to meet the demand for high quality human resources in tourism especially in the time of disruption and uncertainty. Some jobs in tourism will vanish in coming years because of robots and machines, so the curriculum should be relevantly designed, such as containing of student international exchange program, destination stewardship skills, political and ethical skills, human resource skills, and dynamic business skills.

4 CONCLUSION

This study attempts to fill a research gap on the variables influencing Indonesian student desire to enroll in master's degree programs. The purpose of this study is to determine the variables that affect students' decision to pursue a master's degree in tourism. There are two different group used as the respondents: the group of senior-college students and bachelor's degree, meanwhile another group is

all respondents, including senior-college students, bachelor's degree, and master's degree. The outcome demonstrates that personal development strongly influences respondents' intentions to enroll in the master's program in tourism across the board, but not significantly for the group of senior-college students and bachelor's degree holders. These findings demonstrate that for respondents with bachelor's degrees and senior college enrollments, social support, career enhancement, and academic fit are more significant consideration factors than personal development. Their intention to participate in the tourism master's degree was favorably correlated with social support, particularly family support.

This finding implies that the intention to enroll in the master's degree in tourism becomes a strategy to create their self-esteem as it relates to career enhancement that was favorably associated to their intention to do so. To fulfill the demand for top-notch human resources in tourism, particularly in this period of disruption and uncertainty, academic fit is also strongly correlated with their intention to enroll in the master's program in tourism. Their intention to participate in the master's degree in tourism was favorably correlated with social support, particularly family support. Regarding job advancement that was positively connected to their goal to enroll in the master's degree in tourism, this data implies that their ambition to enroll in the program becomes a means of boosting their self-esteem. To fulfill the demand for top-notch human resources in the tourist industry, particularly in this period of upheaval and uncertainty, academic fit is also strongly correlated with their intention to enroll in the master's program in tourism.

Overcoming these limitations may offer suggestions for future research. Only four factors, including academic fit, career enhancement, social support, and personal development, directly influence behavioral intention. Other factors that may have an impact on students' intentions to enroll in tourism master programs were not examined in this study. As a result, additional research utilizing different variables is required, such as personal interest, environmental motivators, career switching, etc. Other than that, there are only students from Open University of Indonesia in this study population. Therefore, research results cannot be generalized outside this population. It is important that comparative studies be replicated at other universities or other non Open and Distance Learning Universities to increase the generalizations. However, this study does not guarantee the same results where different criteria are applied for allocations to different student population groups.

ACKNOWLEDGEMENTS

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TRANSFORMATIONAL LEADERSHIP, ORGANIZATIONAL CLIMATE, ORGANIZATIONAL TRUST, AND MEDIATING ROLE OF ORGANIZATIONAL COMMITMENT TO INNOVATIVE WORK BEHAVIOUR OF OPEN AND DISTANCE LEARNING ACADEMICS IN INDONESIA

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Abstract

The Open University of Indonesia faces increasingly unpredictable competition and disruption, therefore the need to make various innovations to adapt to rapid and sudden changes is a necessity. Innovation basically is the ideas and thoughts of individuals called innovative work behavior, where this becomes the basis for creating better process, service, and product innovations. This behavior cannot appear by itself but requires an environment that is created in such a way for its expression to grow and develop. This study aims to analyze the influence of transformational leadership, organizational trust, organizational climate with the mediating role of organizational commitment on the innovative work behavior of Open University lecturers. This research involved 100 Open Distance Learning Academics, collected data analyze by PLS SEM. The results shows that organizational commitment played as a mediator variable that strengthens the influence of transformational leadership, organizational trust, organizational climate, on the innovative work behavior of Open University lecturers. The results of this study can be an empirical reference for management to be able to develop and improve the innovative work behavior of UT lecturers through improving the organizational commitment and practice of transformational leadership, organizational trust, organizational climate.

Keywords: Innovative Work Behaviour, Organizational Commitment, Transformational leadership, Organizational Trust, Organizational Climate.

1 INTRODUCTION

Universitas Terbuka, as the first and largest Open and Distance University in Indonesia, now transforming become a leader in Open Distance Learning context. To survive sustainably, Universitas Terbuka must continue to innovate to overcome the changes that are happening exponentially and continuously in dynamic environment. Becoming more innovative has been the goal of many private and public companies over the last 30 years. It is common knowledge that innovation is the key for an organization to grow and develop, moving forward to overcome obsolence by providing added value in all aspects of management, products, or organizational governance (Battistelli et al., 2019). Innovation basically is an idea, ideas and thoughts that are owned by individuals or employees, which are the fundamental elements that determine the existence of novelty in the system, service or product of an organization (Ulfa et al., 2022). This is what is referred to as Innovative work behavior where its emergence cannot present itself in an environment, but requires a situation that is full of support so that work innovation behavior can thrive and develop.

Innovative work behavior itself has been understood as an expression of creativity and innovation possessed by employees who work within the framework of an organization. This includes the presence of factors that stimulate or inhibit the expression of creativity, originality, uniqueness and novelty of something. Innovative work behavior explained as the development, adoption and implementation of new employee ideas for products, technology or employee work methods which are stated as important assets to increase organizational innovation and become a determinant of success in a dynamic environment (Dagogo & Barasin, 2020). Many factors are stated as stimulators or barriers to the emergence of work innovation behavior including organizational commitment ((Jafri, 2010), (Taghipour & Dezfuli, 2013), (Hakimian et al., 2016), transformational leadership (Howell & Avolio, 1993), (Li et al., 2019), (Gumusluoglu & Ilsev, 2009), organizational trust (Afsar et al., 2015), (Dagogo & Barasin, 2020), organizational climate (Shanker et al., 2017), (Basu, 2017), (Chen & Hou, 2016).

Organizational commitment has a close relationship with individual innovative work behavior. Commitment is the initial attachment between employees and the organization when they first work and then becomes an attachment that develops over time. According to Beer (2009), commitment and performance are two ingredients that are essential for the sustainability of the organization. From the various studies he has done on many large organizations, commitment is an absolute prerequisite. Organizational commitment can be interpreted as the level of employee self-identification of the organization, and its desire to continue active participation in the organization (Radosavljevic, Cilerdzic, & Dragic, 2017). Organizational commitment can also be interpreted with a strong desire from employees to remain members of the organization; the desire to provide high-level business on behalf of the organization; and a strong desire to accept organizational values and goals (Luthans, 2008; Mowday, 2008). Organizational commitment is also seen as a measure of the extent to which individuals understand and live up to an organization so that they are bound to its goals. The more attached to an organization, a person will try to give the best he has to his organization. People who have high organizational commitment show a willingness to work harder to achieve organizational goals and are able to maintain their desire to continue working for the organization. The more emotionally attached to an organization, the more it will encourage employees to give their best work for the organization. The work can be started from a new idea or new thought that is useful and beneficial for the organization, or is called work innovation behavior.

Based on all of the above arguments, it can be hypothesized that organizational commitment influences work innovation behavior

Transformational leadership is leadership that engages followers, that inspires followers to commit to a shared vision, that gives meaning to their work while serving as a role model that helps followers develop their own potential and is able to see problems from new perspectives (Colquitt, J. A., LePine, J. A., & Wesson, 2019). Transformational leadership is claimed by many researchers as a pattern of leadership that is suitable for the growth and development of innovative behavior in the workplace. The findings of Reuvers, Van Engen, Vinkenburg, & Wilson-Evered (2008) in their research, found that transformational leadership is positively and significantly related to employee work innovation behavior, where it is proven that transformational leadership is a catalyst for the emergence of work innovation behavior, and has a positive impact on innovation. process and product as well as organizational innovation (Yıldız, Baştürk, & Boz, 2014; Elrehail, Emeagwali, Alsaad & Alzghoul, 2018). Many studies have also succeeded in proving that the more transformational the leaders in a company, the more innovations that will emerge in the company (Shin and Zhou, 2003; Dewa Nyoman Reza Aditya, 2016). However Top, Tarcan, Tekingündüz, & Hikmet, 2013 also found that the relationship between transformational leadership and innovation behavior is not only directly related positively and significantly but can also be mediated through organizational commitment. Based on the description above, it can be assumed that there is a positive influence between transformational leadership to innovative work behavior through the organizational commitment of Open University lecturers.

Trust is a fundamental coordination mechanism in everyday social life, especially in business organizations. Trust is a basic need that must be met by the organization to create a sense of joy at work. Trust is a willingness to be subject to authority based on positive expectations of the actions and intentions of the authority/superior. Employees will trust their superiors through their evaluation of the existence of three dimensions of trust, namely the first is the ability or ability that reflects the skills, competencies and expertise possessed by the authorities or superiors. rust is the most crucial factor in every relationship, as well as influencing commitment. McShane and Von Glinow (2010) state that one way to build organizational commitment is to develop trust. Strong organizational commitment will result in high performance, low turnover and decreased absenteeism (Luthans, 2011), and in the end will encourage someone to give the best of himself in the form of ideas, ideas

and try to realize it. This is called employee work innovation behavior. Based on the entire description that has been put forward, it is reasonable to suspect that organizational trust has a positive effect on lecturers' work innovation behavior through the organizational commitment of the Open University lecturers.

Organizational climate is a relatively permanent quality of an organizational environment that is felt by its inhabitants which then influences their behavior so that it can be explained as a certain value or set of characteristics (attributes) of an environment/organization. Organizational climate is different from organizational culture. Organizational culture is built by the beliefs, traditions and values of the people in the organization. In contrast, organizational climate shows the feelings, attitudes and behaviors that persist as a characteristic of everyday life that occurs within the organization. When a work environment encourages and motivates the emergence of risk-taking behavior, provides fair treatment and supports the emergence of new ideas, provides support in the form of recognition and appreciation of an innovation so as to enable collaboration of ideas that continue to flow and enable participation in decision-making, it is said that the organizational environment supports and plays a role in bringing out individual innovative behavior in his work. It is understood that innovative behavior requires the support and encouragement provided by the organization to its employees to take the initiative and have the courage to explore innovative approaches used in work. However, several studies have found that organizational culture and organizational climate do not only function as a stimulator, on the other hand they can actually become an obstacle to the emergence of organizational work innovation behavior (Scott & Bruce, 1994). Organizational commitment is influenced by many factors, one of which is organizational climate. The findings (Bahrami et al., 2016a) which examined the influence of organizational climate on organizational commitment of nurses in the city of Yazd, Iran showed that there was a positive and significant correlation between organizational commitment and organizational climate, so he concluded that improving organizational climate was the right strategy for increase organizational commitment. Meanwhile the findings (Hakimian et al., 2016) state that there is a very significant relationship between affective and normative commitment to the work innovation behavior of MSME employees in Malaysia. From these two studies it can be concluded that the two studies above are empirical evidence of the relationship between the three variables, namely organizational climate,

organizational commitment and work innovation behavior, where organizational commitment can mediate the relationship between organizational climate and organizational behavior. A healthy and fun organizational climate will make someone stay as a member of the organization. The behavior of wanting to remain a member of the organization is a form of commitment. This formed commitment ultimately leads someone to give the best to their organization, work and innovate for the sake of their organization. Based on the entire description stated above, it should be suspected that organizational climate has a positive effect on lecturer work innovation behavior through the organizational commitment of Open University lecturers.

2   METHODOLOGY

The study adopted a quantitative approach, by collecting data from Open Distance Learning Academicians employed at Universitas Terbuka Headquarter in Pondok Cabe Banten Indonesia, utilizing five self-administered questionaire. Collected data was analyzed with the help of a Structural Equation Model Partial Least Square (SEM-PLS) 3.

3   FINDINGS AND DISCUSSION

3.1   Descriptive Data

3.1.1   Descriptive data of research respondent

No	Variable	Category	Number of People	Persentage (%)
1	Gender	a) Man	39	39
		b) Woman	61	61
2	Tenure	a) 1 - 5 Years	36	36
		b) 6 – 10 Years	4	4
		c) 11 – 15 years	13	13
		d) 16 – 20 years	12	12
		e) 21 – 25 years	13	13
		f) 26 – 30 years	3	3
		g) > 30 years	19	19
3	Academic Position	a) Lecturer	44	44
		b) Assistance Professor	33	33
		c) Associate Professor	21	21
		d) Full Professor	2	2
4	Job Status	a) PNS	99	99
		b) Non PNS	-	-
		c) TK BLU	1	1

Based on descriptive analysis, it is known that in general there are more female respondents than male, male lecturers are 39 people and women are 61 people. Based on the tenure of the lecturers, the largest number are lecturers who have a working period of 1 to 5 years, namely 36 people or about 36% and the least are lecturers who have a working period of 25 to 30 years, namely 3 people or about 3%. Furthermore, based on academic positions, lecturers who have academic positions as expert assistants are 44 people or 44%, Lectors are 33 people or 33%, Head Lectors are 21 people and Professors are 2 people or 2%. Furthermore, regarding the employment status category, the majority of lecturers are civil servants, namely 99 people, of which only 1 person has TK BLU status.

3.1.2   Research Model
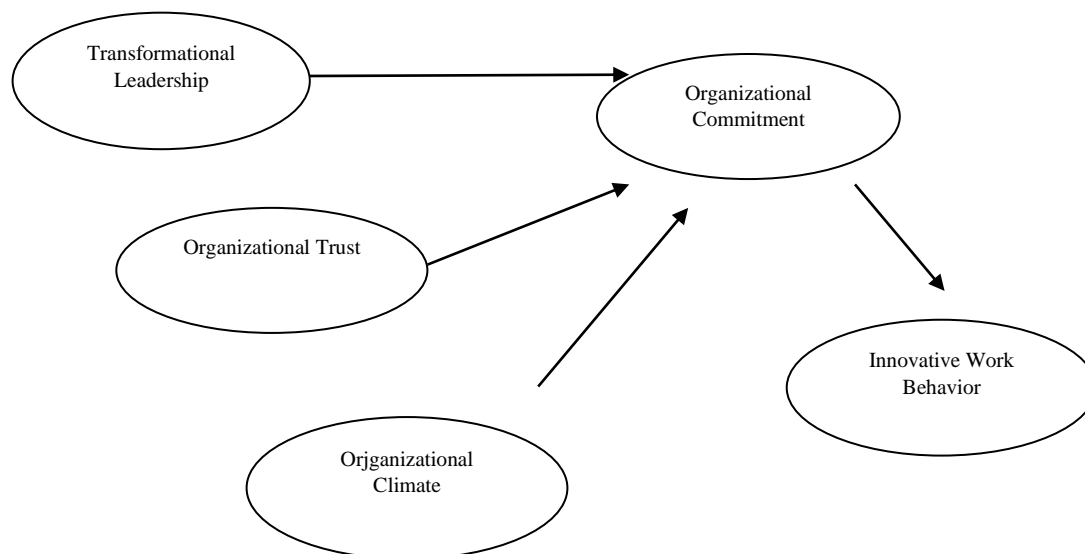
from the theoretical analysis and the findings of previous studies it can be concluded that the hypothesis in this study is:

H1: Commitment Organization Influences Innovative Work Behavior

H2: Transformational leadership influences work innovation behavior through organizational commitment

H3: Organizational Trust influences Innovative work behaviour through organizational commitment

H4: Organizational Climate influences Innovative work behavior through Organizational Commitment

3.1.3   Result of Hypothesis Testing
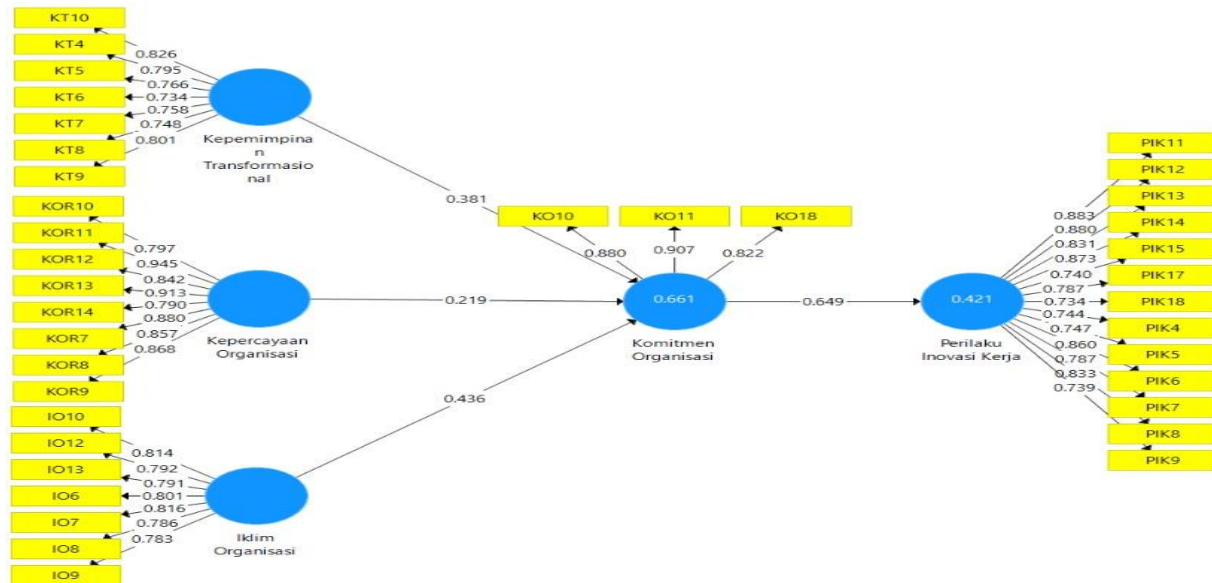
Based on the results of the hypothesis test above, it can be concluded that

Path Coefficient

	Organizational Commitment	Innovative Work Behavior
Transformational Leadership	0,436	
Organizational Trust	0,381	
Organizational Climate	0,219	
Organizational Commitment		0,649

Total Indirect Effect

	Innovative Work Behavior
Transformational Leadership	0,283
Organizational Trust	0,247
Organizational Climate	0,142

Specific Indirect Effect

Iklim Organisasi -> Komitmen Organisasi -> Perilaku Inovasi Kerja	0.283
Kepemimpinan Transformasional -> Komitmen Organisasi -> Perilaku Inovasi Kerja	0.247
Kepercayaan Organisasi -> Komitmen Organisasi -> Perilaku Inovasi Kerja	0.142

4   DISCUSSION AND CONCLUSION

Based on the path coefficient of the influence of transformational leadership, organizational trust, organizational climate directly on commitment is 0.436; 0.381 and; 0.219 while organizational commitment has a relatively large direct effect, namely 0.649. This shows that the one that has the strongest relationship to work innovation behavior is primarily organizational commitment. Commitment is a bond that is formed when someone first comes into contact with the atmosphere of the work environment, whether that includes the physical and non-physical environment. Periodic evaluations are carried out on the physical and non-physical work environment, it is this attachment that will determine other experiences that will be felt by workers. It can be said that commitment is formed by various experiences, feelings, evaluation others and can be the basis motivation to stay or staying out from the organization.

Based on the results of testing the hypotheses that have been described, it can be concluded that all the hypotheses put forward in this study prove that there is a positive and significant influence between the variables of transformational leadership, organizational trust, organizational climate and organizational commitment on work innovation behavior, where the research results also show that Organizational commitment acts as an intermediary variable that mediates the influence of transformational leadership variables, organizational trust and organizational climate on lecturer work innovation behavior.

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DESIGNING A SCIENCE MOBILE LEARNING SCENARIO THAT IMPLEMENTS INQUIRY-BASED LEARNING TO ACHIEVE BETTER INQUIRY SKILL

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Abstract

Learning science demands an authentic learning experience with direct experiential learning. Science lesson at school, particularly physics, is expected to create learning activity that could facilitate students' experience and construction of science understandings through inquiry-based learning. Mobile technology could facilitate learning across context and promote students' inquiry skills. For that reason, there is a necessity to design a novel science instructional strategies which could promote inquiry skills through mobile learning. This study focuses on designing an effective science mobile learning scenario to promote learners' inquiry skills and asking science teachers their views as informant about the implementation of that learning scenario. This research takes a Design-based research approach to design learning scenario which implements inquiry-based learning and integrates a mobile technology (*Arduino Science Journal App*). The learning scenario employs inquiry-based learning and situated learning activity where students are given the opportunity to do a real-time data collection method. Results indicate a common belief of science teachers that inquiry phases were represented in the learning scenario and mobile learning is clearly support the idea of how physics characteristic match well with *Arduino Science Journal App*. Accordingly, to better the design in future work, several recommendations were suggested which mainly focus on pedagogical factors, including (i) comprehensive classroom management; (ii) revisit the previous lesson; (iii) the need to include experiment and; (iv) additional deeper learning for a more meaningful physics lesson.

Keywords: inquiry skills; science mobile learning; learning scenario

1   INTRODUCTION

Learning Science has distinctive characteristics that distinguish from other subjects. Science itself is the result of theory and human inquiry through experimentation. Science curricula policy in some countries agreed on the notion that inquiry is a major theme in science education (Abd-El-Khalick et al., 2004). For instance, National Science Education Standard (NSES) in the USA released standards in science education that outlines that inquiry is vital to science learning and as students are actively involved in developing their understanding by integrating scientific knowledge using their critical and logical thinking (National Research Council, 1996). These standards comprise what students need to do and understand to be scientifically literate at different grade levels. In conjunction with this standard, another country like Indonesia, in the latest middle school curriculum in 2013 also emphasis the curriculum on inquiry-based learning with scientific learning approach (Indonesian Ministry of Education and Culture, 2018). This curriculum mainly focuses on developing knowledge-

based on authentic learning experience with direct experiential learning. These two examples imply that Inquiry skills are important as they could shape students thinking into creating and innovating scientific knowledge.

Accordingly, learning science at school is expected to create learning activity that could facilitate students' experience and construction of science understandings and inquiry skills through inquiry-based learning. However, implementing inquiry-based learning present challenges to both educators and learners. The challenges comprise of how to structure science teaching so, it accommodates the goals of understanding scientific inquiry, enhances the learning of science concept and emphasis on the learner's mental activity to make a connection to current scientific knowledge. Learning science requires observations and experiential learning about the way the world works (Bybee, 2007).

Reiser et al., (2001) argue that to overcome those challenges in which students will be able to experience learning and bridging new concepts and the knowledge they already have requires a strategy to expand the learning opportunities for students using new technologies. Previous approaches that have been done so far are the development of some new technological supports for inquiry-based learning, such as thinker tools to accommodate science accessible to all students, BGuILE for guided inquiry, and nQuire for personal inquiry learning, (Mulholland et al., 2012; Reiser et al., 2001; White & Frederiksen, 1998). Those tools are aligned with the capability of providing scaffolding to support scientific practice and can be inherent in science classroom practices. Such tools embedded Technology Enhanced Learning in Science (TELS) and able to provide a platform where rich investigation can occur, allowing both access to data and strong analytical tools (Kali, Linn, & Roseman, 2008; Reiser et al., 2001). However, those TELS provide computer and web-based technology only and somehow show limitation to allow context for learning to be expanded beyond the traditional classroom. Consequently, new technology is expected to overcome this constraint.

Mobile learning is a promising new technology which enables some affordances that other technologies might not offer. Moreover, as this new kind of technology emerged, there is an opportunity to have learning science conveniently with mobile technology. Because of its ubiquity, mobile learning could facilitate learning beyond the classroom context and benefit students' inquiry skills so they could then be able to apply knowledge in real-life context throughout their lives. Some studies have been conducted in emerging mobile technology applications in science education. For instance, Miller & Doering (2014) report an investigation involving outdoor mobile application,

namely Project Noah, which aims to collect large-scale, ecological data through users encounters with nature. Joiner et al., (2004) offer fascinating insights into the extent that Savannah as mobile gaming, might be employed to create a compelling and engaging learning experience. Another discipline such as in social science, Shih, Chuang, & Hwang, (2010) apply mobile learning via PDA (Personal Data Assistant) that employs inquiry-based learning strategies to facilitate students' field learning.

Those mobile learning apps may fit for other purposes of science education curricula, as for inquiry-based learning, it requires different instructional strategies (Shih et al., 2010). Accordingly, the need to design novel instructional strategies which could promote inquiry skills through mobile learning are eventually become more evident. This study focuses on designing an innovative science mobile learning scenario to promote learners' inquiry skills. The learning scenario employs inquiry-based learning and situated learning activity where students do a meaning-making activity to construct their understanding.

Regarding specific content where the design will be implemented, according to research by (Basson, 2002) students mostly experience difficulties with physics not only due to the complexities of the subject but also due to incapability with their skills and knowledge of mathematics. Moreover, most of these students did not learn physics properly secondary level. Science curricula currently are based on a notion of 'structure of science' and its 'mode of inquiry' (National Research Council, 1996). To accommodate the aforementioned issue, the topic of acceleration from physics will be used to implement the design of the learning scenario.

Inquiry-based learning

Inquiry-based learning is a learning strategy in which students follow some methods as scientists to construct knowledge (D. Kuhn et al., 2017). This strategy emphasises in active participation for a learner to discover knowledge on their own responsibility (De Jong & Van Joolingen, 1998) and many quantitative studies have proven the effectiveness of inquiry teaching as an instructional approach (Alfieri, Brooks, Aldrich, & Tenenbaum, 2011). In terms of inquiry phases, Pedaste et al. (2015) analysed in the identification of five general inquiry phases and synthesised framework to describe inquiry cycle in which inquiry phases and sub-phases would be present. The five general inquiry phases include orientation, conceptualisation, investigation, conclusion and discussion and reflection.

Other inquiry phases with a different approach are presented in Mulholland et al. (2012) in which inquiry phases encompass practical eight phases. They developed *nQuire*, a web-based software to support personal inquiry and use the term 'script' as a dynamic lesson plan that guides how students should interact collaboratively in following an inquiry. This research emphasis on personal inquiry to assist students see science as personally meaningful and relevant to their daily lives. The important part of personal inquiry is taking *ownership* of the inquiry process (Anastopoulou et al., 2012) and encompass familiar contexts such as the home, local neighbourhood and school. Each inquiry is about "myself", "my environment" or "my community", thus the motivation for this focus is to develop inquiries where students engage in investigating their bodies and local surroundings (Sharples et al., 2015a). This argument is also supported by National Research Council (2000) that reports the importance of students' taking ownership of a task could engage students in identifying or sharpening questions for inquiry.

Mobile Learning

Kukulska-hulme (2013) outlines that mobile learning is more than just about *connecting* context; it is about exploiting or *creating* context. Mobile learning connects learners with the place where mobile learning occurs thus provides more flexibility in terms of time, place and resources. Mobile device now has become more powerful and affordable, making the ownership reaches ubiquity, thus, in many countries the possibilities for engaging learning experiences are becoming boundless (Alexander et al., 2019). However, for optimal design, it is required to know the best strategies for making the most of mobile learning.

Mobile learning has the potential in supporting the development of learning communities of offering experiential learning and in encouraging the development of meta-level thinking skills (Joiner et al., 2004). According to a report by UNESCO (2013), mobile devices can support personalised learning to maximise understanding. Because people carry mobile devices with them most of the time, this flexibility allows them to study anytime and anywhere. It supports situated learning where a number of applications guide users in providing information or allow them to learn about particular object in their natural settings. Mobile device then can give literal meaning to 'the world is a classroom'. The emergent of mobile device in learning is also aligned with the current term of 'digital native' which attached to the young generation. As Prensky (2001) points out, digital natives are used to the instantaneity, they receive information really fast, including from their cell phones.

Previous research has shown that some software has developed in addressing the need to improve better in science. As Quintana, et.al (2004) point out, software can help in inquiry learning by scaffolding learners and inform their progress and next steps, providing hints and reminders, and encouraging them to encapsulate and reflect on their progress. One of the mobile software that provides mentioned features is Arduino Science Journal App by Google (ASJA). This app gives students access to conduct a robust observation by collecting data with sensor built-in in the smartphone (Cowen, 2018). The built-in sensor can collect various data including light, sounds, pitch, acceleration, compass and magnet. Moreover, it is a digital form of science journal to document and record investigations through notes, photos and phone's built-in sensors. The app is available for both iOS and Android.

The first interface of ASJA consist of thumbnails of saved projects (Figure 1) and can be continued some time in the future. This feature enables students to revisit and reflect the previous observation. As student create an experiment, the interface will change to split screen mode: the experiment feed and the observation user is making. In the middle of the split screen, the observation tools are seen and allow student to add note, use a sensor, take a photo and attach an image.
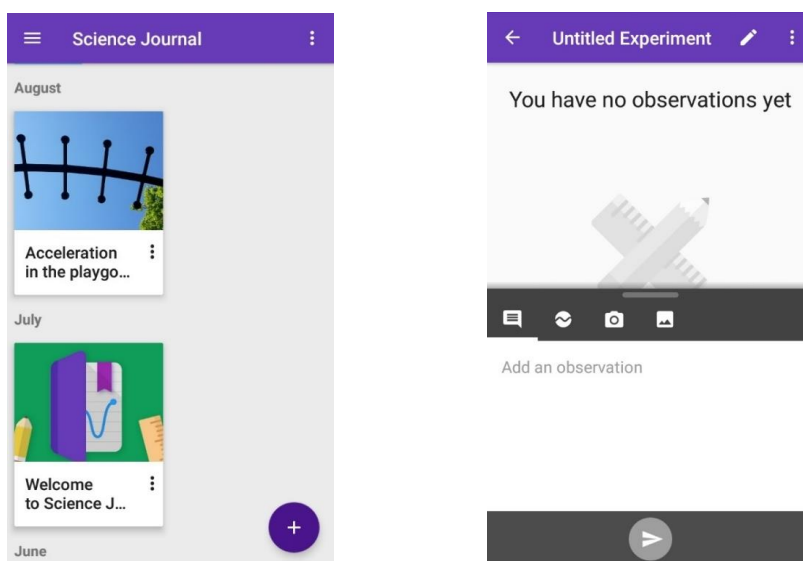
Figure 1. Interface of Science Journal App

Sensors in ASJA comprises light sensor, sound, pitch, compass, magnet and four types of accelerometers. This study will focus on accelerometer to match with acceleration as the chosen content. Unlike the light sensor and sound, which each just record one value, the accelerometer records acceleration in three different directions, or 'axes' (orientation in space), known as X, Y, Z

and additional linear accelerometer. The X, Y and Z axes correspond to a physical direction relative to user's body (Cowen, 2018). Students record the acceleration according to which orientation suitable for the experiment. To record, students need to tap on the red button to begin the recording. The graphic will generate as soon as the recording is on and snapshots can be taken along with minimum, maximum and average acceleration (Figure 2). The ability of the app to share the result in form of .csv file allows students to review and collaborate with other students.
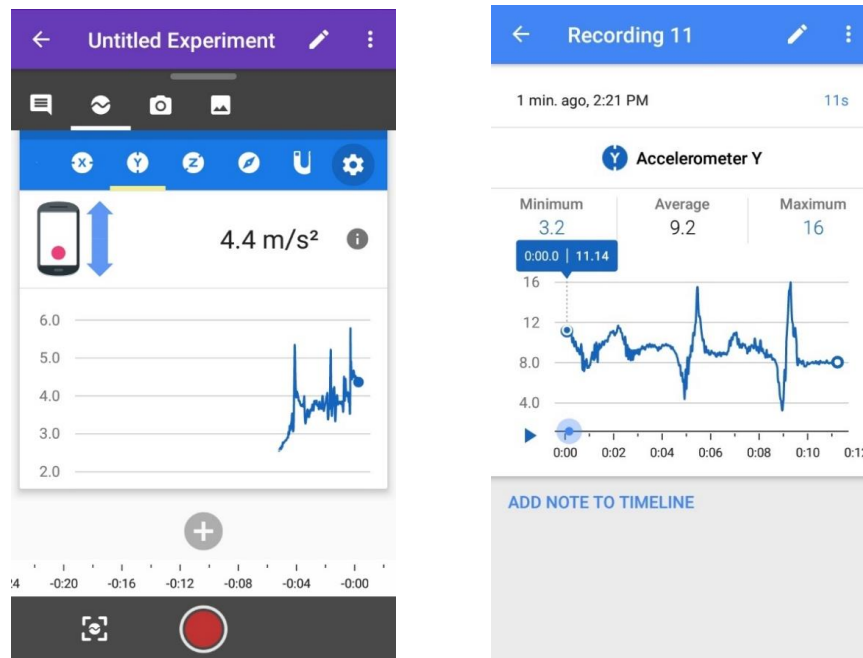
Figure 2. Graphic of acceleration created by SJA

ASJA is utilised as the mobile app in this study because of its several affordances. Firstly, ASJA allows real-time data collection, which is important in inquiry phases as investigation is a central point in inquiry-based learning. The data in the form of acceleration (m/s^2) will then make it easier to proceed to the next phase, which is data analysis. Feature of the app enables repetition as well so that it fosters data accuracy. Secondly, ability to share the data in the form of .csv file making it possible to maintain seamless learning. The learning process could continue across situations (formal and informal contexts) and scenarios (individual learning, small groups, online communities, etc) mediated by technology (Wong, 2012). The third reason is of its interface and usability. The app is quite easy to access and operate, thus, students might not need a long time to master. Accordingly, these descriptions give ASJA plausible reason as to why the researcher involves this app in the study.

Implementation of Inquiry phases

Inquiry-based learning has been chosen in many countries as one approach recommended to teach Science. Similarly in Indonesia, Ministry of Education emphasis the curriculum, especially science subject, to strengthen implementation of inquiry-based learning with scientific learning approach (Indonesian Ministry of Education and Culture, 2018).

Inquiry phases executed in this study are integrated from Pedaste et al., (2015) and Eight-phase inquiry model by Mulholland et al., (2012). These two inquiry models are considered to be employed as they aligned with personal inquiry and supporting mobility during inquiry.

The research conducted by Pedaste et al., (2015) developed a robust inquiry framework from various research. An analysis from a total of 32 articles describing inquiry phases was reviewed, resulting in the identification of five distinct general inquiry phases. Besides, these two inquiry phases represent five essential features of classroom inquiry that apply across all grade levels according to Inquiry and the National Science Education Standard (National Research Council, 2000). Thus, researcher attempts to combine these two inquiry phases to be implemented in this study. The figure below is inquiry model derived from aforementioned studies.

Figure 3. Inquiry model derived from Pedaste et al., (2015) and Mulholland et al., (2012)

The following clarifies what each phase comprise and the flow of what students carry out in the lesson:

Orientation: Find my topic

In this phase, students stimulate curiosity about a topic and finding out a learning challenge based on learning materials introduced by the teacher.

Conceptualisation: Decide my question or hypothesis

Plan my method

This phase is the process of stating the questions or hypothesis based on theory. Then they decide on what approach they will undergo to answer the question or prove the hypothesis.

Investigation: Collect my data

Analyse my data

In this phase, students implement the method and start collecting data and analyse them. They conduct the experiment to test the hypotheses. Then students will interpret data and synthesising new knowledge.

Decide my conclusions

The process of generating conclusions from the data. Students compare inferences made based on data with research questions and hypotheses.

Share and reflect on my progress

The process of communication, presenting the outcomes of the experiment conducted, describing them, critiquing and evaluating the whole inquiry cycle.

Physics is chosen as the subject in this study due to its characteristics. The research of questionnaires study by Angell et al., (2004) shows that upper secondary students perceived physics as difficult and with a high workload, but also interesting. In that research, it is known that such a higher workload demands more conceptual understanding. As for laws and rules, one of the examples are theory of Newton's laws of motion and rules for adding or subtracting vectors (force or velocity vectors).

2 METHODOLOGY

The study was an exposure of learning scenario designed by the researcher to the participants in which they review and try some of the activities). The participants are experienced science teachers that have been teaching for more than four years. The activities in the learning scenario include some experimental procedures embedded with inquiry process. Participants examined the learning scenarios and its relevance to improve learner's inquiry skills and then write some views. After

writing some commentary, participants had semi-structured interviews. Inquiry phases in this study were integrated from Pedaste et al (2014) and Eight-phase inquiry model by Mulholland et al (2012).

Table 1. Description of activities undertaken by participants

Activities	Time
Pre-activity: Familiarise Science Journal App, watching an introduction video Familiarise with phases of inquiry process by Pedaste et al (2015) and Eight-phase inquiry model by Mulholland et al (2012). Review the learning scenario, and try some of the activities	30 mins
Examine the learning scenario, how it meets the criteria based on participants' teaching needs and curriculum	30 mins
Interview	30 mins

Following the approach, data from the interview and some written commentary were collected to support the study. Since the study implements a learning scenario to be examined by teachers, the primary data were teachers interview asking them as informants and experts towards the pertinence of learning scenario if applied in a real classroom setting. The interviews conducted were semi-structured interviews which interviewer hold an open-ended interview guide that has a list of topics to be addressed and a default wording. However, the interviewer the wording and order are subject to change following the interviewee to develop ideas on the issues raised by the researcher (Denscombe, 2017; Robson & McCartan, 2016).

Interviews were chosen because the research wants to explore phenomena and understand them in-depth for a detailed understanding of how things work and speak with key players who can give valuable insights based on their experience and position (Denscombe, 2017) thus, 'providing rich and highly illuminating material' (Robson & McCartan, 2016 p.286).

In this study, qualitative data from the interviews were analysed using thematic coding analysis. The analysis following Flick, (2014) Braun & Clarke, (2006) and Robson & McCartan, (2016) thematic coding analysis which comprises five phases. Thematic analysis was chosen as it can usefully summarise key features and highlight similarities and differences across the data set (Braun & Clarke, 2006).

3   FINDINGS AND DISCUSSION

The findings gathered from six interviews and some written commentary by the participants. This research aims to figure 'How is science mobile learning scenario best be designed to promote students' inquiry skills?'. The result will be presented in some themes developed from the interviews.

3.1   Implementation of Inquiry Phases

The interviews revealed that participants considered the learning scenario is suitable with their curriculum and teaching needs. In accordance with the present results, previous studies have demonstrated that lesson plan – in this case, learning scenario is what links the curriculum to the specifics of instructions, it offers for more productive instructions and advances the potential of effective teaching (Clark & Dunn, 1991; Freiberg & Driscoll, 2000). In regard to this result, National Science Education Standards also mentioned that teachers who plan an inquiry-based science program for their students need to select science content and curricula to meet the interest, knowledge and experiences of the students. This standard accounts for a clear call for inquiry-based science instruction and illuminates such features in teaching practice (Jacobs, Martin, & Otieno, 2008; National Research Council, 1996).

As one of the participants mentioned that the learning scenario is suitable in terms of Indonesian curriculum, this finding is consistent with that of Indonesian Ministry of Education and Culture, (2018) who asserts in the current curriculum to reinforce scientific inquiry approach. Furthermore, in another standard, like in National Research Council, (2000) also describes inquiry encompasses grade K-12, namely content standard for science as inquiry. It can therefore be assumed that the inquiry has emerged in most curricula.

Participants also commented that the implemented inquiry phases did demonstrate that each of inquiry phases is enacted in the design. They considered that inquiry phases are important for students to excel in science as it makes students think critically. This statement may be emerged due to some probing questions are given, thus lead students to employ their expert thinking in finding the answers. This result is in line with those of previous studies. Goodrum, Hackling and Goodrum, Hackling and Rennie (2001) point out inquiry means that students combine all scientific process as they develop reasoning and think critically about the evidence found and give an explanation to build their understanding. The previous researcher argues that critical thinking is the elaborated agenda of science education along with inquiry method (Rutherford, 1964). According to National Research Council (2000) students do not merely undertake inquiry by only learning words like "hypothesis"

and "inference" or by some procedures stated as "the steps of scientific method". Therefore, students need to experience inquiry themselves to perceive a deep understanding of its characteristics. Hence, experience and knowledge could not be separated. In the design, the learning activities focus on students' enacting the experiment and experiencing acceleration by doing simple activity and exploring the playground rides.

Another important finding was that participants believe that inquiry can construct students' understanding. This view may be explained by the fact that learning best occurs when students are engaged in finding answers to real-world problems. In other words, students are required to struggle with ill-defined problems (Fortus, Krajcik, Dershimer, Marx, & Mamlok-Naaman, 2005). Additionally, another literature also supports this view, National Research Council (2000) reports that inquiry abilities require students to link the process with scientific knowledge as they apply scientific reasoning and critical thinking to build their science understanding. In building new knowledge, students have prior conceptions about natural phenomena. When new knowledge is accepted by scientific community, this prior knowledge forms a strong base to build deeper understanding. Also, effective learning will happen when students take control of their own learning. Investigation phase requires learners to collect valid data and making a prediction. As stated by the participants, opportunity to carry out experiment is evident in the learning scenario. The result indicates that teachers perceived making prediction and hypotheses are essential in inquiry learning and thus students should experience these steps to accomplish the whole phases. Learners prioritise evidence, which allows them to build and evaluate explanations that address scientifically oriented questions (National Research Council, 2000).

The next inquiry phase mentioned by the participants is compare and review. These stages are included in investigation: analysing my data. In the learning scenario, compare and review will take place after a learner record acceleration and the graphic has released. A learner is supposed to take notes of the results using the app and then compare the results with friends. As the study from the National Research Council notes that learners 'formulate explanations from evidence to address scientifically oriented questions' (p.26). This phase oriented on the path from evidence to develop robust explanations. Scientific explanations are based on reason and respect on evidence, therefore explanations relating what is observed to what is already known. In other words, it means building new ideas upon their current understandings.

In respect to making inferences, it is stated in the learning scenario as post activity, where students analyse the data by reflecting on the questions they chose earlier and review the data. Moreover, the probing questions also provided to help students in analysing the data. In consonance with this, NRC noted that evaluation of the explanations has occurred in search of alternative explanations. One can ask questions like, 'does my evidence support the proposed explanation? Does my explanation sufficient enough to answer the questions? The point of this stage is that students can link their results with their scientific knowledge appropriate in their level (p.27).

3.2   Mobile application and acceleration topic

Generally, the participants responded that the Arduino Science Journal App (ASJA) is helpful and exciting. Mobile application such as ASJA is helpful as it helps teacher and students to record experiment data conveniently. In the learning scenario, ASJA is the main application for supporting the experiment, hence it is necessary for teacher and learners to install it in their mobile device.

ASJA is perceived as an innovative mobile application by participants as it is novel and interesting, therefore it might be easy for the teacher to grab students' attention. Moreover, students nowadays are digital native (Prensky, 2009) they exposed to digital enhancements, causing them at ease in interacting with new technology like ASJA. ASJA itself has many affordances in supporting the learning activity. Data recording, immediate result and enable taking snapshots and notes are some features that some participants mentioned. ASJA utilise sensors in mobile phone to record phenomena in real-world situation and students can use the app to collect real-time data as part of their science investigations (Cowen, 2018). In the learning scenario, motion sensors are used, measuring acceleration using a 3-axis coordinate system with accelerometers (accelerometer X, Y, Z and linear accelerometer). Besides four motion sensors, this app also contains five other sensors, namely light sensor (brightness), compass, magnetometer, pitch and sound intensity. These features offer limitless possibility for observations which are the core of ASJA. The observation tools comprise add a note, use a sensor, take a photo and attach an image. By making observations, users record data and notes about experiment, just like the way they usually keep notes and record data in paper-based journal, besides, ASJA enables everything stored digitally (Cowen, 2018). As participants tried to install the app and operate it, initial insights from the evaluation of the ASJA reveal that participants like the fact that they can use their phones to do science and unlocks their phone potential.

According to the literature, physics is at best an oversimplification of how scientists operate. Scientific method – is a game plan that is frequently modified when the actions start. It starts with *observation* of the phenomenon, continues with forming *hypothesis* and soon the scientist performs an *experiment* that will test this hypothesis. Then, the outcome of this experiment often raises more questions that lead to *modification*. Another literature supports this claim is that children may not realise they are learning while playing. The swings – for example, allow children to physically experience a wide range of physics concepts, such as velocity, gravitational energy acceleration or angular acceleration. Practical experience enables learning in more than just the mind; it develops skills. Out-of-classroom experiences are also opportunities where scientific method is continuously applicable. Schools that has limited laboratories can benefit by perceiving the world as one big laboratory where enable science engagement with the real world (Mavhunga, 2018). These findings then further support the idea of how physics characteristic match well with the mobile app.

3.3 Redesigning learning scenario

Reflecting on the above findings, recommendations for the improvement and implementation of the design of the learning scenario emerge including the need of (i) comprehensive classroom management (ii) revisit previous lesson (iii) the need to include experiment and; (iv) additional deeper learning for more meaningful physics lesson

3.3.1 Comprehensive classroom management

Classroom management is revealed as one of the issues arising from participants. This pedagogical skill includes supervising, time scheduling, safety, rules and risk, technical issue and grouping. Classroom management is one of the roles associated with effective teaching, alongside with instructional strategies and classroom curriculum design and has been recognized as a pivotal element in effective teaching (Marzano et al., 2003).

The implication of this recommendation is that the learning scenario and its implementation should value how to manage the class both in formal settings (inside the classroom) and informal settings (outside the classroom, e.g. school playground)

3.3.2 Revisit previous lesson

Before entering new subtopic while teaching science, it is suggested by the participants to revisit the previous theme, as it will bridge the known information with the new knowledge. This finding is in accord with what suggested by Johnson (2000) to apply 'input' in the lesson study/learning scenario.

3.3.3   The need to include experiment

When asked about the previous experience in teaching some related content, the participants were unanimous in the view that 'experiment' is always involved and attached to most of physics content. The scientific method – or scientific inquiry is important, specifically in day by day process in filling the detail of a phenomenon. Some great discoveries in physics were done by traditional physicist working in the labs, implementing 'scientific method' (Ostdiek & Bord, 2013). This finding supports evidence from previous study (J. Kuhn & Vogt, 2013), in addition to the use of SJA as experimental tools, the cognitive and motivational learning of the learner is greater when a physical phenomenon, like acceleration is explored with experimental tools. This claims thus support views that experiment and the use of experimental tools are quite vital in physics teaching.

3.3.4   additional deeper learning for more meaningful physics lesson

Involving students to learn physics in a more meaningful way seems essential to support the understanding of science. One of the participants gave valuable insights to sharpen deeper learning in physics by increasing the level of acceleration itself. Comparing the result of highest acceleration among students might lead them to realise and finally acknowledge factors that influence acceleration. Students could later generate with the 2nd Newton's Law that different mass will cause different result of acceleration. Therefore, it can be assumed that this addition could increase students reasoning and benefit their learning.

4   CONCLUSION

The study aimed at finding out how effective science mobile learning scenario best be designed to promote learner's inquiry skills in Acceleration topic in Middle School Science. A design-based research study was conducted to query teachers's view about the designed learning scenario.

The utilisation of Arduino Science Journal App is beneficial as it will help students to record experiment data conveniently as well as generating immediate result to continue to the next phase which is data analysis. ASJA utilise sensors in a mobile phone to record phenomena in a real-world situation and students can use the app to collect real-time data as part of their science investigations

(Cowen, 2018). Collecting data is central in doing scientific investigation, therefore these findings then further support the idea of how physics characteristic match well with the mobile app.

Taken together, these findings suggest a role for effective learning scenario in promoting inquiry skill. Reflecting on the above findings, recommendations for the future improvement and implementation of the design of the learning scenario for the subsequent iteration are identified. The recommendations mainly focus on pedagogical factors, including (i) comprehensive classroom management; (ii) revisit the previous lesson; (iii) the need to include experiment and; (iv) additional deeper learning for a more meaningful physics lesson. These recommendations are based on the first iteration of a DBR study. Therefore, it is recommended that further research in emerging mobile learning and inquiry-based learning be conducted to broaden our understanding of potential relationship of mobile learning and inquiry learning. Through future iterations this work will quest to contribute to this development.

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THE USE OF MOBILE LEARNING TO ENHANCE LEARNING INNOVATION PASCA PANDEMIC COVID 19

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Abstract

This study aims to identify the characteristics, objectives, benefits, advantages and limitations of mobile learning analyzing opportunities and challenges the use of mobile learning as a learning model during the Covid-19 pandemic as well describes the application of the use of mobile learning in learning in education base. This research is a literature study with a qualitative approach using descriptive-analytic analysis. The research results show that mobile learning as a subset of e-learning has many advantages in facilitating learning process without the limits of time, space and place. Although it has limitations, but mobile learning has a very good opportunity to be utilized on virtual learning during the covid-19 pandemic as an alternative to learning face to face. Tablets, smartphones and laptops can be used as supporting devices in the implementation of mobile learning. In order to be implemented optimally, teacher skills are needed in operating the device and designing teaching materials properly digitally based.

Keywords: *e-learning, mobile learning, learning resources, during the covid-19 pandemic*

1   INTRODUCTION

The teaching and learning process is an interactive communication process between teachers and students. In the process of communication sometimes experience difficulties so we need an intermediary in the form of media that can connect communication between teachers and students. In essence, the use of media has the goal of creating more communicative and meaningful learning for students. Along with the development of increasingly advanced technology, there are many alternative media that educators can use to help their students learn, one of the technologies that is currently in great demand by the public is mobile learning using smartphones.

Learning media can be developed on mobile devices that are easy to carry anywhere such as smartphones and tablets (Squire, 2009). In addition, students can also easily interpret data, improve understanding, condense information, present data, generate motivation and interest in students in learning so that students do not only listen to explanations from the teacher but through learning media, students can also make more observations. and demonstrations (Sudjana & Rivai, 2011).

Media development in the form of mobile learning can meet the criteria for learning objectives and content, suitability for student characteristics, efficiency of learning time, and ease of use by students.

The characteristic of using a smartphone as a learning medium or called mobile learning is that it has a very high level of flexibility (Wirawan, 2011). As a complement to existing learning, mobile learning allows its users to access materials, directions, and information related to learning anytime and anywhere.

Mobile learning is an alternative to developing learning media that can be used as a learning supplement so that it can train students to learn independently (Arief, 2014).

As for several researchers who have conducted research on the use and utilization of mobile devices in learning, namely (Musahrain. et al, 2017) which discusses the application of Mobile Learning as a medium in learning, (Ibrahim, Nurwahyuningsih. et al, 2017) which discusses the development of Mobile Learning learning media based on Android in science subjects for junior high school students, (Rahmawati, Erni, 2017) who found that m-learning significantly supports independence and student learning outcomes in geography subjects, (Hapidz, Radif, 2019) which discusses the design and manufacture of media mobile learning on the subject of air conditioning systems and installations.

This article aims to present a literature study that discusses the concept or

theory about the use of mobile learning in learning

2 METHODOLOGY

This research is a library research where the data comes from library sources in the form of books, scientific articles, journals, and other sources that are coherent with the object of discussion. This study uses a qualitative approach to obtain in-depth, detailed and meaningful data on what is being studied (Sugiyono, 2011). This research is descriptive-analytic, which is trying to describe clearly and systematically about the object of study being discussed, collect and process data, and present conclusions after analyzing the research discussion.

Sources of data in this study consisted of primary and secondary data. Primary data is data obtained directly without intermediaries or original data, while secondary data is data obtained from existing sources. The primary data in this study were books and journals about learning during the COVID-19 pandemic and m-learning applications. While the secondary data are books, journals and other sources related to m-learning and its applications during the COVID-19 pandemic. Data analysis was

carried out in a descriptive-analytic manner by providing a detailed explanation of the research object being discussed.

3 FINDINGS AND DISCUSSION

3.1 Mobile Learning Concept

The term mobile learning by Tamimuddin in (Musahrain, 2017) can be interpreted as the use of handheld and mobile devices or technologies such as mobile phones, PDAs (Personal Digital Assistants), tablets and laptops used in learning (Musahrain, 2017). This opinion is in line with what was expressed by Desmond in Hamzah (2006) that m-learning refers to the provision of learning and training through the use of unlimited equipment such as PDAs (Personal Digital Assistants), cellular phones, and tablets (Hamzah, 2006).

Quinn Clark in Musahrain (2017) argues that mobile learning is the intersection of mobile computing and e-learning: accessible resources wherever you are, strong search capabilities, rich interaction, powerful support for effective learning, and performance-based assessment. E-learning is independent of location in time or space. Based on this opinion, it can be interpreted that mobile learning is learning through mobile computers and e-learning is a tool that can be used as a source to access information that can be done anywhere, has a strong ability to access, is rich in interaction, provides full support. in achieving effective learning and assessment-based initial appearance (Musahrain, 2017).

Mobile learning or m-learning is often termed as e-learning through mobile computing devices. In general, it is considered as any device that is small enough, can work alone, can be carried at all times in everyday life, and can be used for some forms of learning. This device can be seen as a tool to access content, either stored locally on the device or accessible via interconnection.

This device is also a tool for interacting with other people, either through voice, exchanging written messages, still images and moving images (Information Technology Computer Handout, 2019). Mobile learning users can access learning content anywhere and anytime, so that the independence of students will grow because of access to learning content without being bound by space and time (Hakim, 2017).

Thus, mobile learning can be interpreted as part of e-learning that is used by teachers and students in the learning process through handheld devices such as tablets, cell phones, PDAs (Personal Digital Assistants), with the aim of making it easier to access teaching materials for teachers and other materials. learning for students without time and place limits, so that learning can be more effective and efficient. In addition, learning outcomes can also increase and learning becomes more quality.

3.2 Classification of Mobile Learning

The mobile learning system has several general classifications based on the following indicators:

1. Types of mobile devices supported by notebooks, table PCs (Personal Computers), PDAs (Personal Digital Assistants), smart phones or cell phones

2. Type of wireless communication used to access learning materials and administrative information GPRS (General Packet Radio Service), GSMC (Global System for Mobile Communications), IEEE 802.11, Bluetooth, irDA

3. Educational support synchronously and asynchronously. Users can communicate synchronously via chat and voice communication, or asynchronously via email and SMS (Short Message Service) with educators

4. Support for e-learning standards

5. Availability of a permanent internet connection between the m-learning system and the user

6. User location

7. Access to learning materials and administrative services (Information Technology Computer Handout, 2019).

The general classification in mobile learning systems can clearly be seen in the below of following figure
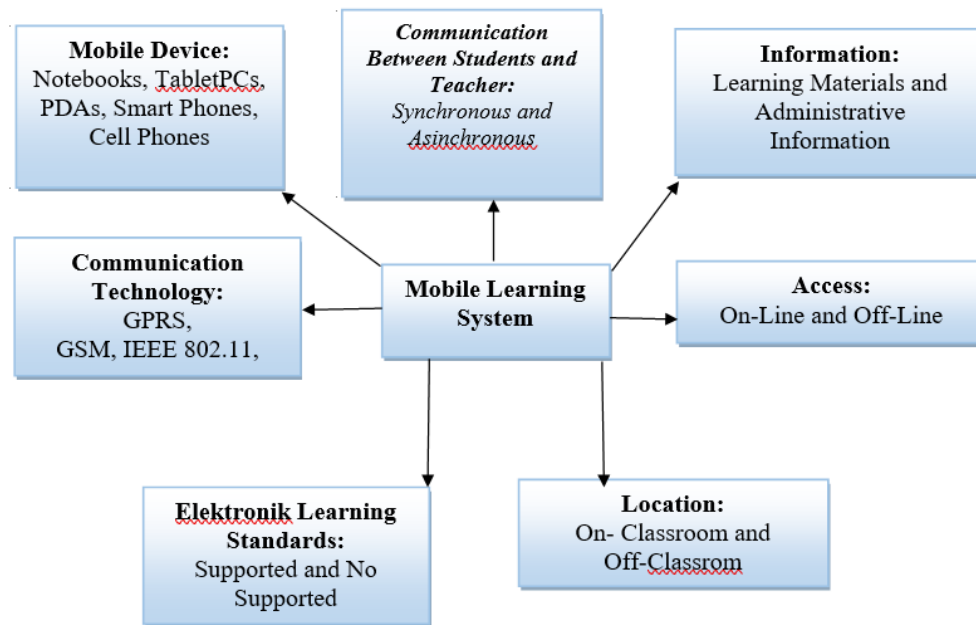
General Classification of Mobile Learning Systems Figure

3.3 Functions and Benefits of Mobile Learning

3.3.1 Mobile Learning Function

There are three main functions of using mobile learning, namely supplement, complement, and substitution functions (Miftah., 2010). The supplement or additional function can mean that there is freedom for students to choose and use mobile in accessing learning materials or in using them as learning media. The complement function is defined as a complement because it can be used as an evaluation tool, providing enrichment, reinforcement and can be used to repeat or recall learning that has been done even without the help and assistance of the teacher or tutor.

While the substitution function, which means that students can be given the freedom to choose the learning model used, both conventional learning models, technology-based learning models, or mixed models, namely combining conventional and technology models.

3.3.2 Benefits of Mobile Learning

Mobile learning has several benefits seen from two angles, namely the point of view of students and educators. When viewed from the point of view of students, mobile learning allows the development of high learning flexibility. Learners can access learning materials at any time and can be repeated. Learners can interact with educators at any time. With conditions like this, students can further solidify their mastery of learning materials.

While from the point of view of educators, mobile learning is useful in terms of updating learning materials which are the responsibility of educators in accordance with the demands of scientific developments that occur, can develop self-potential for educators, conducting research in order to increase their knowledge and knowledge because of the relatively large amount of free time they have, can control the learning activities of students, educators can find out when students learn, what topics are studied, and how long the topics are studied and how many times the topics or topics are studied. material is re-studied, can check the performance of students in carrying out practice questions after studying certain topics and check students' answers and provide students' work (Majid, 2012).

Thus, the benefits of mobile learning can be a source of learning for educators and students both in the process and in learning outcomes at school.

3.4   Advantages and Limitations of Mobile Learning

Each medium has advantages as well as limitations. Likewise, mobile learning as a learning medium that can be used by teachers and students in educative interactions. There are several advantages and limitations of mobile learning, namely:

3.4.1 Advantages of Mobile Learning

M-Learning has advantages compared to other learning resources used in learning that can be used anywhere and anytime, most mobile devices have relatively cheaper prices, small and light device sizes, can be accessed by more students because m-learning utilizes technology that can be used in everyday life.

3.4.2 Limitations of Mobile Learning

M-Learning is a potential alternative to expand access to education. However, there is not much information about the use of mobile devices, especially cellular phones as learning media. This is unfortunate considering that the level of ownership and the level of use that is already quite high is underutilized to be directed towards education. Most of the content circulating in the market is still dominated by entertainment content and very little educational aspect.

Therefore, there must be the development of mobile device-based content or applications that are more numerous, diverse, inexpensive, and easily accessible, especially educational content. Although m-learning has advantages, it also has limitations. The limitations of m-learning are mainly on the side of the device or learning media.

The limitations of this mobile device are the ability of the processor, memory capacity, display screen, power, and input/output devices (Wear, 2019). Thus, this limitation can be overcome along with the development of increasingly rapid communication technology.

3.5 Opportunities and Challenges of Mobile Learning as an Alternative Post-Covid-19 Learning Model

One of the effective and efficient learning models during the COVID-19 pandemic is mobile learning. Learning with this model provides great opportunities for teachers and students during the COVID-19 pandemic. Moreover, the government provides online facilities through online learning media by preparing sources, media and links as stated in the guidelines for organizing learning in the 2020/2021 academic year and the 2020/2021 academic year during the coronavirus disease 2019 (covid-19) pandemic (Kemendikbud, 2020).

There are several software application programs needed in mobile learning, namely the Learning Mobile Author (LMA) program, and the photo editing application program or PhotoScape. In addition, there is a common application program that is familiar, namely Microsoft PowerPoint. These three application programs are quite mutually supportive in preparing teaching materials as well as converting and editing files needed in designing mobile-learning learning programs (Darmawan, 2016). If this learning is used properly, it will provide good opportunities, but if it is not

used properly by teachers and students, then this becomes a learning challenge in the future. Mobile application learning will be a promising innovation prospect that develops through learning applications that are supported by many mobile phone brands.

In addition, the lack of optimal mobile learning in the learning process has a negative impact on students. Moreover, various social networking applications that appear today on the internet, be it Facebook, Twitter, Telegram, Instagram, online games, and other social networks will distract students from learning. This is the challenge for mobile learning in the future. Therefore, teachers must package and design mobile learning learning in an interesting, creative, innovative and fun way so that students do not get bored in learning.

3.6   Mobile Learning Applications in Learning

Current technological advances require teachers to be more creative in integrating technology-based media into learning. One of them can be done through the use of mobile learning. Mobile learning can be utilized at all levels of education, including at the basic education level. Basic education is the initial level of education during the first 9 years of children's schooling and becomes the basis for secondary education.

Basic education is carried out to provide and develop attitudes and abilities, knowledge and basic skills needed to live in a community environment, and to prepare students to continue to secondary education. In basic education, teachers carry out learning by developing students' learning creations through edutainment or playing with learning or play and learning (Pramana, 2017).

Playing while learning will affect the development of students, starting from their physical development, encouraging communication with other students, and channeling pent-up emotional energy when playing. Therefore, teachers must choose educational games in order to maximize and optimize the human potential of students. Educational game tools must be designed according to the age range of students at the basic education level.

Teachers must pay attention to aspects that must be developed, both physical, motor, emotional, social, language, cognitive, and moral aspects that can be used in various ways (Mursid, 2015). One

way that can be taken by teachers is to use mobile learning in learning. Considering the tendency of students at the basic education level to prefer to use gadgets or smartphones as media that looks interesting and fun, as well as many game applications or games in it so that it beats other media. Therefore, teachers at the basic education level must properly design and design their learning through mobile learning.

However, the teacher must also understand the characteristics, interests and potentials possessed as well as the learning styles of students, so that learning can be achieved easily. In addition, teachers must also be the main learning source or mediator in learning whose task is to design or design, prepare and utilize other learning resources so that learning is of quality (Samsinar, 2020).

If the teacher pays attention and focuses on the character, interests, potential, learning styles and multimedia learning, then the teacher must take advantage of learning with mobile-learning. Mobile learning has a system based on its tools that use notebooks, tablets, PDAs, smartphones, cell phones, and all mobile devices that can be used whenever and wherever a person is. When viewed from the network aspect, namely General Packet Radio Service (GPRS), Global System for Mobile Communication (GSM), bluetooth, and infa red.

When viewed in terms of communication for teachers, it can be done online and offline by means of synchronous and asynchronous communication. And when viewed in terms of location, it can be done outside or in the classroom (Aripin, 2018). Mobile learning is a form of learning technology in the form of developing teaching materials, both theory and practice, which requires several supporting abilities. These abilities relate to the ability to analyze curriculum starting from competency standards, basic competencies, core competencies, teaching materials, content or material analysis, and topics of teaching materials to be studied.
developed to the Syllabus and Learning Program Plans.

In addition, the ability to analyze the availability and carrying capacity of learning media or multimedia learning is required. On the other hand, the initial requirement that must be possessed is the ability to install software that supports the production of mobile learning teaching materials both offline and online. There are several software application programs needed, namely the Learning

Mobile Author Program (LMA), Photo Editing Application Program or PhotoScape, and Microsoft PowerPoint.

These three application programs support each other in preparing teaching materials as well as converting and editing files needed in designing mobile learning learning programs. In developing mobile learning learning, one must analyze the content of the curriculum structure in each subject in school or analyze several material topics that are indeed adaptive to be developed into a mobile program. Therefore, not all material topics in a subject can be designed in the form of mobile learning.

Thus, the requirement for the m-learning program is to analyze content. After analyzing the content, it is necessary to develop the topic into the form of learning flow stages through flow charts. Flow chart or flow chart is a chart that contains graphic symbols that show the direction of the flow of activities and data owned by the program as an execution process. Flow chart models vary according to their type, both for drills (practices), tutorials, simulations and games. The flow chart models in interactive multimedia are as follows:

a. Flow Chart Model with Drill Type (Practice)

The stages of learning with this type are presenting problems in the form of practice questions at a certain level of student performance, students working on practice questions, the program records student performance, evaluates and provides feedback, if the answers given by students are correct, then the program presents the next material and if students answer incorrectly then the program provides facilities for repeating exercises or remedies which can be given partially at the end of the whole question.

Learning with this model does not present repetition when presenting questions. Repetition occurs after solving the overall problem and after checking the ability results whether they have met the standard or not.

b. Flow Chart Model with Tutorial Type

The stages of learning with this model are introduction or giving instructions, presentation of material information, questions and responses, assessment of responses, feedback, repetition, lesson arrangements, introduction and closing.

c. Model Flow Chart with Simulation Type

The stages of learning with this model are giving instructions, presenting material, giving simulations, conclusions and closing.

d. Model Flow Chart with Type Games

The learning stages of this model are started with a menu containing the identity of the programmer, learning instructions, program help menu, games, game controls, successful or failed games, closing or exiting. After determining the flow chart model, the next step is to develop a storyboard according to the flow chart that was made.

Storyboard is basically a development of a flow chart. The flow chart is the center of a computer-based learning program production with various models adapted to the characteristics of the material or information that has been designed in program production planning (Darmawan, 2016). The flow chart only contains an outline of the contents of each plot from start to finish, and the storyboard is a more detailed or more complete explanation of each flow contained in the flow chart.

The function of the storyboard is as a medium to provide detailed or more complete explanations contained in each plot in the flow chart, as a guide for programmers and animators in realizing program plans in the form of programming language and animation, as a guide for voice actors and recording technicians in record sound for the needs of the script, as a written document, and as material in making a manual book as a user manual and program contents according to the storyboard that was made. There are several things that must be considered in developing a storyboard, namely:

a. Determine the type of visual that will be used to support the content or content of the lesson, and make a sketch of it.

b. Prepare the part to be played audio in the program package. Audio can be in the form of silence, special sound effects, background sound, music and narration. The combination of sounds will be able to enrich the program package

c. Pay attention to the content or content of the lesson, it must include everything in the storyboard

d. Review storyboards by checking that all audio and graphics match the text, introductions and introductions show something that can attract attention, important information has been included, interactive sequences have been combined, learning strategies and tactics have been combined, narratives are made as concise and short as possible, program supports exercises the exercises, flow and organization of the program are easy to follow and understand

e. Collect and present storyboards so they can be seen at once

f. Storyboard review and criticism by the production team

g. Record all comments, criticisms and suggestions

h. Revise the storyboard according to input from the production team

i. Start doing production (Arsyad, 2015).

After the storyboard is complete, then prepare the file to make mobile learning teaching materials in Microsoft PowerPoint (PPT) format, save as file by selecting PowerPoint Presentation, select save as type JPG file, click every slide, and click ok. Furthermore, for the need to convert files into mobile learning teaching materials, they are processed with two application programs, namely the PhotoScape application program and the Mobile Learning Author Application Program (LMA). After processing this application program, it is ready to produce mobile learning programs

4 CONCLUSION

Based on a review of various literature, it can be concluded that mobile learning is part of e-learning as a form of learning that utilizes electronic devices, digital media, and mobile communication devices and technologies whose development is very rapid. The use of mobile learning is relatively easy, without limits and time and the price of the device is affordable so that both teachers and students can use it in learning.

Even though it has limitations, mobile learning has excellent opportunities to be utilized in virtual learning during the Covid-19 pandemic as an alternative to face-to-face learning. Mobile learning can be a solution for learning during the Covid-19 pandemic by utilizing devices that are familiar to

teachers and students, such as tablets, smartphones and laptops. Mobile learning can be a learning innovation to be applied at all levels of education, including basic education.

To be implemented optimally, the teacher must master this learning model by properly packaging and designing teaching materials starting with installing the Learning Mobile Author (LMA) software application, the Edit Photo or PhotoScape Application program, and Microsoft PowerPoint. After that, prepare teaching materials and convert and edit files needed in designing mobile learning learning programs.

Mobile learning offers many benefits and advantages in making learning effective. Therefore, this learning model is highly recommended for teachers in implementing virtual learning during the Covid-19 pandemic as a substitute for face-to-face learning. This research is limited to only examining mobile learning conceptually. For other researchers, it is highly recommended to conduct further studies on the use of mobile learning, one of which is related to the effectiveness of using mobile learning in virtual learning.

ACKNOWLEDGEMENTS

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STUDENTS' ENGAGEMENT ONLINE-LEARNING: ANALYSIS IN RASCH METHOD

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Abstract

The problem of research is how the level the students in online learning has been implemented since the COVID-19 pandemic at Faculty of Teacher Training and Education Universitas Palangka Raya. The purpose of study was to investigate how students engagement in online learning based on demographic factors such as age, gender, study program, year of class and domicile domicile when online learning is carried out. The research approach is quantitative (non-experimental) with a survey method by developing instruments based on three dimensions of learning engagement. Data were collected from 267 students using an online learning engagement instrument. Measurements used the Rasch method with the WINSTEP application to determine the validity and reliability of the research instrument, then a Differential Item Function (DIF) was carried out to assess student involvement in online learning specifically from the demographic factors of gender, study program, know generation and domicile. It was found that students had high cognitive involvement compared to behavioral and emotional involvement. Furthermore, it shows that there are differences in student involvement based on demographic factors such as gender, study program, year of class and domicile. This research can be a reflection and input for lecturers in choosing the right learning method in online learning and also for further research.

Keywords: Engagement, online learning, rasch method

1   INTRODUCTION

Online learning in Indonesia has only been widely recognised since the Covid-19 hit the world, so inevitably have to study from home. Learning from home without face-to-face meeting with a teacher is like students only receiving assignment from teacher in primary to secondary schools and even universities. In fact, online learning has actually been carried out since the 20th century in developed countries, including Australia with its open University and even in Indonesia. In relation to the interactions that take place in learning, the involvement of students is important and can affect student satisfaction in learning (El-Sayad et al., 2021). Actually, online learning has begun to develop in this century at world-renowned universities known as MOOCs (Massive Open Online Courses) which can be accessed by anyone and is free (https://www.mooc.org/).

In a survey conducted by researchers during the Covid-19 pandemic related to the use of lecturers' methods in conducting online learning to Teacher training faculty of universitas palangka raya related to the use of applications in conducting online learning, the most common is Google Classroom application (80,9%), which was then followed by the Zoom app (55,5%), and the use of Google Meet

(24,6%). According to Shamin Akhter and his colleagues (Akhter et al., 2021) online learning is a process of providing information from a variety of different media such as E books, CD, etc which is a change in the traditional teaching and learning style. According to Zhang (Shi et al., 2017), online learning is a learning that utilizes digital technology , applications that are specifically designed to meet the needs of learning. These applications can include Microsoft team, Zoom, Meet, Jitsi Meet, etc which are provided on a limited free or paid.

Many studies have been conducted on this online learning in student learning readiness during the Covid-19 Pandemic, which looks at the effect of zoom online-based learning on learning readiness (Vhalery et al., 2021). In addition to other studies that examine the effectiveness of online-based learning media such as Edmodo (Muhajir et al., 2019);Muzyanah et al., 2018). More research related to Google Classroom on learning in higher education (Cristiano & Triana, 2019; Heggart & Yoo, 2018; Kumar & Bervell, 2019). With the use of apps in online learning, it is equally important to know the extent of their engagement in online learning, because this is different from face-to-face learning. Furthermore in the research conducted to see student engagement in online learning (Nasution et al., 2022; Purba et al., 2021) similarly, research conducted in Malaysia linked to student demographics such as gender, ethnicity, study level, showed high engagement in study levels but was limited in research result in terms of domicile at the time of online learning (Adams et al., 2021).

Engagement in learning is generally the active role and collaboration of learners involved in participation every activity carried out inside and outside the classroom (Peter T.Ewell, n.d.). Whereas in online learning is the involvement in independent activities, interaction with learning resources and interaction according to the application used. Students involvement is described by Peter (Peter T.Ewell, n.d.), as an active collaborative activity in learning. Meanwhile Fredricks et al (Fredricks et al., 2004) illustrates that engagement is complex, as a process that is influenced by contextualized situation. There are three component to "engagement": cognitive engagement, emotional engagement, and behavioral engagement. Cognitive engagement is a mental process, which includes knowledge and skills in learning; emotional engagement is the feeling felt towards lecturers, and institutions, study programs, departments, faculties, and the university in general. While behavioral engagement is a mental process in which students have positive action towards their institutions, social environment, lecture materials, activities outside of lectures that are still

related to academics (extra-curricular).

Student involvement in online learning using Google Classroom during the Covid-19 pandemic (Febrilia et al., 2020), shows that online learning carried out by students is quite good with high student participation in asking question, answering lecturer questions, collecting assignments, according to deadline, being active in discussion forums between students and lecturers. Whereas involvement in learning is involvement in terms of feelings, cognitive and behavior. Therefore, this research is more focussed on student involvement in online learning related to these three thing more specifically based on involvement seen from age, gender, regional origin (considering that students come from many different backgrounds).

In this research, to measure the extent of student involvement in online learning, an instrument will be developed called "Students Involvement in Online Learning Instrument". With the Rasch method, the quality of the data that has been collected through the survey will be assessed first. If in classical theory the number of samples is very decisive, while in Rasch modelling it is calculated based on calibration of items at a certain precision and at a trust level of up to 99%, the size of which is the stable calibration of items in the logit (as described in Chapter 3, table 3.2). Then, the WINSTEP software version 3.73 (the application used in this study) will detect outliers (respondent who answered all minimum or maximum values) and misfit responses (respondens whose MNSQ Outfit index is greater than 2 or less than 0,4) (Adams et al., 2021). Whereas in the research conducted by Gabriel Nababan and company in measuring student involvement in online learning in Mathematics using indicators from " The Online Student Engagement Scale/OSE, namely Skill, Emotion, Participation, and Performance.(Purba et al., 2021).

The instrument was developed based on questions about age, gender, regional origin, field of study/major. Then the closed questionnaire item were developed from 3 dimensions : 1) Emotional Engagement 8 items, 2) Cognitive Engagement 6 items, and 3) Behavioral Engagement 7 items. Thus, an operational definition was developed as a basis for making the following instrument development: Engagement in online learning is an interaction in the teaching and learning process that occurs in students who involve cognitive, emotional and behavioral in learning. Cognitive engagement is a mental process, which includes knowledge and skills in learning; emotional engagement is the feeling felt towards lecturers, and institution, study program, departments,

faculties and the University in general. While behavioral engagement is a mental process in which students have positive actions towards their institution, social environment, lecture materials, activities, outside of lectures that are still related to academics (extra-curricular).

2   METHODOLOGY

The research approach used is quantitative research, a non-experimental research with a survey method. The instrument used was "The Online Learning Enggement Questionnaire" which was developed based on question of cognitive, emotional and behavioral engagement. The closed-ended questionnaire items were developed from 3 dimensions : 1) Emotional Engagement, 2) Cognitive Engagement, and 3) Behavioral Engagement. The responses from the questionnaire developed with open-ended questions for age, gender, domicile when online learning was conducted, field of study/major and closed-ended question according to Curley, McLure, Spence and Craig (Spence et al., 2002) to obtain the " Engagement in Online Learning" instrument on a 1-5 Likert scale with answer options; (a) strongly agree (score = 5); (b) agree (score=4); (c) moderately agree (neutral) (score=3); (d) disagree (score=2) and (e) strongly disagree (score=1).

The minimum sample size is 150 respondents (Boone et al, 2014). Precision item calibration calculation at 0,5 logit and 99 % trust level. There were 317 students who participated in this study. The next step was to clean and validate the data using WINSTEP version 3.73, Rasch measurement model software, to detect outliers (2 respondents who answered all minimum or maximum values) and misfit responses (48 respondents with MNSQ Outfit index greater than 2 less than 4) (Widhiarso & Sumintono, 2016). The resulting 267 respondents were further analysed in this study, the demographic profile is presented in table 1.

The Rasch rating scale model approach was used to assess the data. Student engagement in online learning involves latent traits that refer to students opinions, perception, and attitudes in activities that require precise and accurate measurement models (Andrich, 2019). There are two types of logit data generated from software, namely item logits that are used to inform instrument quality and item calibration, and person logits that inform about respondent engagement. Data input with Microsoft Excel which was then imported into WINSTEP version 3.73, with the RASCH measurement model for data validation.

Table 1. Demographic Profile of Respondents (N=267)

Demographic	Respondents	Persentage (%)
Gender		
Male	65	24,347%
Female	202	75,66%
Batch (Year)		
2016	2	0,75%
2017	7	2,22%
2018	17	6,37%
2019	31	11,61%
2020	95	35,58%
2021	115	43,07%
Study Program		
Mechanical Engineering		8,9%
Education	24	51,31%
English Education	137	6,74%
Biology Education	18	31,09%
PAUD	83	0,37%
PPKN	1	0,75%
PGSD	2	0,37%
Guidance Counseling	1	0,37%
Mathematics Education	1	
Domicile		58,80%
Palangka Raya	157	41,20%
Outside Palangka Raya	110	

3   FINDINGS AND DISCUSSION

3.1   Finding

3.1.1 Instrument Quality

To determine whether the instrument has good quality, the validity and reliability aspects are shown in table 4.2, indicating that the data collected fits the model seen outfit mean square because the average value is close to one (ideal value) for both person and item, also confirmed by the significant

value of the Chi-square test. The reliability index for person (0,85) is categorizes as good, item (0,99) as special and Alpha (0,87) excellent.(Sumintono & Widhiarso, 2014). The separation index of both person (3,48) and item difficulty (12,02) shows an index of more than 3 (minimum acceptable value). The greater the separation value, the better the overall quality of the instrument for respondents and item, in other words, it support the fact that the instrument and the data collected are very reliable.

Table 2. Summary Statistics of Person and Item

Psychometric properties.	Person	Item
N	267	21
Outfit Mean Square		
Mean	0,06	0,21
		0,92
SD	0.92	12,02
Separation	3,48	0,99
Reliability	0,85	
Cronbach'sAlpha	0,87	
Chi-square(X^2)	5316*	
Raw variance	41,3*	
Unexplained variance Eigen value	2,2	

* p < .05

From table 2. Above the result of measuring the raw variance of the data is 41,3%, this show the minimum unidimensionality requirement of 40% can be met and also from the unexplained Eigen value there are less than three, namely 2,2. (Cavanagh & Romanoski, 2006) which indicates this instrument is more favourable or satisfactory. The five-rank scale used in this study Figure 1 shows that the average person measured by category moves up monotonically indicating each rating scalehas its own peak (*Summary-LinacreJM-Set*, n.d.), meaning that all Likert scale categories function well.
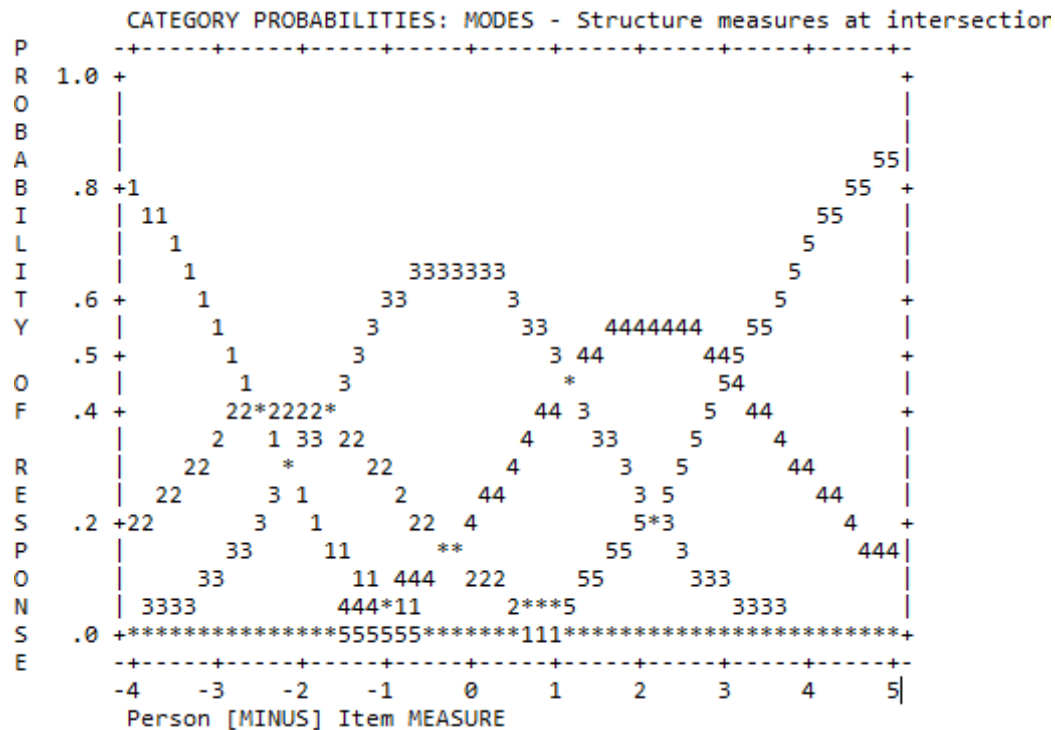
*Figure 1. Analysis of the Online Learning Engagement Instrument
rating scale*

3.1.2 Online Learning Engagement Item Calibration

In the analysis using the Rasch method in this study, the estimation of item location (calibration) or logit value item (LVI) means that the higher the level of seriousness or difficulty of the item on the scale, in other words, the item tends not to be easily agreed by respondents. The item logit average was set at 0,00 logit, and the item standard deviation (SD) in this study was 0,93 logit. Mean and SD are used to categorize items based on difficulty level (Table 4.1). Provisions for items that are very difficult to approve if LVI > 0,93, while those that are difficult to approve arw (+ 0,93 > LVI > 0,00, the category of respondents easily approve (0,00 > LVI > 0,93 and the category very easily approved by respondents (LVI < ÿ 0,93 logit).

Table 3. Item calibration of student engagement in online learning

Construction of Engagement	Difficulty Level			
	Very Difficult	Difficult	Easy	Very Easy
Cognitiv	-	-	C4	C6,C5, C1,C2, C3,
Emotional	E2,, E5	-	E	E7, E3, E4, E8, E1

Behavior	-	B6, B7, B3	B5, B4, B1

As shown in Table 2, the three dimensions in the instrument showed three different response pattern. For cognitive engagement, there were no item that were very difficult for respondents to agree with. As for emotional engagement (2 items) that are very difficult for respondents to agree with, namely item number 2 (The task given by lecturer are very many.) and item number 5 (I like to send chats or online discussion or make comments with lecturers). Whereas in the behavioral engagement there is 1 item that is very difficult to agree with, namely item B2 (I post opinions or responses in the forum regularly). The finding suggest that students perceptions of cognitive behavior do not have the same level difficulty to do so compared to the process of emotional engagement and behaviors associated with psychological attachment for emotional engagement.

The location of the person and the completed item in the logit measurement continuum in Figure 2 (Wright item map) which show how the position of the item and the respondent fit together in the logit continuum, the higher the LVI means the item is difficult to agree with. On the right side of the Wright map, item E5 (I like to send an online chats or discussions or make comments with lecturers with a logit of LVI + 1,86) is the most difficult item to agree with. This means that students rarely ask questions in online lectures with lecturers. While item E8 is located at the bottom right of the Wright map whichis an emotional connection with the institution (I am happy if there is credit assistance provided by the institution. with logit LVI – 2,06), is the item that is mostly agreed by respondents, meaning that this item is the most expected by students if online learning is carried out
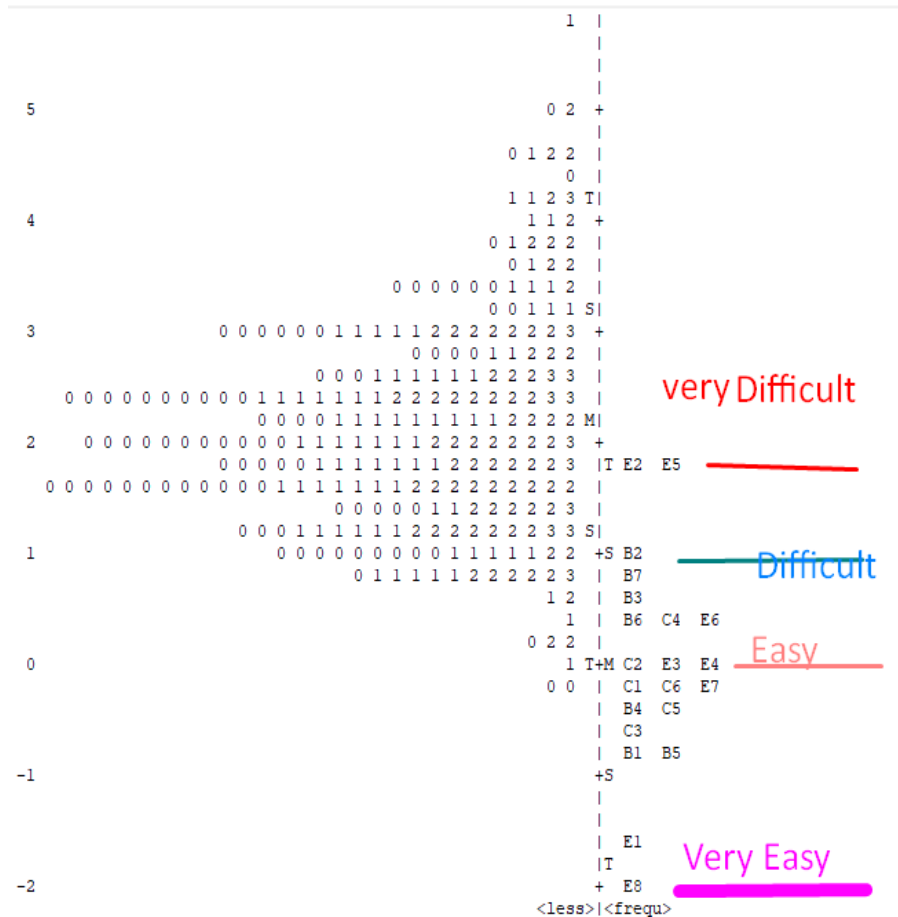
Figure 2. *Position of people and items (Wright map)*

3.1.3   Students Engagement Level in online learning

On the left side of Figure 2 is the spread of person level engagement. The higher the logit person value (LVP) located in the upper left, indicates that respondents answer to I item tends to agree or strongly agree, indicating that the level of student involvement in online learning is very high. In this study, the mean LVP was 2,15 with a standard deviation of 1,03, indicating that respondents tended to be higher than the item. This indicates that the level of engagement of this sample is higher than the level of difficulty seen in the item, this also means that the placement of the test items is satifactory.

As above in the items there are grouping of difficulty levels, so categorization of student responses is also possible, as the Rasch model provided an accurate and precise measurement of engagement in online learning (Table 3). Using the LVP mean and SD, there are four level of learning engagement (from very high engagement to low engagement), which identify the number of students in each group. This analysis has the benefit of being able to steer towards individual-centered statistics rather than group-centered statistics, which provide a lot of detail (Engelhard et al., 2018).

Table 3. Online learning engagement rate by demographics (N=267)

Demographic	Very High LVP > 3,18	High +3,18 > LVP > + 2,15	Moderate +2,15 > LVP > 0,36	Low LVP < 0,36
Gender				
Male	7	17	38	1
Female	33	69	97	5
Batch (Year)				
2016	-	1	1	-
2017	1	1	4	-
2018	3	9	6	-
2019	4	10	12	2
2020	18	35	43	2
2021	14	30	68	2
Study Program				
Mechanical Engineering	3	7	14	-
Education	20	49	67	1
English Education	5	5	7	1
Biology Education	15	25	40	3
PAUD	-	1	-	-
PPKN	-	-	2	-
PGSD	-	-	1	-
Guidance Counseling	-	-	-	1
Mathematics Education				
Domicile				
Palangka Raya	20	46	85	6
Outside Palangka Raya	20	40	80	-

From table 3 above, student engagement in online learning based on student gender found about 24 out of 65 male students (36,92%) and 102 out of 202 female students (50,50%) are in very high online learning engagement. Thet moderate engagement, male were 38 (58,46%) and female 97 (48,02%), while at low engagement, male were only 1 out of 65 (1,54%) and female 3 out of 202 (1,48%). This shows that in online learning, female engagement is on average higher than male.

When viewed from the class year of students, the high number of engagement is balanced between students in 2020 and 2021. This is possible because the number of courses programmed by students in this batch (2020 and 2021) was the highest when this research was conducted.

 The result of the analysis based on the Study Program, student engagement in online learning with very high engagement are balanced with moderate and low engagement. English Education study program 69 out of 137 (50,36%) were in the very high learning engagement range. While the Biology Education Study Program has very high engagement 10 out of 18 (66,67 %) with moderate and low engagement 7 out of 18 (38,89%), While the PTM Study Program 10 out of 24 (41,67 %) are in the category very high engagement and PAUD 40 out of 83 (48,19 %) are in the category of very high engagement. While the Counselling Study Program, Mathematics Education with few respondents did not fall into the very high categories. Only the PPKN Study Program with 1 respondent is at a high online learning engagement. So, the Study Program with the highest percentage of online learning engagement is the Biology Education Study Program.

Online learning engagement based on domicile at the time of learning which is categorized for Palangka Raya area and outside Palangka Raya (both outside the area within one province and outside the island), From the research findings, students with domiciles outside of Palangka Raya on average have high engagement than students who live in Palangka Raya during online learning. This can be seen from the engagement of students outside Palangka Raya, there is no low engagement.

3.1.4   Differential Item Functioning (DIF) Respondent Demographic Factors

The next analysis is to detect item bias, which in the Ranch method is represented by Differential Item Functioning (DIF). For this analysis, there are two demographic variables, namely gender and domicile. An item is said to have DIF if it has DIF contrast value of less than – 0,5 or more than 0,5, and a t value of less than – 2,0 or more than 2,0, and a p (probability) value of less than 0,05 or more than – 0,05 (Boone & Staver, 2014). Table 4 shows that it is possible to have DIF on gender, only two criteria are eligible, while DIF on domicile that meets 3 conditions is E2 (*The task given by the lecturer are very many*) , while the others only meet one or 2 conditions.

 In addition, looking at the DIF plot for the whole items provides very interesting findings. If the location of the item is in the top row, it means that the item is considered difficult to agree with. Figure 3 shows the DIF plots by gender, with each dimension having a varying response pattern. For

the cognitive dimension, item C3 (*I listen to the explanation of the material by the lecturer during online learning*) there is no difference between male and female students; while item C4 (I listen to the lecturer in online learning while taking notes) up to C5 (*I like to send chat or online discussions or make comments with the lecturer*) is a very difficult item to be approved by male students respondents than female students respondents.

Table 4. Differential Function of Online Learning Engagement Instrument Items

Item	DIF Contrast	t	Probability	Demographic
C1	- 0,03	- 0.14	0,8872	Gender
C2	- 0.17	- 0,79	0,4337	
C2	- 0,26	0,3554	0,1838	
E2	- 0,18	1,5163	0,0090	Domicile
E4	- 0,22	- 0,9151	0,7731	
E6	- 0,24	0,1773	0,2520	
E8	- 0,02	- 0,2261	0, 4259	
B4	- 0,31	- 0,2704	0,4527	
B5	- 0,21	0,4863	0,1416	
C1	-0,24	0,2379	0,2286	
C4	- 0,02	- 1,4025	1,00	
E5	- 0,22	0,1816	0,2473	
E8	- 0,21	- 0,2261	0,4259	
B2	- 0,17	- 0,1260	0, 3827	
B4	- 0,15	- 0, 2704	0, 4527	
B7	- 0,09	- 0,6677	0, 6529	

In Figure 3, the emotional dimension, items E2 (*The task given by the lecturer are very many*) and E5 (I like to send chats or online discussions or make comment with the lecturer) as the most difficult items for both female and male respondents to agree on. Whereas item E8 (I am happy if there is internet credit assistance provided by the institution in online learning) is the item that is most easily agreed upon by both female and male respondents. There is a difference in response between male and female on items (C2, C4, C5, E6, B2, B5 dan B6), while the others are almost the same, there is no difference in response from male and female. At item C2 (*I read the material that has been sent by lecturer or given by the lecturer during the virtual meeting*) is more easily agreed by male students

than female, C4 (I listen to the lecturer in online learning while taking notes) and C5 (*I make notes for assignments given by the lecturer*) are more easily agreed by female students than male. This shows that the perseverance and attention of female students in participating in online learning. Similarly E6 (*I am happy with the University's implementation of online learning*) and B2 (I post opinions or responses in the discussion forum regularly) are more agreed upon by female students. What is different is that items B5 I post assignment that I do myself) and B6 (*Assignments made are not copy and paste assignments from internet*) are more easily approved by male students.
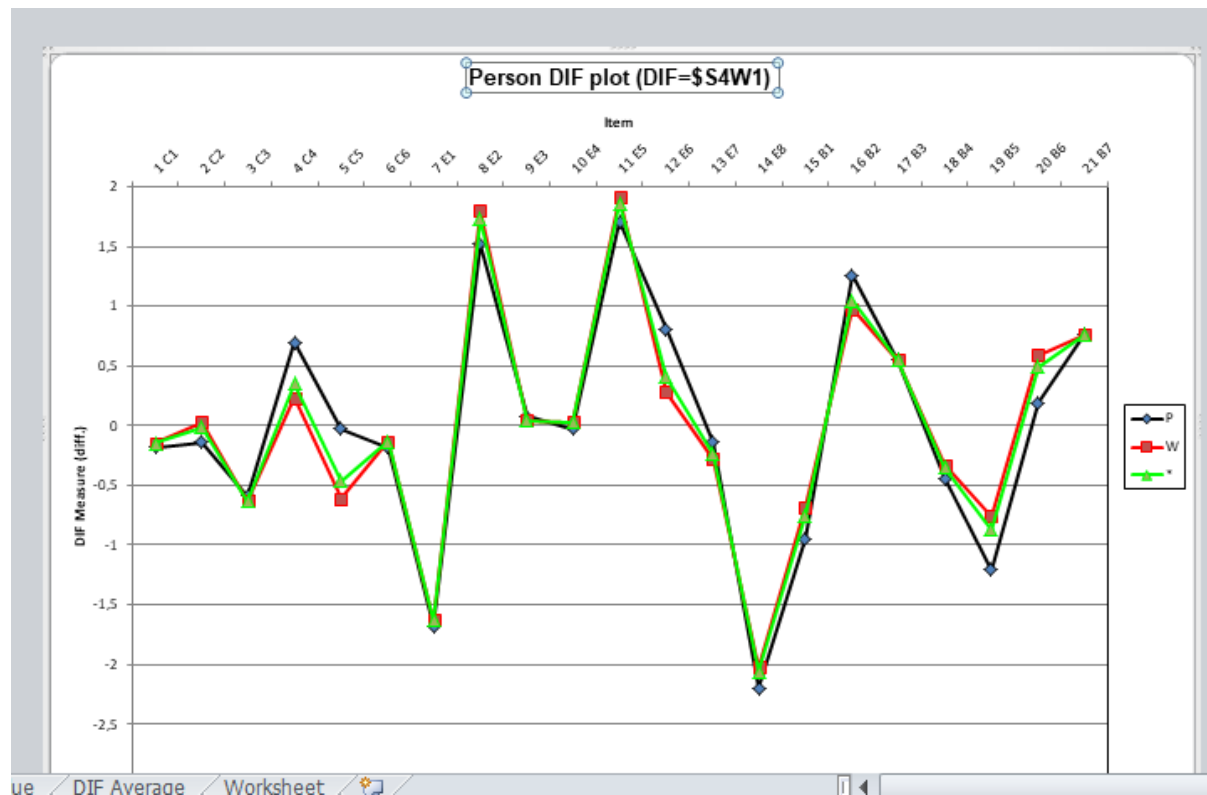
Figure 3. DIF plot of people by gender for all items

Figure 4 shows the DIF plot based on domicile during online learning, namely in Palangka Raya city (P) and outside Palangka Raya city (D). Outside the city of Palangka Raya is not grouped in a particular area, only differentiated between those in the city and outside Palangka Raya, considering that this research is only for students of Palangka Raya University. Of the two groups of students residing in Palangka Raya and outside Palangka Raya in general do not have many different

responses outside of item E2 (*The task given by lecturer are very many*) which are detected as DIF items, only in item C2 (*I read the material that has been sent by the lecturer or given by the lecturer during the virtual meeting*) which is slightly different for students outside Palangka Raya who more easily agree to the item than students who live in Palangka Raya. This shows that students who are outside Palangka Raya city when online learning is conducted are more prepared to participated in online learning.
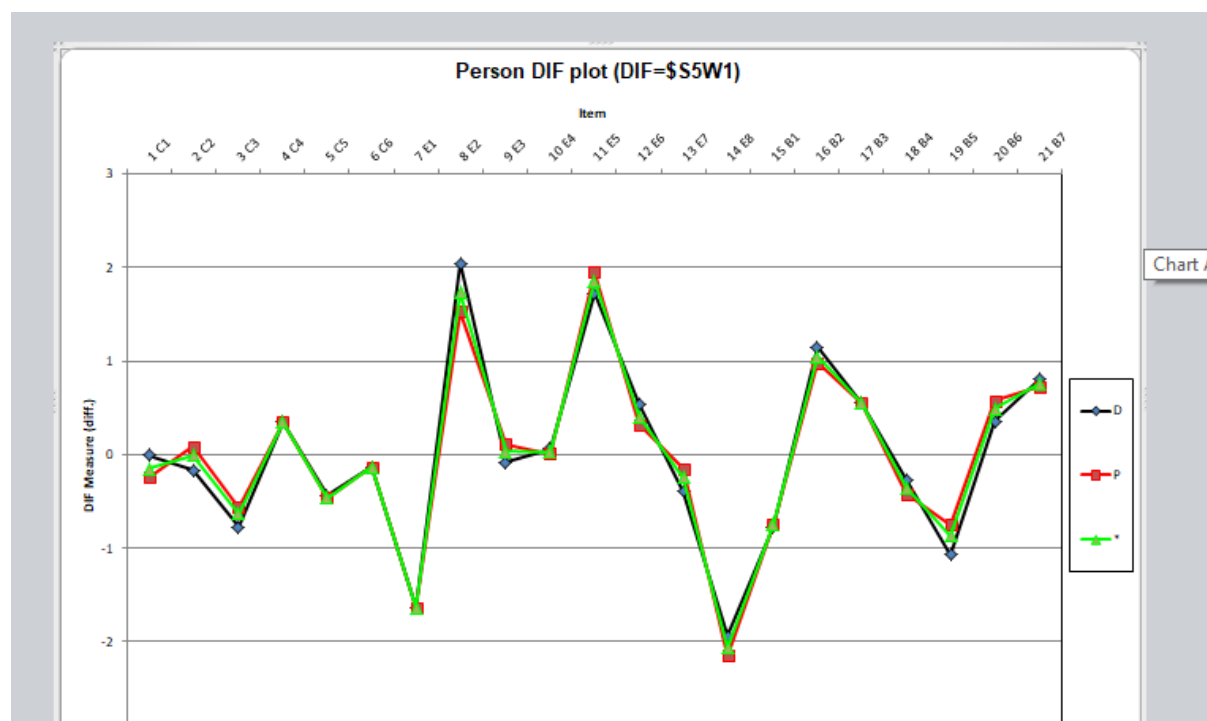
Figure 4 DIF plot of people by Domicile for all items

3.2 Discussion

This study aims to investigate students engagement in online learning, specifically to find out how their engagement is based on gender, study program, class year, and domicile when online learning is implemented at FKIP Palangka Raya University. Based on the result of the study, it is obtained the level of cognitive engagement is easier to do, which shows that students have a high level of cognitive engagement compared to emotional and behavioral engagement. This contrasts with the findings of previous studies that found high levels of behavioral engagement compare to cognitive and emotional engagement (Adams et al., 2021). The different findings are in line with what is stated in the

discussion of the limitations of research conducted in Malaysia which cannot be generalized so this study also has limitations which are only carried out at one university.

At a high cognitive level, it shows that students academic performance does not affect their engagement in online learning. This is in accordance with the results of research that has found e-learning structures that emphasize cognitive and behavioral engagement tend to produce better academic performance (Al-Qahtani & Higgins, 2013).

There is something interesting from this research that in online learning, students feel that the task given by lecturers are not much. This can be detected from the statement of item E2 on the dimension of emotional engagement (The task given by the lecturer are very many) which is very difficult for students to agree with. This illustrates that the task given by lecturers are perceived to be no different from the many tasks that lecturers usually do during face-to-face teaching. This item detected bias in the demographic factor of student domicile, meaning that this item contain bias in domicile. This is in line with research conducted by Adam and colleague that student background factors also affect the learning model carried out (Adams et al., 2020).

Regarding the Indonesia Government policy through the Medikbud Ristek during the Covid-19 pandemic which provides free internet credit for students is the most agreed upon thing from the findings in this study. Based on the results of the research for the statement item which is a form of the dimension of emotional engagement with the institution as the item that is most easily agreed upon by respondents who have an *INFIT MNSQ* value that is smaller than the sum of the mean value and standard deviation of the *INFIT MNSQ* value which indicates this item is a suitable item not out of the model. This is also reinforced by the Outfit Mean Square value E8 (I am happy if there is credit assistance provided by the institution in online learning , 1,12) which is accepted $0,5 < \text{MNSQ} < 1,5$; value Outfit Z- Standart (ZSTD) E2 (0,8), which is accepted $- 2,0 < \text{ZSTD} < + 2,0$.(Sumintono & Widhiarso, 2014).

The limitations of the findings of this study for cognitive engagement is higher than emotional and behavioral engagement cannot be generalized because this study only limited to one faculty as well as research conducted at the University of Malaysia in Adam and colleagues (Adams et al., 2021).

4   CONCLUSION

From the results of this study, we can conclude that the implementation of online learning is the preparation of a learning environment that allows students to learn conductively. Because in online learning there are several factors that can be an obstacle, especially the network that needs to be prepared for the alternatives to be able to follow online learning well. I n terms of communication constraints between lecturers and students also. The higher cognitive engagement in online learning can be a recommendation that online learning can still be done even if face-to-face learning can be done.Online learning can be done with conducive environmental conditions related to the internet network and also the readiness of students and lecturers. High cognitive engagement is also accompanied by behavioral and emotional engagement. This research has limitations because it was only conducted in one faculty, thus this research can be carried out again at a wider area level.

ACKNOWLEDGEMENTS

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STUDENT PLAGIARISM BEHAVIOR IN ONLINE TUTORIALS (E-LEARNING UNIVERSITAS TERBUKA)

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Abstract

Universitas Terbuka is one of the universities that use an online learning system in its learning system. In online tutorials students must actively participate in learning activities by studying the initiation materials provided, responding to discussions, and doing assignments. Because assignments and discussions are important in assessment, students must respond and do all of them. If you don't do it, it will affect the value. However, sometimes in responding to these discussions and assignments, some students commit plagiarism, either by taking the full answers in the module, taking the answers belonging to their friends, or taking them from the internet. Therefore, this research was conducted in order to analyze the behavior of student plagiarism in this online tutorial. This study uses a qualitative method with a phenomenological approach to explore student plagiarism behavior in online tutorials (case studies on students of the Department of Sociology, FHISIP, Universitas Terbuka). The results of the study show that the reasons for committing plagiarism include getting answers more easily, answering assignments quickly, not finding answers that he thinks are right and getting good grades. Factors that encourage them to plagiarism include not understanding the material, being pressured, not finding answers on their own, and joining friends. In order to avoid plagiarism, among others, by answering according to your own thoughts which are strengthened by the module, citing original sources accompanied by sources and added from your own thoughts after reading the module book, paraphrasing the original source, and checking on the plagiarism platform.

Keywords: plagiarism behavior, social deviance, online tutorials.

1 INTRODUCTION

Universitas Terbuka is one of the universities that provides online learning services (online). The learning process is carried out in learning services called online tutorials (tuton). According to *Kamus Besar Bahasa Indonesia* (2016), tutorial means class guidance by a teacher (tutor) for a student or a small group of students. Meanwhile, according to 2020/2021 *Katalog Sistem Penyelenggaraan Universitas Terbuka*, tutorials are a study assistance service provided for students that aim to strengthen student independent learning outcomes. The purpose of organizing this online tutorial is to optimize the use of the internet network to provide learning assistance services to students, enable the distance learning process to be designed in a more communicative and interactive link, and provide alternative choices for students who have access to the internet network to obtain study assistance services online. optimal (https://www.ut.ac.id/tutorial-online). In other words, the purpose of this online tutorial is to provide easy learning services to students and help students understand learning material. This online tutorial is an internet-based tutorial or web-based tutorial (WBT). Therefore, to be able to access this online tutorial, students must be able to operate a computer and

have an internet network. Even now, these online tutorials can be accessed using more practical means, namely being able to use mobile phones and tablets so that these online tutorials can be accessed anywhere and anytime.

In this online tutorial, various activities are provided, such as initiation materials, discussions, and assignments. Specifically for assignments only given in the third, fifth, and seventh sessions. Due to the nature of online tutorials or online learning, students must actively participate in these activities. The value of online tutorials, both from discussions and assignments, has a large contribution to the final grade. Therefore, students are required to respond to each discussion and answer the assignments given. In answering assignments or responding to discussions, students used various methods, some did read the module so they could answer the various assignments given, some took answers from their friends, and it is not uncommon to find that when the student's answer is detected in the plagiarism checker application, the result is similar and plagiarized from other sources. According to *Kamus Besar Bahasa Indonesia* (2016), plagiarism is plagiarism that violates the copyright. While plagiarism is taking other people's essays (opinions and so on) and making them appear as if they were their own compositions, for example publishing other people's writings on their own behalf; plagiarize.

When plagiarizing other people's answers or their classmates' answers, sometimes students take it whole or copy the answers in their entirety, without paraphrasing. In addition to taking it in its entirety which of course will be very clear, some students copy the answers by paraphrasing the answers of their friends or other sources without providing the original reference. Based on observations made in previous online tutorial classes, many students easily took the answers of their friends who uploaded the answers first. Even once found, students took answers belonging to their friends without deleting the name or the original owner.

In addition to plagiarizing friends' answers, with the sophistication of technology and the internet, many students use technology unwisely, for example when they have assignments, students easily find and retrieve answers from the internet. This can be seen from the results of observations that have been made in online tutorial classes in the sociology study program. Many students were detected or found plagiarizing or copying and pasting answers from the internet. Usually, they take answers from blogs, Wikipedia, or educational pages, such as Quora, Brainly, and so on. This is in accordance with the results of Park 2003; Jackson 2006; Roig 2012; Scanlon & Neumann 2002 in

Nimasari (2017) that technological developments are one of the causes of the high level of plagiarism. Of course, this can be said as a form of the negative impact of technology. As stated by Bondang (2015) in his research that technological sophistication makes it easier to copy and paste which ultimately leads to acts of plagiarism.

There are various reasons someone does this plagiarism. According to Debnath in Shadiqi (2019), there are eight reasons for plagiarism being carried out, namely because the information is easily available, especially now that there is the internet; publication pressure from academic demands, both for lecturers or students who are pursuing academic targets; less confident and less skilled in writing; articles written in a hurry and under pressure; lack of understanding and awareness of plagiarism; unknowingly copying the original text without acknowledging the source; there is a belief that there is no problem copying texts that they have without providing sources, as long as they are not copied from other people; accustomed to plagiarism and have committed plagiarism in the past.

In addition to these reasons, based on research results from Akib (2016), the reasons or factors causing plagiarism behavior among students are the development of information technology such as electronic media making it easier for students to obtain lecture material from the media as well as the high workload of lectures given by lecturers, culture instant, and not enough time has led students to plagiarism. Therefore, this action must be stopped so as not to add to the bad image of plagiarism in the academic world.

This shows that plagiarism or the phenomenon of plagiarism is often found and seems to have been common. Even based on the results of the Research and Development Media Group survey in Suryana (2016), it is stated that the majority of students, both in school and college, commit academic fraud in the form of plagiarism. Universitas Terbuka as a university with an online learning system does not rule out the possibility of its students committing plagiarism. Of course, this cannot be allowed so that this act of plagiarism does not continue. Therefore, to find out the phenomenon of plagiarism among academics, the author wants to analyze the behavior or actions of plagiarism among students, especially in the online tutorial class for the Karya Ilmiah course, Department of Sociology, FHISIP, Universitas Terbuka.

LITERATURE REVIEW

Plagiarism

To understand whether a work can be called plagiarism or not, we must first know the meaning of plagiarism. According to the Regulation of the Minister of National Education Number 17 of 2010 concerning Prevention and Control of Plagiarism in Higher Education, plagiarism is an act intentionally or unintentionally in obtaining or trying to obtain credit or value for a scientific work, by quoting part or all of the scientific work of other parties who acknowledged as a scientific work, without stating the source properly and adequately. If you already know the meaning and it is proven plagiarism, that person can be said to be a plagiarist. A plagiarist is a person who takes another person's essay (opinion and so on) and publishes it as his own essay (opinion and so on); plagiarism Based on these two definitions, it can be said that plagiarism is an act of taking credit and quoting part or all of another person's work as his own without mentioning or citing the original source properly.

To see whether the work of students is called plagiarism or not, you must first find out the characteristics of plagiarism. Apart from looking at the definition of plagiarism or plagiarism, we can also see the form of plagiarism itself. As Parvaty Iyer and Abhipsita Singh say in Soelistyo (2011: 23-25) that understanding plagiarism is not just understanding its definition, but there is a broader scope, namely, there are causal factors and the type/form of plagiarism itself. Based on Parvati Iyer and Abhipsita Singh in Soelistyo (2011: 23-25) there are four types of plagiarism, which are as follows.

1. Plagiarism of ideas, namely taking the ideas or ideas of others. However, this type of plagiarism is relatively difficult to find evidence for because ideas are abstract and may have similarities with other people as a result of different creators.
2. Plagiarism word for word (word for word plagiarism), namely quoting other people's work word for word without providing the source.
3. Plagiarism of sources, i.e. failure to mention in full the references referred to in the citation.
4. Plagiarism of authorship, which is deliberately admitting that someone else's work is the result of his work to deceive the public.

In addition to these four types of plagiarism, iThenticate in Harliyansyah (2017) in 2013 conducted a survey of 334 researchers and found there were nine types of plagiarism, as follows.

1. Secondary sources, namely citing primary sources contained in secondary sources without providing information on the original secondary sources.

2. Invalid source, namely providing incorrect information or not in accordance with the reference.

3. Duplication, namely using previous research work without providing information that the research has been done before.

4. Paraphrasing, namely taking text from a source that is then paraphrased so that it seems as if the text is his own without providing the original source.

5. Repetitive research, which uses the same data and research methods from previous studies without mentioning the original.

6. Replication, namely sending one manuscript to several publications, such as journals, conferences, and so on.

7. Misleading attribution, namely mentioning parties who did not contribute to the manuscript/research.

8. Unethical collaboration, namely plagiarism when collaborating parties violate agreements and collaboration ethics.

9. Verbatim plagiarism, namely copying and pasting someone else's words without providing clear references or quotations.

Exchange Theory

In this study, we will discuss behavior. Therefore, the theory that will be used to analyze the results of his research is George C. Homans' theory of exchange. His exchange theory was influenced by the behaviorist paradigm in psychology belonging to B.F. Skinner. Skinner himself is a pioneer of the paradigm of social behavior (social behavioral) who tries to apply the psychological principles of deep behaviorism to sociology (Wardani, 2016). In fact, according to Margaret Poloma in Wagiyo (2016), Homas believes that the behavioral psychology taught by Skinner can explain social exchange. In his view, Homans stated that people who behave are to get rewards and to avoid punishment (Wagiyo, 2016). He also stated that this exchange did not always result in economic matters, but also other issues such as satisfaction, self-esteem and friendship.

According to George C. Homans (Ritzer, 2018), there are five propositions to explain social exchange, which are as follows.

1. The success proposition, that is, the more often a person gets a reward, the more often that person performs an action or deed. Homans believes this proposition can be applied to humans because previously Skinner had tested it on animal behavior.

2. The stimulus proposition, that is, if a person has received a stimulus so that his behavior is rewarded/rewarded, on other occasions, if there is an element of similarity in the stimulus, it is possible that the person will do the same action.

3. The value proposition, that is, if the higher the value of the behavior, the person is happier to do what he does.

4. The deprivation-satiation proposition, that is, the more often a person gets a reward, the less the value becomes. That person will always do the same thing without getting bored.

5. The aggression-approval proposition, that is, if a person gets a reward that is not in accordance with his expectations, he will be disappointed. And vice versa, if the person gets the reward according to what he wants, he will be happy and do what he likes and is considered valuable.

Anomie Theory (Deviant Behavior)

It can be said that committing plagiarism is an act of deviant behavior because it is not in accordance with values and norms. Therefore, in this study, we will use the theory of deviant behavior anomie to analyze it. The term anomie was first introduced by Emil Durkheim. According to him, anomie means a state without norms (the concept of anomie referred to the absence of social regulation normlessness). Emile Durkheim in his book entitled The Division of Labor in Society uses the term anomie to explain "dere-gulation", namely the non-compliance of various rules in society so that people do not know what is expected of others, as a result, circumstances lead to deviations (Patty, 2015). In anomie theory, deviance is a result of various tensions in a social structure so there are people who experience pressure which eventually deviate (Narwoko, 2004: 110).

2 METHODOLOGY

This study uses a qualitative method with a phenomenological approach to explore student plagiarism behavior in online tutorials (case studies on students of the Department of Sociology, FHISIP, Universitas Terbuka). According to Schutz (Yusanto, 2019), phenomenology is the study of knowledge that comes from awareness or the way we understand an object or event through the conscious experience of that object or event. A phenomenon is the appearance of an object, event, or condition in one's perception, so it is subjective. For Shultz and the understanding of

phenomenologists, the main task of phenomenological analysis is to reconstruct the "real" world of human life in the form that they themselves experience. The reality of the world is intersubjective in the sense that members of society share basic perceptions about the world which they internalize through socialization and allow them to interact or communicate. The subjects in the study were students of the Sociology Study Program who took the 2020/2021 Karya Ilmiah course. The source of research data used is primary data, namely the results of interviews with selected informants and the results of data processing from questionnaires. This study used Sociology students who took the Karya Ilmiah course.

3 FINDINGS AND DISCUSSION

3.1 Plagiarism according to Students

In the field of education, students are prone to plagiarism. Moreover, students have a lot of work to do. The issue of plagiarism has often arisen and in almost every course assignment, evidence of this plagiarism has been found. Even in online tutorials, tutors or lecturers usually give advice or appeals before the start of lectures so that students do not commit plagiarism, but in fact, there are still many such actions. Then, do these students actually know the concept of plagiarism?

Based on the results of interviews with students who took online tutorials for the Scientific Work course period 20/21.2 of the Sociology Study Program, the Open University, it can be seen when they are asked the question "what is plagiarism?" In general, their answers include "Taking writings/sources from other parties without clearly writing down the sources, imitating or copying other people's answers without any changes, deviant acts by committing fraudulent actions duplicating/copying without the permission of the creator, plagiarism such as copying and pasting answers from other people, the activity of copying sentences, cheating or copying something without the permission of the creator. This is illustrated by one of the following respondents.

> *"menurut saya plagiarisme itu full mengcopas atau menyalin hasil kerja orang dari internet tanpa nyantumin penulis yang aslinya dan tanpa mencantumkan referensi nya semisal kutipan seseorang"*
> *"istilahnya mungkin nyontek tugas atau punya orang lain tanpa izin, dan meskipun izin mungkin tulisan itu diakui diri sendiri"*

> *"mengakui tulisan orang lain yang tidak diubah sebagai miliknya dan tidak nyantumin sumbernya. Hmm dapat dikatakan, kita mengakui kalimat dalam tulisan punya orang lain sebagai milik kita"*

Based on this opinion alone, it can be seen that on average, they have the same opinion about plagiarism, which is taking other people's writings without the permission of the original creator. If you look at the results of the interview, it can be seen indirectly that students actually know or have knowledge about the concept of plagiarism, but are ignored and choose a short way to do their assignments. Then, what are the forms of plagiarism?

3.2 Types of Plagiarism according to Students

As explained above, there are several types of plagiarism, namely idea plagiarism, word-for-word plagiarism, plagiarism of unknown sources, and authorship plagiarism. The results of the interviews show that on average students have committed plagiarism and it takes various forms. There are students who plagiarism word for word, either taking from modules or the internet. They took several sentences without giving the original source. This is in accordance with the following informants.

> *"hehe biasanya saya langsung asal comot beberapa bagian kalimat di internet, yang penting nyambung dengan tugas saya. Saya tambahkan sedikit pemikiran saya agar tidak terlihat mengambil dari internet"*
>
> *"iya saya pernah copas dari internet dan tidak saya edit, saya ambil dari berbagai sumber terus langsung saya masukkan di tugas dan diskusi"*

In article writing, taking a few words from other people's writing is not prohibited, but there are citation techniques that are recommended properly. Moreover, students take word for word and even sentences up to one paragraph, of course, that is not justified.

There are also students who explained that if he took a sentence in an article on an internet blog, then changed the language a little, but did not include the original source. According to them, this is no longer plagiarism because it has been paraphrased or gone through an editing process.

Even though the actual sentence has been changed, if they don't include the source, what they do is a form of plagiarism. This can be categorized as plagiarism on the source because it does not include

clear references (Soelistyo, 2011). In addition, it can also be said to be a type of paraphrasing plagiarism because it takes the text of a source which is then paraphrased so that it seems as if the text belongs to him without providing the original source (Harliyansyah, 2017).

In addition to the two forms above, it was also found that students plagiarized writing entirely belonging to other people who were acknowledged to be theirs and were not given a source. This is in accordance with the following informant's statement.

> *"I've taken the answer to an assignment from brainly.com because when I got the*
> *answer it was already there, so I took it all"*
> *"I got the task of making a paper, but I don't understand it, I looked on the internet*
> *and I collected it, just changed the name hehe"*
> *"In Karil's assignment, when I first took everything on the internet, it turned out that*
> *I was caught, so I changed again. After all, I'm confused about what to do"*

The results of the interviews above are also reinforced by the findings of the researchers themselves in the Scientific Work class, many articles or scientific works were found only on the internet. Not only taking word for word, without clear quotes but also found to take the work of others as a whole. Meanwhile, when doing assignments and discussions, students did not include clear references as a source of support.

3.3 Student Motivation to do Plagiarism

The results of the study showed that on average students who took the Sociology Study Program Scientific Work course had committed plagiarism. Their reasons for plagiarism also vary. Based on the interview results, there are students who commit plagiarism because it is easier to get answers and to answer assignments quickly. This reason is a practical reason and they do not seem to want to think about doing the task. This also shows that students are still low in terms of literacy. They have no desire to read relevant modules, journals, or books, but instead choose to search the internet and copy and paste related answers or articles. This is in accordance with the following student statements.

> *"Usually the answers from the discussions or assignments are not in the book, so yes*
> *I just go to the internet, search there and just copy and paste"*

> *"I'm too lazy to read a thick module, especially if for example there is no answer in this module. Besides, it's better via the internet, the answers or articles we need are already there and there are lots of them, all we have to do is copy and paste what we want"*

In addition to the causes above, the reason students commit plagiarism is that they do not find answers that they think are right. They assume, what they think is not necessarily true, therefore they then look for these answers on the internet which are then copied into their own answers. There are also those who state that they commit plagiarism because they want to have good grades. This shows that there is still a low level of student satisfaction with their own abilities. They are not confident in their abilities and answers, then look for shortcuts by plagiarism.

The reason they do plagiarism is driven by the easier it is for students to access technology called the internet. They can surf, access anything and get any information on the internet, including looking for answers or articles they want so that they can easily take/plagiarize which are then recognized as their own. This is in accordance with the following student statements.

> *"It's good that there is the internet, so all you have to do is look for answers there, you don't have to think about it"*
>
> *"Well, what can I do, I don't understand the material, so the only way is, just ask 'Mbah google (google)', the answers will appear, both in blogs and journals, we just have to copy and paste"*

The ease of access to the internet makes it easier for students to get answers that they think are right for their difficulties in doing assignments so they then take plagiarism actions. Not only the internet factor, according to students, which motivates them to plagiarism, among others, because they do not understand the material, are stuck in finding ideas when making assignments or scientific papers, do not find answers on their own, and follow the trend of actions taken by their friends.

The act of plagiarism committed by this student certainly wants a goal. Among other things, the goal is to get good results and to finish quickly. This is in accordance with Homans's thinking that people who behave are to get rewards and avoid punishment (Wagiyo, 2016). They expect rewards in the form of good grades according to their expectations. But in reality, instead of avoiding punishment and getting good rewards in the form of good grades, they actually get bad grades because their work

is detected as plagiarism. Instead of getting good results, they get punished for their actions, for example in the form of a warning, not getting grades, or even not passing the course.

3.4   Plagiarism as a Social Deviance

Students realize that plagiarism is wrong and injures the academic community. They stated that this action was not good and exemplary because this plagiarism behavior indicated the bad character and quality of students. However, the action was still carried out. As explained above, it turns out that many students have committed plagiarism, namely deliberately taking or quoting other people's writings that are recognized as their own without providing clear sources and even admitting other people's articles as their own without including the original sources. Of course, these actions in anomie theory can be categorized as deviations, especially if we look at their reasons or motives for committing plagiarism as an intentional act of cheating that is driven by factors of not understanding the material, being pressured, not finding answers themselves, and joining friends.

If we look at it from a sociological point of view, this act is certainly a form of social deviation. Where someone commits an intentional or unintentional act that violates applicable norms by taking other people's work without asking permission and not providing a clear source. Apart from that, students have actually violated the Regulation of the Minister of National Education of the Republic of Indonesia Number 17 of 2010 concerning the Prevention and Management of Plagiarism in Higher Education. Of course, because they have violated Permendiknas, the perpetrators of this plagiarism should receive clear sanctions according to Permendiknas RI No. 17 of 2010 Article 12 paragraph 1 which reads "Sanctions for students who are proven to have committed plagiarism as referred to in Article 10 paragraph (4), sequentially from the lightest to the heaviest, consist of (a) warning; (b) written warning; (c) postponement of the granting of some student rights; (d) cancellation of the value of one or several courses obtained by students; (e) honorable discharge from student status; (f) dishonorable dismissal from student status; or (g) cancellation of a diploma if a student has graduated from a program".

Based on the interview results, so far the sanctions given to students who commit acts of plagiarism are still limited to reprimands from lecturers, bad grades, or assignments not accepted so that they are returned to students. This is in accordance with the following student statements.

"I have been returned several times because I was found to be plagiarizing on the internet. The lecturer asked me to fix it, I was also dizzy, but what else could I do? In the end, I did as much as I could according to my thoughts"

"Hehe, lecturers and assignments often reprimand me because my discussions are plagiarized from the internet or other friends. The grades are so bad."

The sanctions given are still quite light for students, which of course are still adjusted to the level of plagiarism committed by students. However, even though the sanctions given were quite light, students should not have committed this act of plagiarism because even the slightest plagiarism is a deviant act that harms the academic world.

3.5   Solutions to Overcome Plagiarism

Based on the results of the study, it was shown that on average students did not check their work or answers on the plagiarism check platform. No wonder then many works that are detected as plagiarism appear on the internet. As stated by students, in fact, even though they generally know how to check for plagiarism on several plagiarism check platforms and Google, they rarely even don't check their work on average. This shows that the awareness of students is still weak to check plagiarism. Therefore, there needs to be aware from these students to carry out this checking, especially since there are many plagiarism check platforms that provide services for free.

In addition, it is expected that students in making scientific work, and making answers to discussions and assignments should use their own thoughts or ideas which are then strengthened by reading sources, both from modules, journals, and other relevant books. Students should also start learning and seeking knowledge about good citation techniques from various sources and paraphrasing each original source without forgetting to provide the source in the quotation.

Students are also expected to pay more attention to suggestions or orders from tutors or lecturers regarding how to avoid plagiarism. Because in general, every lecturer before starting learning or online tutorials will give directions so that students do not commit plagiarism, and do not take other people's answers either from the internet or from fellow students. It is also hoped that students will be more aware of this act of plagiarism and that this act is a wrong action and can tarnish the academic community and tarnish themselves because it shows the quality of their abilities.

4   CONCLUSION

Based on the research results, according to students, plagiarism is taking writing/sources from other parties without clearly writing down the sources, imitating or copying other people's answers without any changes, deviant acts by committing fraudulent actions duplicating/copying without permission of the creator, plagiarism is like copying and pasting answers from other people, the activity of copying sentences, and cheating or copying something without the permission of the creator. The reasons for committing plagiarism include getting answers more easily, answering assignments quickly, not finding answers that he thinks are right and getting good grades. Factors that encourage them to plagiarism include not understanding the material, being pressured, not finding answers on their own, and joining friends. In order to avoid plagiarism, among others, by answering according to your own thoughts which are strengthened by the module, citing original sources accompanied by sources and added from your own thoughts after reading the module book, paraphrasing the original source, and checking on the plagiarism platform.

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ANALYSIS OF EDUCATION SYSTEMS AND LEARNING STRATEGIES AT SPECIAL NEEDS SCHOOL

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Abstract

Education for Children with Special Needs is a mandate of Law No. 20 of 2003 Article 5 paragraph (2) of the National Education System Law. The government has built specially designed schools in the form of providing special schools (SDLB, SMPLB and SMALB) as well as inclusive schools in accordance with educational standards. The standards used in the education process in special schools need to be researched. Has the standard met the 8 (eight) National Education Standards in accordance with the Government Regulation of the Republic of Indonesia No.57 of 2021. This study is to evaluate 8 (eight) National Education Standards in special schools in Indonesia. Respondents were 218 from 37 special schools in Java and Sumatra. Respondents consist of principals and teachers. Research data were collected using a questionnaire.

Research shows that the highest standard test results are management standards with a loading factor value of 0.921 and an R-square of 85, followed by education standards and education personnel (loading factor 0.865; R Square 75%); Standard Process (loading factor 0.850 ; R Square 72%); Facilities and Infrastructure Standards (loading factor 0.843; R Square 71%); Financing Standards (loading factor 0.842; R Square 71%); Assessment Standards (loading factor 0.830; R Square 69%); Standard Content (loading factor 0.816; R Square 67%); and Graduate Competency Standards (loading factor 0.774; R Square 60%). The results of this study indicate that the management carried out at each SLB has been running well and in accordance with educational standards. Meanwhile, the factor that still requires attention from the government and SLB managers is the competency standard of graduates.

Keywords: national education standards, special schools, school management

1 INTRODUCTION

Education for children with special needs is a mandate of The Law Number 20 Year of 2003 Chapter 5 verse (2) The Law of National Educational System which reads: Citizens with Impairment of physical, emotional, mental, intellectual and or social are entitled to get special education. Further in Chapter 32 of The Law of National Education System explain: Special Education is an education for learners/students who have a or some level of difficulty in following learning process since they have impairment of physical, emotional, mental, social and or have potential intelligence and special talent. The government itself has mandated the right to education for special needs in Chapter 54 The

Law Number 39 Year of 1999 about Human Rights, that is : Every child with physical or mental impairment has the right to get care, education, training and special assistance at state expense, to guarantee his/her life in accordance with human dignity, self-improvement and ability to participate in the life of society and the state.

The Efforts made by the government in relation to the implementation of laws (UU) and Government Regulations (PP) regarding children with the special needs, are in the form of providing special schools such as Special Elementary Schools (SDLB), Special Junior High Schools (SMPLB), Special Senior High Schools (SMALB). Beside that, the special need children can take education in integrated schools which are regular schools that accept children with special needs, with the same curriculum and infrastructure for all learners/students. This integrated schools are currently better known as Inclusive School (Ministry of Education and Sosial/Kemendikbud, 2016)

Based on Constitution (UU) No. 8 year of 2016 regarding persons with disabilities, there are five (5) categories of disabilities, namely physical, intellectual, mental, sensory and multiple disabilities. Herewith, based on running data 2020 of Badan Pusat Statistik/BPS (Central Bureau Statistic) mentioned that the number of people with disabilities reached 22,5 million or around 5 Percent (https://www.suara.com/bisnis/2020). While the latest data from BPS (Central Bureau Statistic) 2017 mentioned that total children with special needs in Indonesia were 1,6 million people. The Ministry Education and Social (Kemendikbud) estimated that almost 70% of Children with special needs (ABK) did not get a decent education. It means that more than one million children with special needs (ABK) have not received the education that is important for their life. It is of the 30% of total children with special needs (ABK) who received educations, only 18% of them have received inclusive education. https://lifestyle.bisnis.com/read/, both from specials school and ordinary schools that implementing inclusive education. https://lifestyle.bisnis.com/read/.

Data statistic of Special Education (PLB) 2019/2020 from Ministry Education shows that total Special Schools (SLB) in Indonesia are 2270 schools and only 26,12% of them are public schools, the rest are private schools.

 Nissa Tarnoto (2016) explains the problems that arise regarding the implementation of inclusive education are the teachers, students, parents, school, society, government and lack of supported

facilities and infrastructures for the inclusive school. It needs to cultivate the school culture in the school environment itself and the community outside the school as well.

Refer to the above background, it needs further analysis on how to analyze the education system and Learning strategies in the education of children with special needs. Based on Government Rules of Indonesian Republic Number 19 Year 2005 regarding to the Standard of National Education, associated with (1) competency standard; (2) Content standard; (3) Process standard; (4) Standard of Educator and education personnel; (5) Standard of facilities and infrastructures; (6) Management Standard; (7) Financing standards; and (8) assessment standard

2 METHODOLOGY

2.1 Research Sites

The Research of Education System Analysis and Learning Strategy for Education of Children with Special Needs was implemented at Special Schools (SLB) which are located in DKI Jakarta, Sumatera Barat, Yogyakarta and Central Java, consist of SLB A; SLB B; and SLB C. Total schools sampled are 37 SLB and showed at Table 1

Table 1. SLB Sample

1	SLB Al Azhar	14	SLB Rela Bhakti II Wates	27	SLB Kasih Ibu
2	SLB Al Ikhlas	15	SLB Negeri 1 Yogyakarta	28	SLB PGRI Nanggulan
3	SLB Negeri 1 Bukittinggi	16	SLB Krida Mulia1 Rongkop	29	SLB Damayanti
4	SLB Negeri 1 Payakumbuh	17	SLB Marsudi Putra II	30	SLB Marganingsih
5	SLB C Payakumbuh	18	SLB Bangun Putra Kasihan	31	SLB Yapenas
6	SLB Negeri 1 Padang	19	SLB Sutawijaya	32	SLB ABCD KURNIA ASIH
7	SLB Negeri 2 Padang	20	SLB Bina Anggita	33	SLBN JOMBANG
8	SLB Autis Bima Padang	21	SLB Citra Mulia Mandiri	34	SLB Rela Bhakti I Gamping
9	SLB YPAC Sumatera Barat	22	SLB Puspa Melati Tepus	35	SLB Krida Mulia II
10	SLB Autisma YPPA Padang	23	SLB Muhammadiyah Panjong	36	SLB TEGAR HARAPAN
11	SLB A PTN	24	SLB PGRI Trimulyo	37	SLB Negeri 1 Bantul
12	SLB Negeri 1 Jakarta	25	SLB Pamardi Putra		
13	SLBN Pembina Yogyakarta	26	SLB Negeri 2 Yogyakarta		

2.2 Research Design

This study uses a quantitative research design that aimed to analyze education system and learning strategy at education for children with special needs, based on 8 (eight) Education Standard national in accordance with Government Regulation of the Republic of Indonesia Number 19 Year 2005. Data retrieval is done by using questionnaire and interviews with related parties with the implementation

of Education for children with special needs (ABK). The respondents in this study are the headmaster and teachers of special schools. Total Respondents in this study are 234 persons.

3 FINDINGS AND DISCUSSION

3.1 Analysis of correlations between standards

3.1.1 Results of Correlation Matrix between Standards

The result of the research shows that all standards variables have positive and significant correlations or connections. The significant connections are showed by probabilities value less than alpha 5%, also connection between variables has positive value, since they have positive coefficient.

Table 2 : Result of Matrix Correlation between Standards

Correlations		Content standard	Process Standard	Graduation Competence Standard	Educator and Education Staff Standard	Facilities and Infrastructure Standard	Management Standard	Financing standard	Evaluation Standard
Content Standard	Person Correlation	1							
	Sig.(2-tiled)	.000							
Process standard	Person Correlation	0.833"	1						
	Sig.(2-tiled)	.000	.000						
Graduation Competence Standard	Person Correlation	.633	.640	1					
	Sig.(2-tiled)	.000	.000	.000					
Educator and Education Staff Standard	Personm Correlation	.611	.626	.678	1				
	Sig.(2-tiled)	.000	.000	.000	.000				
Facilities and infrastructure standard	Personm Correlation	.603	.610	.536	.780	1			
	Sig.(2-tiled)	.000	.000	.000	.000	.000			
Management Standard	Personm Correlation	.707	.760	.635	.657	.739	1		
	Sig.(2-tiled)	.000	.000	.000	.000	.000	.000		
Financing Standard	Personm Correlation	.580	.641	.510	.559	.671	.731	1	
	Sig.(2-tiled)	.000	.000	.000	.000	.000	.000	.000	
Evaluation standard	Personm Correlation	.629	.654	.684	.622	.544	.735	.611	1
	Sig.(2-tiled)	.000	.000	.000	.000	.000	.000	.000	.000
***correlation is significant at the 0,01 level (2 -tailed)									

Tabel 2 above showing that the relationship between process standards can be explained as follows:

a) Content Standard has strong relationship with process standards, since the highest value of correlation coefficient is 0.833, continued with the relationship to management standard is 0.707 and content standard has the lowest correlation with financial standard is 0.580

b) Process standard has strong relationship with content standard, since the highest value of coefficient is 0.833, continued with relationship to management standard is 0.760 and process standard has the lowest correlation with standard of facilities and infrastructure is 0.610

c) Graduation competency standard has strong relationship with standard of values, since coefficient value of the highest correlation is 0.684, continued with relationship to standard education and education personnel/staff is 0.678 and financial standard that has the lowest correlation is 0.510

d) Standard of education and education personnel/staff have strong relationship with standard of facilities and infrastructures is……., since the value of the highest correlation coefficient is 0.708, continued with the relationship to management standard is 0.657 and financial standard that has the lowest correlation is 0.559

e) Standard of facilities and infrastructure has strong relationship with the management standard, since the highest value of correlation is 0.739, continued with relationship to standard of education and education personnel/staff is 0.708 and graduation competence standard has the lowest correlation is 0.536

f) Standard of graduation management has strong relationship with process standard, since the value of the highest correlation is 0.760, continued with the relationship to standard of facilities and infrastructure is 0.739 and standard of graduation competence that has the lowest correlation is 0.635

g) Financial standard has strong relationship with management standard, since value of the highest correlation coefficient is 0.731, continued with relationship to standard of facilities and infrastructure is 0.671 and standard of graduation competence has the lowest correlation is 0.510

h) Evaluation standard has strong relationship with management standard, since value of the highest correlation coefficient is 0.735, continued with relationship to standard of graduation competence is 0.684 and standard of facilities and infrastructure has the lowest correlation is 0.544

3.2 The Result of Factor Analysis with Confirmatory Factor Analysis (CFA)

Tujuan analisis ini adalah untuk mengetahui indikator yang paling mereflexikan masing-masing Standard. Hasil CFA menunjukkan seluruh indikator pernyataan memiliki nilai t-hitung yang lebih besar dari t-tabel 1,96 artinya secara signifikan seluruh indikator pernyataan yang terdapat pada setiap Item Analisis Standar Nasional Pendidikan mampu mencerminkan Variabel semua Standard.

The objective of this analysis is to find out indicators which indicators the best reflects each standard. CFA result shows that all indicators of statement have value t- count bigger than t-table 1,96 means that all indicators of statement contained in each item of Analysis of Education National Standard can reflect all variable standard.

3.2.1 Content Standard

The result of CFA shows that school describe competency standard (SK) and basic standard (KD) into each subject of learning that has the highest SLF (SLF=0.81). While the lowest SLF (SLF=0.45) is the teacher allocates the time for structured assignments and unstructured independent activities given to the students maximum 50% of time allocation of each subject. The value of Standardized Loading Factor (SLF) is described at the following picture.
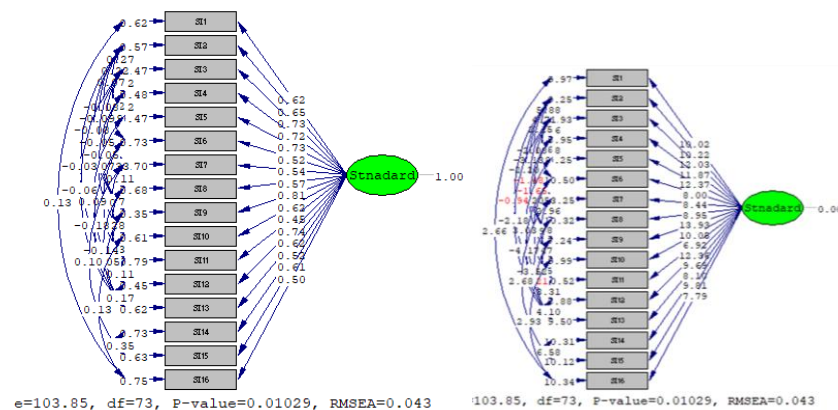
Picture 1. Standardized Loading Factor and T-count of content standard

3.2.2 Process Standard

In process standard, CFA result showing that the statement which has the highest SLF is the statement number SP7 (SLF = 0,88), The Headmaster was doing supervision of learning process through 4 ways: (1) giving examples, (2) discussion, (3) training, and (4) consultation. Whereas the lowest SLF (SLF=0.57) is the teachers implement the learning process by following learning steps according to the provisions of Government Rules of National Education no 41 year of 2007 (statement number SP4).
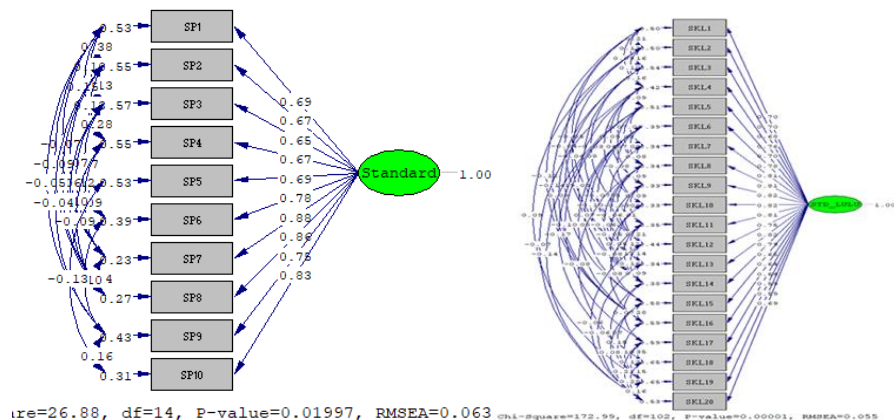
Picture 2. Standardized Loading Factor and T count of Process Standard

3.2.3 Graduate Competence Standard

Graduate Competence Standard shows the result of CFA that all indicators of statement have value of t count that is bigger than t-table 1,96, means that all indicators of statements are significantly up to SKL20 are able to reflect variable of Graduate Competence Standard
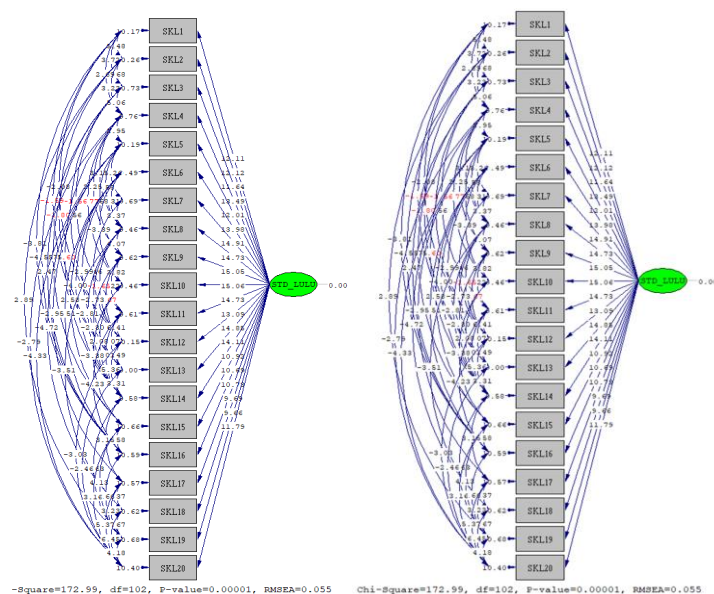
Picture 3.Standardized Loading Factor and T count of Graduation Standard

3.2.4 Educator Standard and Education Personnel/Staff

CFA Result shows that all indicators of statement have value t-count which is bigger than t-table 1,96 means that all indicators of statement SPTK1 up to SPTK24 significantly are able to reflect variable of Education Standard and Education Personnel
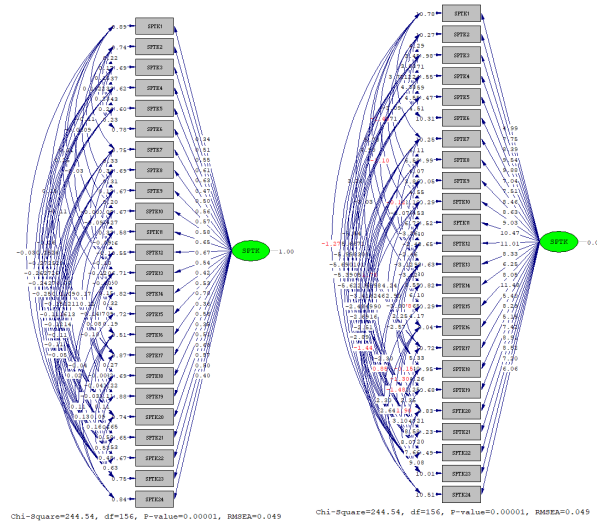
Picture 4. Standardized Loading Factor and T Count of Educator and Personnel Standard

3.2.5   *Facilities and Infrastructure Standard*

CFA Result shows that all indicators of statement have value t-count which is bigger than t-table 1,96 means that all indicators of statement SSP1 up to SSP27 significantly can reflect variable standard of Facilities and Infrastructure
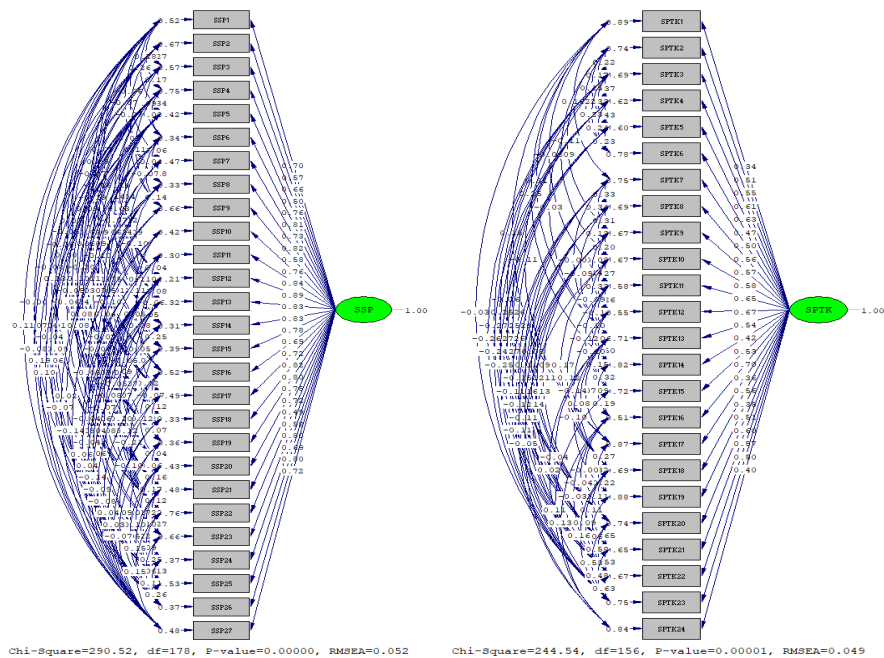
Picture 5. Standardized Loading Factor and T Count of Facilities and Infrastructure

3.2.6 Management Standard

CFA Result shows that all indicators of statement have value t-count which is bigger than t-table means that all indicators of statement SPL1 up to SPL 10 significantly be able to reflect variable of Management Standard.
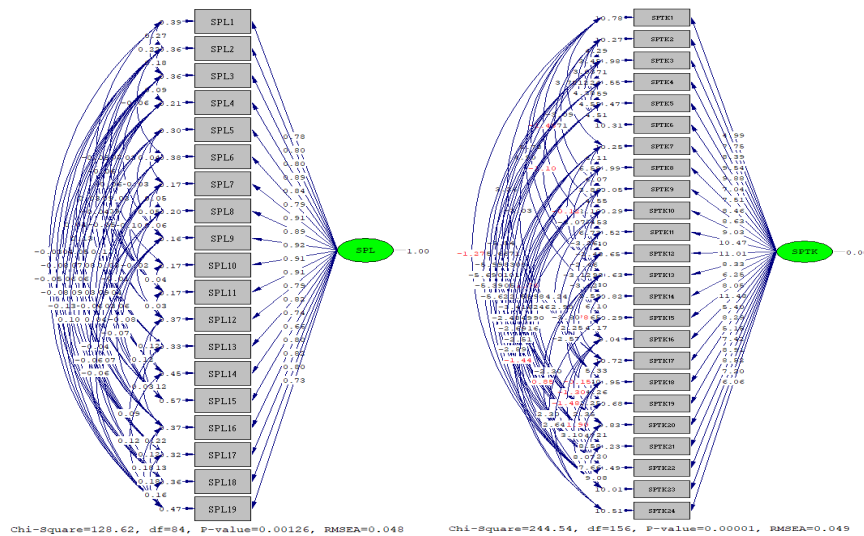
Picture 6. Standardized Loading Factor and T Count of Management Standard

3.2.7 Financing Standard

CFA Result shows that all indicators of statement have value t-count that is bigger than t-table 1,96 means that all indicators of statement SP1 up to SP 19 are able to reflect Variable of Financing Standard.
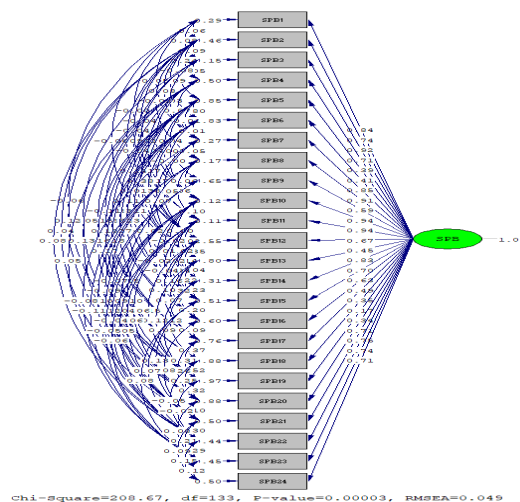
Picture 7. Standardized Loading Factor and T Count of Financing Standard

3.2.8 Assessment Standard

CFA Result shows that all indicators of statement have value t-count that is bigger than t-table 1,96 means that all indicators of statement SPN1 up to SPN 22 are able to reflect Variable of Financing Standard.
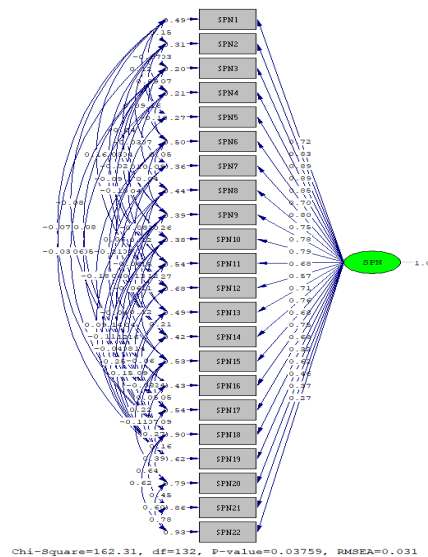
Picture 7. Standardized Loading Factor and T Count of Assessment Standard

4   CONCLUSION

The Research of Education System Analysis and Learning Strategy in Education for Children of Special Needs in this phase I, focused on analysis 8 (eight) of Education National Standards, Education in Special Needs School. The research result shows that all national standards of education have been well managed. It can be seen from the result of factor analysis by CFA. The CFA results shows that all indicators of statement, each of them measured has been reflecting variable on every Education National Standard. This research also shows that there is strong relation between standard of National Education. Standard and process standard have a very strong relationship and determine against other standards. Meanwhile standard of graduation competence has a very strong relationship with evaluation standard. Standard of educator and education personnel/ staff have close relationship with standard of facilities and infrastructures as well as standard of management.

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SCHOOL READINESS IN THE NEW NORMAL ERA (STUDY ON SPECIAL NEEDS SCHOOLS)

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Abstract

The COVID-19 pandemic has changed people's habits, including in the education sector. During the pandemic, Indonesia changed the face-to-face learning system to study from home with a distance learning system. After the pandemic the world entered the New Normal Era. There are several rules and facilities needed by each individual when entering the New Normal Era, including facilities that must be owned by students and must be provided by the school. Special Schools (SLB) are one of the educational institutions that must comply with the rules of learning in the New Normal Era. So that the government establishes several facilities and facilities that must be owned by schools in order to carry out face-to-face learning activities. Research on the readiness of special education in learning in the New Normal Era was conducted at 37 special schools in Java and Sumatra. Research respondents consisted of principals and teachers as many as 218 people. Research data were collected using a questionnaire.

Research shows that all special schools are ready for face-to-face learning. Learning facilities are adequate with adequate internet network (82.91%), distance learning devices (73.93%), educators who are able to carry out a combination of learning (83.76%). 92% of respondents have formed a Covid Task Force Team consisting of teachers, education staff, student organizations, medical personnel and school committees. Meanwhile, coordination with school committees and medical personnel has been carried out regarding parental consent (97%). Coordination with medical personnel is carried out related to the evaluation of a clean and healthy environment (92%) and a healthy canteen (30.34). The facilities provided by the school consist of hand washing (97.4%), temperature measuring devices (98.7%), disinfectants (84.19%), clean toilets (88.89%), seats are arranged at a distance of 1,5m (81.20%), means of announcing the implementation of health protocols (93%). Facilities that currently exist and require additional are boundary markers (65.38%), differentiated entrances and exits (35.04%), barriers for administrative services with mica plastic or others (45.73%). In terms of human resources, the number of teachers outside the city area (9.83%), the number of students outside the city area (2.56%), teachers who have congenital diseases (18.80%), the number of children who have a history of asthma (3.85%)

Keywords: pandemic, SLB readiness, supporting facilities.

1   INTRODUCTION

The Law number 8 of Year 2016 regarding to Persons with Disabilities, explain that persons with disabilities are everyone who has physical limitation, intellectual, mental and or sensory in the long term and when interacting with his or her surrounding experience obstacles and difficulties to participate fully dan effectively with other citizens based on equal rights. Special Protection for Children with disabilities is a form of protection received by children with disabilities for fulfilling his or her right and get a sense of security, against threat that endanger themselves and their lives in their growth and development. Every child including children with disabilities has the right to get protection from violence and discrimination, with the birth of Ministry Regulation of Women

Empowerment and protection of children in Republic of Indonesia Number 4 Year 2017 regarding Special Protection for Children with disabilities.

The government's efforts that are related to the implementation of Law (UU) and Government Regulations (PP) regarding children with special needs in forms of providing Special Schools, such as Elementary Special Schools (SDLB), Junior High Special School (SMPLB), Senior High Special School (SMALB). Besides children with special needs can also take education in integrated school which is regular school that received children with special needs, with the same curriculum, the facilities and infrastructures for all learners/students. Currently integrated school is better well known with inclusive school (Kemendikbud, 2016). SLB A is for children with visual impairment or having obstacles in sense of sight; SLB B is for children with deficiency in sense of hearing or hearing impairment; and SLB C is for children with developmental impairment or children with intelligence below average.

Patterns and methods of learning delivered to the Children with Special Needs (ABK) are of course different with the education for normal children, according to the mandate of Law number 39 Year 1999 Chapter 54 regarding to Human Rights. This is related to The State's obligation to organize special education for Children with Special Needs (ABK)

In Era of pandemic Covid 19, according to Joint Decision of Ministry Education, Culture, Research and Technology, Ministry Religion, Ministry of Health, Ministry of Home Affairs of The Republic Indonesia number: 05/Kb/2021; Number:1347 Year 2021; Number Hk.01.08/Menkes/6678/2021 Number 443-5847 Year 2021 regarding to Learning Organization Guides in Era of Pandemic Coronavirus Disease 2019 (Covid 19) explain that during pandemic era, face to face learning is limited by strict health protocol. This also have an impact on learning in Special Needs (SLB). Most of Special Schools (SLB) organize learning with model of limited face to face meeting, by visiting the homes of students in turn. Especially at Special Schools (SLB) which are located in difficult to reach location with using internet facilities. The teachers develop teaching materials that can be used by parents for conducting learning at homes. Although it is difficult, learning process in limited face to face learning and online learning can be held.

Yuliani (2021) explained that there are 3 (three) models of learning system for school of special needs (SLB) during pandemic of COVID 19. The learning models are daring system, parents come to

school and teachers do home visits. Meanwhile for learning models at school are video all/video conference, online application for assignment via whatsapp report. Parents can choose learning model which is suitable with the capabilities of their children. But, there are some obstacles in giving services of special education in this pandemic era. Teachers and parents are unable to imagine learning for special needs students, implemented by daring learning system. Some of special needs students don't want to study, because the student is unfamiliar with the routine studying at home.

Meanwhile, Research by Hasan (2021), explains that learning for children with special needs in the education units of Special School in era pandemic of Covid 19 is implemented with limited face-to-face meetings and distance learning through daring based on (Special Instructional Review (TIK) as well as mixed between online with limited face-to-face meeting through teacher's visit. The problems arise in learning in Special School in pandemic era of Covid 19, are (1) the Educators/the teachers have difficulties in keeping distance with students; (2) there are still many constraints and unfamiliar with new normal habits; (3) some kind of disabilities cause new habits of health protocol (new normal) it is still hard to be implemented; (4) the students habit of shopping in school canteen; (5) material delivered is not optimal; (6) some students and some parents does not have computer or smartphone; (7) some disabilities experience obstacles in operating computer or smartphone; (8) lack of knowledge and care of student's parents to support their children in distance learning based on Special Instructional Review (TIK)

Related to various learning barriers in face to face meeting, some of Special Schools organize limited face-to-face learning, with fulfilling health protocols. The learning organization of limited face to face meeting is based on circular letter of Ministry of Education, Culture, Research and Technology Number 7 Year 2022 regarding to Discretion of The Implementation of Joint Decision of 4 (four) Ministries regarding Learning Organizing in Pandemic Era of Coronavirus Disease (Covid-19). The rules require school to have support facilities to conduct limited face to face learning.

Refer from the official page of the Ministry of Health, there are six (6) points should be fulfilled by educational institutions if they want to implement learning with face to face meeting. Those facilities are : (1) sanitation; (2) Health facilities; (3) Readiness to apply mandatory mask; (4) thermos gun; (5) Education Unit Mapping to find out who is comorbid and (6) Agreement between School and guardian parents. Beside that, both schools and universities must apply movement of 5M Covid-19 which is the complementary to the 3M action, there are (1) wearing a mask; (2) washing hands with

soap and running water; (3) keeping distance; (4) staying away from the crowd and (5) limiting mobility and interaction. https://pintek(.id/blog/sarana-dan-prasarana-sekolah/).

2 METHODOLOGY

2.1 Research Location

Research of Education System Analysis and Learning Strategy in Education for Special Needs Children is implemented in Special schools located in DKI Jakarta, West Sumatra, Yogyakarta and Central of Java consist of SLB A; SLB B; and SLB C. Total school samples are 37 SLB and showed in Table 1

Tabel 1. SLB Sample

1	SLB Al Azhar	14	SLB Rela Bhakti II Wates	27	SLB Kasih Ibu
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5	SLB C Payakumbuh	18	SLB Bangun Putra Kasihan	31	SLB Yapenas
6	SLB Negeri 1 Padang	19	SLB Sutawijaya	32	SLB ABCD KURNIA ASIH
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8	SLB Autis Bima Padang	21	SLB Citra Mulia Mandiri	34	SLB Rela Bhakti I Gamping
9	SLB YPAC Sumatera Barat	22	SLB Puspa Melati Tepus	35	SLB Krida Mulia II
10	SLB Autisma YPPA Padang	23	SLB Muhammadiyah Panjong	36	SLB TEGAR HARAPAN
11	SLB A PTN	24	SLB PGRI Trimulyo	37	SLB Negeri 1 Bantul
12	SLB Negeri 1 Jakarta	25	SLB Pamardi Putra		
13	SLBN Pembina Yogyakarta	26	SLB Negeri 2 Yogyakarta		

2.2 Research Design

This research uses quantitative research design that aimed to analyze educational system and learning strategy in education for special needs, based on eight (8) Education national Standards according to Government Regulation of Republic Indonesia Number 19 Year 2005. Data retrieval is implemented by using questionnaires and interviews with related parties on the implementation of Education for Children with Special Needs (ABK). Respondents in this research consist of Headmasters and teachers of Special needs. Total Respondents in this research are 234 people.

3 FINDINGS AND DISCUSSION

3.1 Readiness of School Facilities for limited face-to-face Learning

3.1.1 *Readiness of Covid Officer Unit Team*

Team of Covid Officer Unit is one of the requirements for the opening limited face-to-face learning. The role of the COVID-19 task force in every education unit is very important to strengthen control

supervision and new health practice. Technical Provisions regarding the covid task force are available in The Ministry of Home Affairs Institution (Inmendagri) no. 35, 36 and 37 Year 2021 including Guidance of Controlling and Fostering the implementation of Health Protocol in every Educational Unit from Ministry of Health.

Result of the Research shows that 92,7% school have formed Team of Covid Officer Unit that consist of elements Education Personnel, Student Organization, Medical Personnel and School Committee. Adequacy proportion of Covid-19 task Force Teams in SLB can be seen in Picture 1
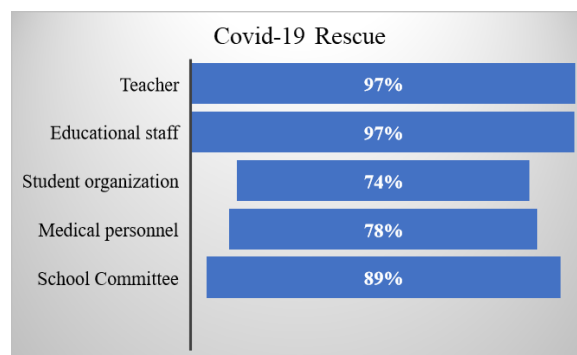
Figure 1 Composition of Covid 19 Task Force Team

Requirements must be fulfilled by school that will organize limited face-to-face learning, that is permits and coordination with related parties. Data shows that 97% parents allow student to implement limited face-to-face learning. 98% schools have also coordinated with Health Centre and conduct evaluation hygiene and health of the school environment. But the facility still few the school have, is Healthy Canteen. Only 30% schools that have prepared healthy canteen for students, teachers and school staffs.
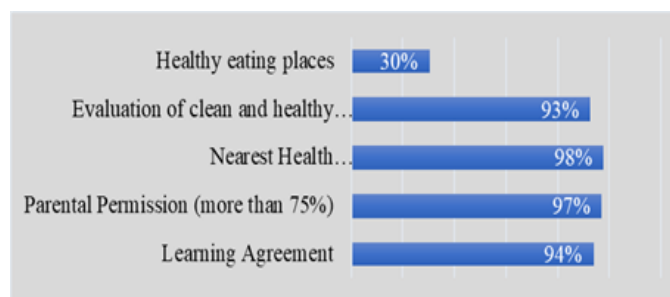
Figure 2. Coordinating and Evaluating

3.1.2 *Readiness of Facilities and Infrastructures*

Other requirements for school to organize learning with limited face-to-face meeting are teachers, students, parents and education personnel must implement health protocols of 5M, such as wearing

a mask, washing hands with soap and running water, keeping distance, staying away from crowds and reducing mobility https://puslapdik.kemdikbud.go.id/artikel/ada-7-syarat-bila-sekolah-ingin-pembelajaran-tatap-muka-selama-pandemi). These requirements must be fulfilled by the school in order the learning can take place properly and in accordance with the established procedures. Most of the school have hand washing facilities (97,44%), thermometer (98,72%). But some schools have not yet fulfilled facility that separate entrance and exit, only 35,04% schools have made this facility. As well as barriers for administrative service, only 45,73% schools that can provide this facility
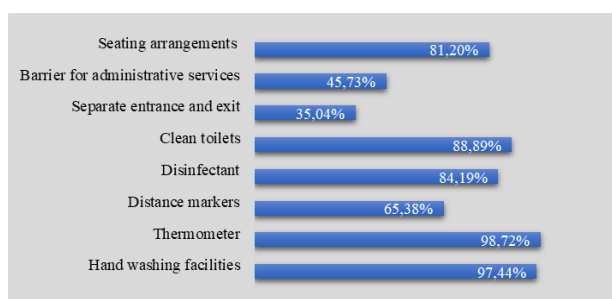
Figure 3. Healthy Protocol Support

Beside physical facilities, implementation of learning with limited face-to- meeting need also support facilities such as computers, laptops and internet networks. Result of this research shows that schools have been ready with the support facilities to implement learning with limited face-to-face meeting with dual mode (offline and online). 82,91% schools have provided an adequate internet network facilities and have teachers who capable organize face-to-face and online learning. The difficulties that are faced by the school currently is providing learning media for areas that are far for school location. Only 73,93% school can provide this facility.
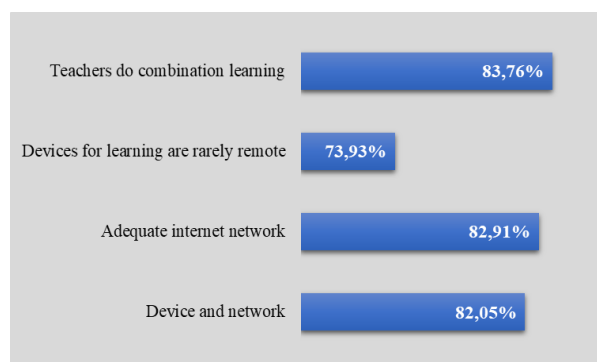
Figure 4. Support Facilities for Learning with Limited Face-to-face Meeting

3.2 Mitigation of the risk of the transmission of Covid 19

One of the risks in organizing face-to-face learning in pandemic COVID 19 is the possibility of the transmission of COVID 19, can happen from person to person through respiratory droplet when coughing and sneezing (Ministry of Home Affairs/Kementrian Dalam Negeri, 2020). The best way to reduce contracting Covid-19 is by not directly exposed to corona virus (Covid-19), such as close contact with patients, touching the objects that are exposed to coughing splashes and breath of the Covid-19 patients. Besides that, keep following health protocol such as wearing a mask, handwashing with soap and running water minimum for 20 seconds, use hand sanitizer if soap and water is not available, keeping distance minimum one meter away from other people and avoid touching nose, eyes, mouth and face using hands not yet been cleaned (Sembiring and Meo, 2020). So the preventive measure is needed especially for student and teacher who have the potential to be infected COVID-19. Before doing learning activities with limited face-to-face meeting, the school should do mapping of students who potentially to be infected COVID 19 and students as well as teachers who are comorbid.

Total teachers who have congenital diseases such as diabetes, hypertension and heart disease are 18%. Meanwhile students who have a story of asthma are 3,8%. Teachers who domiciled far enough from school location are 9,8% and students who domiciled far enough from school location are 2,69%
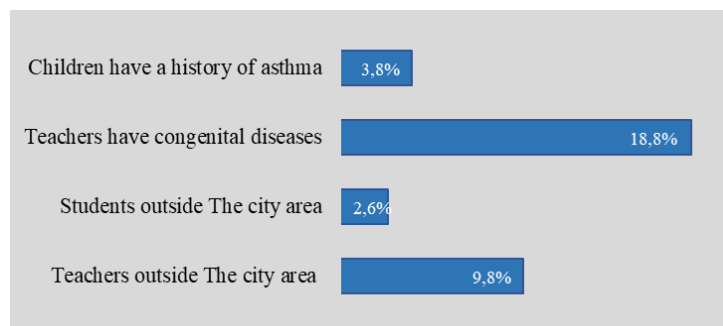
Figure 5. Mapping of Teachers and Students who unable attend the lesson

Those data shows that the potential to be infected with COVID 19 is quite small, since migration level of students and teachers is not too big and controllable.

4 CONCLUSION

COVID 19 has changed human behavior including in the organizing of learning. In order to the transmission does not occur especially to students, the government issues the Law and Regulation that regulate the implementation of education. All level of education unit, including Special Schools

(SLB) required to follow a series of health protocols in learning activities. Learning alternatives used are online learning model. But there are some limitations in online learning model, especially for students with special needs. Learning model offered is learning with limited face-to-face meeting while keep following the health protocol.

Result of this research shows that in general Special Schools (SLB) are ready to implement learning with limited face-to-face meeting. This can be seen from the readiness of school in preparing COVID task forces in school area as well as supporting facilities and infrastructures. Schools also anticipate with the mapping of teachers and students who have the potential to be infected with COVID 19.

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LEARNING VIDEOS IN EDUCATIONAL STATISTICS

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Abstract

Online learning conducted during the pandemic requires teachers to use media and technology in learning. One of the flexible media and technology is learning video. Learning video can be studied by students when students want it and can be adjusted to the speed of each individual's learning so that it can help those who have difficulty in understanding the content of the material during online and offline learning. This study aims to develop a video-based learning media that is appropriate with the learning outcomes of the educational statistics course so that it can be used as a reference. The learning videos that are focused on in this research are statistics videos in chapter 1: introduction to statistics and chapter 2: data presentation. This Research and development is using the ADDIE Model (Analyze, Design, Develop, Implement, Evaluate). Product development in the form of learning videos was validated by material experts and learning media experts and tested in the early stages to students who used the video in statistical learning. The instruments used in this study include a validator questionnaire for educational statistics material experts, a validator questionnaire for learning media experts, and student questionnaires in the early stages of testing. The data analysis technique used is quantitative and qualitative descriptive data analysis techniques with the aim of interpreting quantitative data on the questionnaire scores and interpreting qualitative data in the form of suggestions and comments from the validator. The results obtained are learning videos introduction to statistics and data presentation that fulfilled the valid and practical categories.

Keywords: Learning Video, Educational Statistics, Media and Technology

1 INTRODUCTION

Online learning during the pandemic requires teachers to apply learning using media and technology. Various platforms learning media are used by teachers such as whatsapp, google classroom, zoom, Ms. team, and etc. In other words, the necessity of teachers in using learning media and technology in these days is unavoidable according to the importance of the role of learning media in supporting online learning to provide understanding and achieve learning goals. The rapid progress of science and technology in the field of education initiated the development of learning media that can motivate students to be involved in a learning process.

Students who have struggle in internet access when studying online will have difficulty following lecture materials using video conferencing such as Zoom or Ms. Teams. Online learning through video conference has weaknesses which are quota problem which requires high cost and also an unstable internet connection so that the access into video conference becomes intermittent. This factor is caused by differences in the location of students accessing Zoom (Naserly, 2020). The

material obtained eventually becomes incomplete. This is not a good thing because it will have an impact on learning misconceptions.

Students can use references such as books that can be used as learning resources to get more complete information. Unfortunately, Indonesia's literacy interest in the low categories. Based on data from the national reading literacy activity index (*Alibaca* index), Indonesia is in the category of low literacy activity with an average of 37.32. 9 of 34 provinces in Indonesia are in the category of moderate literacy with index numbers between 40.01 – 60.00; 24 others provinces are classified as low with index values between 20.01 – 40.00; and 1 province is in the very low category with index numbers between 0 – 20.00 (Solihin et al., 2019). In the digital era, sources of knowledge do not only come from books. However, there are other forms of learning media that can help present information or material content in a more interesting way which is learning videos. Therefore, description of the problem above can be overcome using a supporting material through learning media in the form of video.

Learning videos are flexible, it means that students can study from the videos whenever they want and can be adjusted to the pace of each student's learning. This can help those who have difficulty grasping the material, which is usually explained too quickly by the lecturer at face-to-face learning (David Brecht, 2012). This is due to the characteristics of videos that can be paused and played repeatedly by students to improve their understanding of learning materials (Luhulima et al., 2016).

Statistics is a branch of mathematics that is useful in daily life and also supports various other disciplines. The use of statistics is studied and applied in various fields of science including education, social, health, economics, agriculture and other fields of study (Rusydi & Fadhli, 2018). The difference is only in its applicative use in their respective fields. In other words, the application of statistics is very broad. Therefore, the statistics course is a subject that must be taken by students with the aim of equipping students with statistical knowledge and skills, especially quantitative data.

This research is based on the statistics course at Universitas Terbuka which is educational statistics. However, it is not impossible to be studied by other students from various institutions. Because the material taught is also almost the same as the content of statistics courses in general. Therefore, the purpose of this study was to meet the student's need for references regarding Educational Statistics courses through learning videos especially chapter 1: introduction to statistics and chapter 2: data

presentation. In addition, with the convenience of today's technology, the usefulness of learning videos can reach more students. The use of YouTube as a video sharing platform can facilitate the dissemination of educational statistics learning videos so that they can be accessed by students in various regions.

Based on the description stated above, the output in this study is in the form of a video which is expected to be a reference for students in understanding Educational Statistics courses. Therefore, the author wishes to conduct a study with the title "Learning Videos in Educational Statistics".

2   METHODOLOGY

This study aims to develop learning media based on online learning videos that are in accordance with the learning outcomes of educational statistics courses so that they can be used as references in understanding educational statistics courses. Online learning videos in this article limited to chapter 1: introduction to statistics and chapter 2: data presentation. This research is using development research which the development research model chosen is the ADDIE model. ADDIE model consists of 5 development steps including stage 1: Analyze, stage 2: Design, stage 3: Develop, stage 4: Implement, and stage 5: Evaluate (Branch, 2009).

The analyze stage in this study is the stage where the researcher analyzes the needs. The result of analyze stage is based on the material that students need to learn in the Education statistics course and the character of the students, namely whether students who have studied basic statistics have the appropriate competencies. The material needs used are guided by the RAT of education statistics course in Universitas Terbuka. Meanwhile, in the design stage, researchers design concepts and materials that will be included in educational statistics learning videos. At this stage, the researcher also developed a questionnaire instrument to measure the validity of the material in the form of closed and open question. The closed questionnaire uses a likert scale from $1 - 5$. While the open questionnaire is in the form of reccomendation and suggestion by material expert validators related to improving the content of the learning video material. Educational statistics concepts and materials that have been designed or called story line for chapter 1 and chapter 2 are then validated by an expert validator of educational statistics materials. The validity of the material on the story line aims to obtain input for researchers in perfecting the concepts and material of educational statistics before being made into video form. After the concept and material in the form of story line are valid, then continue to the next stage which is the develop stage. At this stage the researchers began to realize

the concept design and educational statistics material in the form of videos. The videos that have been made are then validated by learning media experts. Similar to the questionnaire instrument for material expert validators, the instruments given to media expert validators were also in the form of closed questionnaires and open questionnaires. At the implementation stage, videos that have been valid by learning materials and media experts, are then tested for practicality through an early stage trial (Preliminary Field Testing). Based on Borg and Gall (2003) an early-stage trial (Preliminary Field Testing) was conducted on 6 to 12 subjects. The instrument used in the form of a questionnaire. This research is limited to the initial trial stage and does not proceed to the field trial stage. This is because the field trials will be continued in the next research related to the effectiveness of online learning video-based learning media on educational statistics. The last stage of the ADDIE development model is the evaluation stage. The feedback obtained from the early-stage trial was evaluated. If the results of the student response questionnaire are in the good category, a revision will be made according to the questionnaire items to meet the needs of the developed learning video. At the end of the study, the online learning videos developed in this study can be concluded to be valid and practical.

Data analysis was carried out on data from the questionnaire instrument validator of educational statistics material experts, the instrument validator of the learning media expert questionnaire, and the student questionnaire instrument at the initial trial stage. Therefore, the data analysis technique used is descriptive data analysis technique with the aim of converting the data in the questionnaire into scores and interpreted. The percentage results obtained are interpreted using the PAP classification of achievement levels with a scale of 5 according to Agung (2011) which can be seen in the following table.

Table 1. Interpretation of achievement percentage

Achievement Level	Criteria	Conclusion
90% –100%	Very Good	No Need to Revised
80% – 89%	Good	No Need to Revised
65% – 79%	Cukup	Revised
55% – 64%	Kurang	Revised
0% – 54%	Sangat Kurang	Revised

3 FINDINGS AND DISCUSSION

This research consists of five development stages which are 1) Analyze, 2) Design, 3) Develop, 4) Implement, and 5) Evaluate

3.1 Needs analysis

The first step in this research is conducting needs analysis. Needs analysis aims to determine the material to be included in the learning videos. In this step, researcher analyzed the students needs by doing interview and distributing questionnaire. This needs analysis is based on the material needs and characteristics of students. Based on the questionnaire to the 30 students who have studied educational statistics, it is known that several things are follows. Most of the students agreed that audio-visual media as the preferred type of learning media is 66.67% compared to audio or visual. 53.33% of students said important and 20% of students said very important that the educational statistics need to be equipped with learning video. 40% of students stated often and 30% of students stated very often that learning is equipped with videos make students more motivated to study educational statistics. students find that easy to understand the material if it is presented in the form of learning videos with frequent answer choices of 46.67% and very frequent answer choices of 43.33%. 40% of students stated the effective duration for a learning video with a range of 10-15 minutes. 40% of students expected that the learning video contain material equipped with example.

In addition, researcher also conducted interview to the lecturer of educational statistics. Based on the interview, we conclude the content of educational statistics as shown in the following table.

Table 2. The content of educational statistics

Learning Outcomes	Topic	Sub Topic
Students are able to explain the difference between statistics and statistic	Introduction to Statistics	Definitions of Statistics and Statistic
Students are able to mention the benefits of studying statistics		Benefits of statistics
Students are able to explain the types of statistics		Types of Statistics
Students are able to explain various measurement scales and classify data according to the types		Levels of Measurement
Students are able to explain the definition of population and sample.		Population and Sampel

Students are able to explain the the definition of frequency distribution table and its purpose.	Data Presentation	frequency distribution table
Students are able to explain terms related to frequency distribution tables.		
Students are able to present raw data in a frequency distribution table.		
Students are able to differentiate between "less than cumulative frequency distribution table" and "more than cumulative frequency distribution table".		
Students are able to draw a histogram graph based on data in a frequency distribution table.		Histogram, frequency polygon, and ogive
Students are able to draw and describe frequency polygon based on histogram.		
Students are able to draw and describe ogive based on table cumulative frequency distribution, either absolute frequency or relative frequency.		

3.2 The Design of Learning Videos

In this step, researcher designed the learning videos by making storyline. The design of the storyline referred to in this study is a comprehensive description of the video content that includes visual aspects, narration, and the time duration of each part. Moreover, this storyline was also made in the form of power point which will facilitate editor to develop, to edit, and to display sequence of each scene on the learning video. The video framework developed in the storyline consists of an introduction, a learning video core, and a closing. An introduction scene in the video is needed to provide information about the identity of the video and the topic or material to be discussed. The introduction scene features the researcher, material reviewers, media reviewers, greetings, and discussion titles/topics. The core of the learning video contains an explanation that describes the material and can be completed with example questions, and working procedures. The closing contains a short message after listening to the video and is equipped with information on the topic/material in the next video and also the references used. Here are one of the storyline as shown in the figure 1.

SKENARIO MEDIA PEMBELAJARAN | VIDEO PEMBELAJARAN

STATISTIKA DASAR PENDAHULUAN STATISTIK
Penulis Naskah : Azizah Mujahidah Annisa, Iin Ariyanti
Sasaran: Mahasiswa Semester 4
Durasi: 15 Menit
Format Sajian: Video Pembelajaran
Sumber Materi:

Bibliography
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Sudijono, A. (2008). *Pengantar Statistik Pendidikan*. Depok: RajaGrafindo Persada.

Sinopsis / Deskripsi
Pendahuluan statistika mencakup pengertian statistika dan statistic, manfaat statistika, jenis-jenis statistika, ragam skala pengukuran, serta populasi dan sampel

Cut (Slide)	Storyline (Alur Cerita)	Aset Visual (Gambar)	Narasi (Voice Over) dan Musik Ilustrasi	Perkiraan Durasi
1.	Opening Title	Teks : Video pembukaan dengan tulisan "Statistika Pendidikan" Oleh: Azizah Mujahidah Annisa, S.Pd., M.Pd. Iin Ariyanti, S.Pd., M.Pd. Dra. Puryati, M.Pd.	Backsound: Musik instrumental	20 – 25 detik

Figure 1. Storyline of learning video

The resulting storyline is then validated by educational statistics material experts. The material experts gave assessments related to content/material validity, construct validity, and face validity. Here are the results of material experts assesment.

Table 3. The results of the material experts asessment

Components/Aspects	Material Experts Validation Results	
	Video 1: Introduction to statistics	Video 2: Data Presentation
Contents Validity		
The material presented is in accordance with the learning outcome.	5	5
Concept explained properly.	5	5
The material presented is easy to understand	5	5
The depth of learning material	3	3
The item evaluation questions contain sufficient information	3	3
The level of difficulty of the questions presented is appropriate	3	3
Average Percentage (%)	**70**	**70**
Components/Aspects	Material Experts Validation Results	
Construct Validity		

Materials are developed in accordance with learning outcomes	4	4
The example is in accordance with the objectives of learning achievement	4	4
the order of the material is appropriate and systematic	4	4
Accuracy of time allocation in accordance with the content of the material at each stage	4	4
Average Percentage (%)	**80**	**80**
Face Validity		
The image displayed is clear	4	5
The language used is communicative	3	3
Sentences in the script can be understood well	3	3
the sentence does not cause double interpretation or misunderstanding	3	3
The language used does not offend SARA and others	5	5
The language used is clear, easy to understand, and correct according to EYD	4	4
Average Percentage (%)	**73**	**76**
Average of Total Percentage (%)	**74 (Revised)**	**75 (Revised)**

According to the material expert, the storyline meets the criteria for validity and deserves to be continued to the learning video development stage with minor revisions. There are several components that need to be revised and are given by experts directly on the storyline. Based on comments and suggestions given by material expert validators, the researcher made corrections to the contents of storyline. Furthermore, the storyline can be continued to the stage of developing learning videos.

3.3 The Development of Learning Videos

The next stage is the stage of developing learning videos. The development of the learning video is conducted after the material design in the form of a storyline is declared valid by the material expert

and can be proceed to video making. The flow of the video development stage consists of taking video recording according to the contents of the stroyline that has been made previously, editing video, then compiling a series of video contents from the opening, the learning video core, and the closing. Below are some scenes in the learning videos as shown in the figure 2 and figure 3.

Figure 2. The scene of an introduction in the learning videos

Figure 2. The scene of a learning video core in the learning videos

In the next step, the learning videos are consulted to the learning media experts for validation. Similar to the material experts, learning videos meets the criteria for validity by learning media experts but minor revisions are needed. Here are the results of material experts assessment as shown in table 4.

Table 4. The results of learning media experts

Components/Aspects	Material Experts Validation Results (%)	Criteria

	Video 1: Introduction to statistics	Video 2: Data Presentation	
Contents Validity	90	90	Valid and very good criteria
Construct Validity	95	95	
Face Validity	84	88	
Format and Audio Aspect	90	97.5	

3.4 Implementation and Evaluation of Learning Video

Implementation stage referred in this study are just early-stage trial (Preliminary Field Testing) which aims to test the practicality of the learning videos. The researcher uploaded the learning videos chapter 1 and chapter 2 via youtube. This is intended to make the video more accessible for students. Then, researcher did early-stage trial (Preliminary Field Testing) on 14 students for video chapter 1 and on 17 students for video chapter 2 by distributing preliminary field testing questionnaire. The students who get questionnaire were the students who have watched the learning video and studied educational statistics course. Here are the results of preliminary field testing as shown in table 5.

Table 5. The results of preliminary field testing

Statement	Preliminary Field Testing Results (%)	
	Video 1: Introduction to statistics	Video 2: Data Presentation
The material presented is in accordance with the Education Statistics Course	100	98
The title corresponds to the material presented	100	98
The explanation of the concept is stated correctly	98	97
The material presented in this learning video is easy to understand	98	95
The material presented includes the achievements of the Educational Statistics Course	100	97
The learning video contains example that can test your understanding of educational statistics material.	94	95
The learning video design is attractive.	94	95
Selection of background, text, color and writing looks clear and easy to read.	91	97
The quality of the sound in the learning video sounds clear.	98	96
The definitions, symbols and mathematical formulas presented are clear and precise	98	94
Selection of images according to the material described	98	95
The sound matches with the displayed image	97	97
The background music in the video is appropriate	94	96
The language used corrects according to Indonesian.	95	98
The language used does not contain SARA	98	97

The learning video is interesting to watch	98	98
The learning video supports you to understand the material.	98	95
The learning video can provide motivation to study educational statistics material	100	98
Average of Total Percentage (%)	**97 (No Need to Revised with very good criteria**	**96 (No Need to Revised with very good criteria)**

Based on the table 5, it can be seen from preliminary field testing, all aspects is classified as very good without needing to be revised. Overall, based on the the results of material experts, learning media experts, and preliminary field testing can be concluded that learning videos of introduction to statistics and data presentation fulfilled the valid and practical categories. Link youtube of learning media chapter 1 is https://youtu.be/97k4I4r2yoA and chapter 2 is https://youtu.be/FGzpbYY1-1w

4   CONCLUSION

This research results in learning video in the educational statistics course. The learning videos that are focused on in this research are statistics videos in chapter 1: introduction to statistics and chapter 2: data presentation. It was developed through development research using ADDIE model which includes 5 stages (Analyze, Design, Develop, Implement and Evaluate). In the need analysis stage, researcher got the arrangement of material according to the needs of the course, duration video with intervals of 10-15 minutes, and the contents contain material material equipped with example. Next, in the design stage, researcher designed the learning videos by making storyline and validated to the material experts which resulted in a score 74 (the chapter 1 video) and 75 (the chapter 2 video). The storyline meets the criteria for validity and need to be revised based on comments and suggestions given by material expert validators. In the development stage, researcher develop learning video based on the story line. Then, the learning videos are consulted to the learning media experts for validation which resulted in a score 97 (the chapter 1 video) and 96 (the chapter 2 video) with very good criteria. In the last stage which are implementation and evaluation stage, researcher did early-stage trial (Preliminary Field Testing) on 14 students for video chapter 1 and on 17 students for video chapter 2 by distributing preliminary field testing questionnaire. Based on preliminary field testing resulted in a score 97 (the chapter 1 video) and 96 (the chapter 2 video) which means all aspects is classified as very good without needing to be revised. Overall, it can be concluded that the learning

videos which are the chapter 1 and the chapter 2 videos that are developed meet the valid and practical criteria.

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THE 21ST-CENTURY OF LEARNING CALLS FOR THE 21ST-CENTURY PEDAGOGY

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Abstract

This inquiry deliberates and investigates the implementation of online learning after the outbreak of the Covid-19 pandemic in Indonesia settings. Arguments on this issue are important given the rise of various complaints about online learning operations, from March – December 2020. Complaints originate from teachers, students, parents, and education stakeholders. Therefore, this study aims to scrutinize and discover the factors that potentially cause those complaints. Additionally, this study elaborates and introduces solutions exclusively by looking for transformative pedagogy so that online is as effective as offline learning. The outcomes are expected to procreate basic ideas as a bridge to anticipate and mitigate the potential for prolonged complaints at the operational level. The emphasis is also expected to minimize complaints in the operational and social domains. Methodically, this study utilizes a qualitative approach. It is a modification of the integrative literature review (ILR) and comprehensive literature review (CLR) procedures. Having amalgamated the two approaches, this study establishes six steps in the form of routine activities. The routine starts with designing, implementing, summarizing, analyzing, validating, and writing a report. Under this approach, the synthesis process is semi-structured and implemented analytically, critically, in-depth, and broadly. These steps are executed by systematically reviewing related previous studies to assemble new theories. After going through a process procedurally, this study constructs the main outcome with three supporting arguments. The *main outcome* is to generate ideas on applicable transformative pedagogic in online learning. This transformative pedagogy is then referred to as the so-called Maxiagogy. The arguments that support the outset of Maxiagogy refer to five basic conceptions: the revolution of online learning models, the evolution of pedagogy in online learning, the differences between online learning versus emergency remote teaching, and the system operations of online learning. The theory on expounding educational experiences is also included. This experience is used as a basis to ensure that the effectiveness of online and offline learning is relatively comparable as long as the educational experience exists. Maxiagogy, the proposed pedagogy in online learning, becomes relevant as a transformative pedagogy. For, Maxiagogy positions students at the center of the learning process by giving them full autonomy in the learning process. Students can also openly obtain learning resources since the reason for them to study is to be of benefit to the universe. Maxiagogy then considers students' drive to learn so that they become more self-motivated and self-determined. This is a response to the demands and styles of millennial learners. Additionally, it was acknowledged that the role of educators will be reduced to the details that can be automated by applications. The idea of Maxiagogy is still in its infancy. Further studies with a wider theoretical and methodological spectrum need to be conducted. The results of a further comprehensive study will mitigate the complications of online learning implementation at the operational and social levels.

Keywords: Revolution of online learning model, pedagogy evolution, online learning system, educational experience, ILR-CLR

1 INTRODUCTION

Shift after shift endures continuously occurring. From the Industrial Revolution 1.0 up to now and we then call it Industry 4.0 (Schwab, 2016). Soon after that, now the times shifted again to Industry 5.0 (Rossi, 2018). At this point, two keywords emerge, digitalization and disruption. These two issues leave one thing certain: **Uncertainty!** This is the essence of a shift that occurs randomly and unpredictably from industrial and technological perspectives.

Before arriving in this era, we were also surprised by globalization. Even today, this globalization is referred to as Globalization 2.0 as expressed by Vielmetter and Sell (2014). Globalization brings up openness and at the same time competition. Those who survive in this era are those who present in such a way that every time they appear they will always get better, newer, faster, simpler, and easier (Sembiring, Rahayu & Sembiring, 2021).

Only with these two driving factors, the world order in almost all aspects of life must be rearranged. Re-adjusted, so as not to run over time. Some ways of thinking and patterns of action and even old behavior are no longer appropriate to be applied in this disruption era. This phenomenon certainly disturbs the education sector as well.

At the end of 2019 and entering 2020, a global pandemic called the Covid-19 pandemic suddenly appeared. The new order that has been attempted to materialize due to the impetus of globalization and the industrial revolution has not sat down. The Covid-19 pandemic was then unexpectedly shaken. Activities previously carried out "normally" must suddenly be carried out in the "new normal" mode.

This phenomenon penetrates the world of education, especially at the implementation level, i.e., the learning process (Sembiring, 2022b). Education, apart from having to keep up with the demands of the times, must at the same time adapt to the direct effects of the pandemic. At first learning face-to-face, for example, shifts suddenly to virtual mode. In the current term, previously offline learning suddenly had to learn online (Sembiring, 2022a). Not only studying from home but even working and praying from home as well.

At the beginning of this shift, in the learning process, many complaints arose. Learning that is initially offline, must be carried out online. Complaints don't just come from teachers and students. Parents and education stakeholders also dispatched complaints (Sembiring, 2021b).

Having observed previous related analyses, it identified potential factors why complaints appeared. Among other things, the unpreparedness of teachers and students to learn online since there has been no previous adequate experience. What is more, parents must have never imagined playing a role of a "teacher" as the learning process is carried out from home. There are also complaints about the unavailability of infrastructure; this is actually quite important to support the learning process. Online learning should be supported by the latest information and communication technology-based media.

Various complaints due to the shift from offline to online learning can be grouped into three main categories. They are in the area of conceptual, operational, and social (Sembiring, 2021b). Conceptual complaints related to the philosophy and theory of learning. Operational complaints related to the system and service delivery. Social complaints related to cultural stuttering. Most communities did not realize that whatever the mode of learning is, the basis is always student independence (teachers and the school system should also do so).

Considering that many features can be used to investigate why these complaints appear, we will take them from the upstream first. Note first that the complaint is conceptual. This step is expected to reduce operational and social complications afterward. At the conceptual level, it is even still quite broad to be investigated. For simplicity, we focus on the pedagogical aspect (Sembiring, 2021a). This means that 21st-century education (learning) essentially calls for 21st-century pedagogy. Now, what is meant by 21st-century pedagogy in this context?

As a result of having to learn from home, the only choice for learning is online (Belawati, 2019). Pedagogy has existed and has even evolved (Anderson & Dron, 2011). Basic question: Is the pedagogy "definitely" following the current and future modes of online learning?

Based on the previous depiction, this study, therefore, aims to explore, investigate, elaborate and introduce the transformative pedagogy of online learning. The results are expected to bring up basic ideas as a link to anticipate and mitigate the potential for prolonged complaints in the operationalization of online learning. In the end, this idea is expected to reduce complaints in the operational and social scopes.

To make all this possible, we look at three basic conceptions plus one discourse on efforts to realize an educational experience. First, it refers to the revolution in online learning models (Taylor, 2001; McTee, 2011). Second, the evolution of pedagogy and its relation to online learning (Anderson & Dron, 2011). Third, the system and operations of online learning services (Sembiring, 2020). Fourth, conceptual and operational differences in emergency remote teaching versus online learning (Whittle, Tiwari, Yan & Williams, 2020; Hodges, Moore, Lockee, Trust & Bond, 2020). The last refers to the concept of realizing an education (learning) experience through the presence of cognitive, teaching, and social presence of students (Garrison, 2009).

2 RESEARCH DESIGN

The study utilizes a qualitative approach, i.e., a modification of the five steps of the Integrative Literature Review (ILR) and seven steps of the Comprehensive Literature Review (CLR). They are a valid all-inclusive review, consisting of a systematic and scientifically designed review of a defined literature base. It employs the rigor of original research to limit outcome bias. Methodically, the processes and procedures finally utilized in this study are better understood by perceiving a modified ILR and CLR approach illustrated in Figure 1.
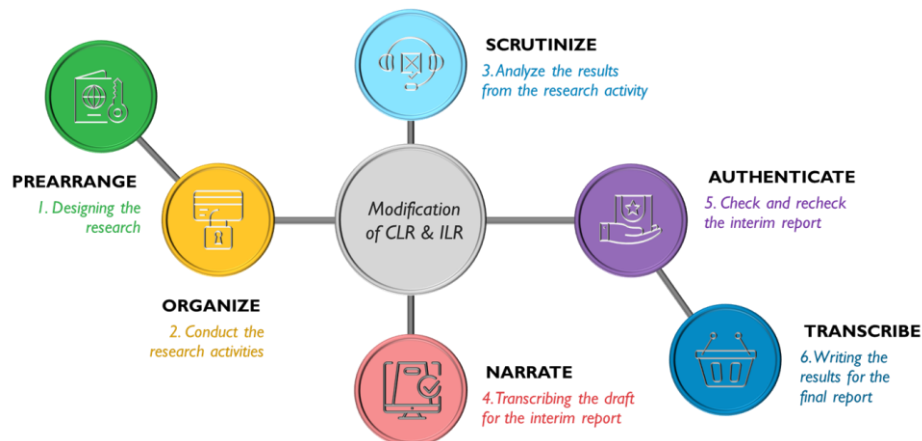
Figure 1. A Modified ILR and CLR Techniques

The first type of research considered and elaborated on ILR, library research introduced by Onwuegbuzie and Frels (2015) and Williams (2018). The process follows five steps, i.e., design, conduct, analysis, structuring, and writing a report. It was related to a semi-structured review aiming at assessing, criticizing, and synthesizing the literature on the related.

The second type of research referred to and particularized was CLR. It is literature research introduced by Whittemore and Knafl (2005) and Snyder (2019). The process follows seven steps approach. It includes defining the scope, planning the approach, searching the strategy for efficiency, managing the literature, reading-analyzing, benchmarking from other comparable works of literature, and assembling-writing the results. Those steps are followed to assess, criticize, and synthesize related literature, enabling new-fangled and applicable theoretical frameworks and perspectives to emerge methodically.

Although this study uses modified ILR and CLR, it does not mean that there are no other approaches as a supplement. Focus group discussions (FGD) are inserted and conducted in certain stages. In this FGD, reconfirmations were made regarding the focus and sub-focus of the study that should be considered for follow-up. The follow-up to the FGD was intended to ensure that the focus cited remained relevant to the literature review executed.

3 FINDINGS AND DISCUSSIONS

Based on the symptoms and objectives described previously, the theoretical inquiries carried out refer to five main spheres. First, related to the revolution in online learning models. Second, it relates to the evolution of online learning pedagogy. Third, related to the general practice of implementing online learning, Fourth, referring to online learning systems and operations. Finally, we pay attention to the concept of realizing an educational experience.

Related to the five theoretical studies mentioned above, it is symptomatic that the learning process referred to as online learning is actually an empirically emergency remote teaching (Whittle, Tiwari, Yan & Williams, 2020). The four studies mentioned earlier are the basis for showing how the implementation of online learning is well-organized so as not to fall into the trap of emergency remote teaching (Hodges, Moore, Lockee, Trust & Bond, 2020).

3.1 The Revolution of the Online Learning Model

There have been discussions and elaborations made to explain the revolution of the online learning model (Taylor, 2001; McTee, 2011, Belawati, 2019; Sembiring, 2021a; Sembiring, 2021b). The essence of the discussions accentuated that the online learning model has now reached the Fifth Generation (Figure 2). It is referred to as the so-called Intelligent Flexible Learning Model. Along

the way, the Fifth Generation has been reliable as a substitute for offline learning to be online with a relatively equal level of effectiveness.
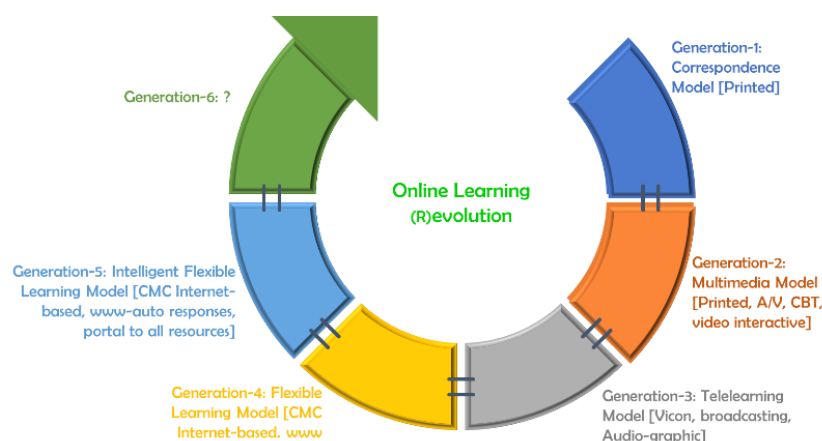
Figure 2. The Revolution of the Online Learning Model

The Fifth Generation has already taken advantage of the existence of computer-mediated communication (CMC). What is important and prominent in this generation, the model is already Internet-based, www-auto-responses, and a portal system for all the necessary learning resources. From the facilities that follow, it seems this model is close to perfection because there is real interaction, as it can be done synchronously.

Communication by computer media makes the learning system (even without face-to-face meetings) become integrated as two-way communication is available. Multidirectional and synchronous communication and interaction also take place. Nowadays, everyone is familiar with the CMC. Every day people send messages via various applications such as chat. Some connect through online forums to other social media where we connect with individuals from various backgrounds. Also able to connect even if you are from and in various regions around the world without limits. Not to mention the various types and variations of chat applications that allow everyone to exchange information quickly, actively, and intensely.

This situation makes this Generation superior to the previous generations. Why? Because the interaction can be multi-directional and occur synchronously. It is also possible to keep active continuous communication because the available devices are supportive. In addition, the entire learning process is well documented.

The online learning revolution has moved in such a way in five generations. However, it still needs improvement. That's not to say that the Fifth Generation model doesn't support it optimally. However, due to the fast-changing times, it must be improved to be balanced. Many concepts have changed. We must of new developments following changes, otherwise educational goals not be achieved. Or it could even come back, which causes problems that eventually pile up so that it becomes a burden for educators and students.

The application of an appropriate online learning model, on the one hand, will make online learning as effective as offline. On the other hand, in order not to fall into the trap of emergency remote teaching, online learning must also be subject to appropriate pedagogical choices and implementation. It is also necessary to make anticipatory efforts, "maybe" soon there will also be a "Sixth Generation" online learning model. The following describes the evolution of online learning pedagogy.

3.2 Evolution of Online Learning Pedagogy

Each learning process has its design associated with the existing theory. The same is true for distance learning, which was later called online learning. Pedagogics in online learning have also evolved (Anderson & Dron, 2011).

In the early stages, the approach applied refers to the cognitive concept of behaviorism. In practice, the approach implemented is more teacher-oriented. It was highly influenced by educators' ways, styles, and teaching strategies. At first, the learning reaction was in the self and not in the attitude or ability. Limited only to the behavioral aspect. Only then developed a view that began to include aspects of one's motivation, attitude, and mentality. Thus learning in terms of the concept of cognitive-behaviorism exists in educators who design learning. At the beginning of this concept, the existence of supporting technology is still very limited.

The changing times will always be followed by technological developments. Likewise, the evolution of the online learning generation has also evolved to constructivism. Where there are two-way communication support devices. In that way, the learning process becomes more dynamic as it facilitates teacher and student interactions despite it doesn't take place in the same space and time. Interaction can take place synchronously and/or asynchronously.

Entering 2000, the connectivity approach emerged. This concept, as a third-generation pedagogy of online learning, is relatively new. What is more, it is associated with today's technological era. the dissemination of information is so rapid with more sophisticated communication devices connected in a global network. In this situation, the learning process takes place outside the learner but focuses on social networks. Learning in the sense of the generation of connectivism focuses on creating and maintaining networked connections so that they always follow the development of the situation flexibly. It can be applied at any time according to the needs of each in terms of solving the problems encountered.

Just like the revolution that occurred in the online learning model, which is certain to bring up to the next generation, in terms of pedagogy the same process also happened. This means that it is necessary to open up the possibility of the need to conduct a study of pedagogy that is thought to be suitable for online learning according to the demands of 21st-century learning.

3.3 Online Learning Systems and Operations

The basic system of education can be broadly illustrated in two ways. Namely the face-to-face education (offline) and the distance education system (online). What will be elaborated at this level is related to the distance education system (online learning). And, a more elaborative one is described later related to online learning. The discussion will be directed specifically into the context of online learning. So far, the online learning system is considered a breakthrough because it can penetrate the constraints of space and time (Suparman, 2020). To simplify, it can be understood by perceiving Figure 3.
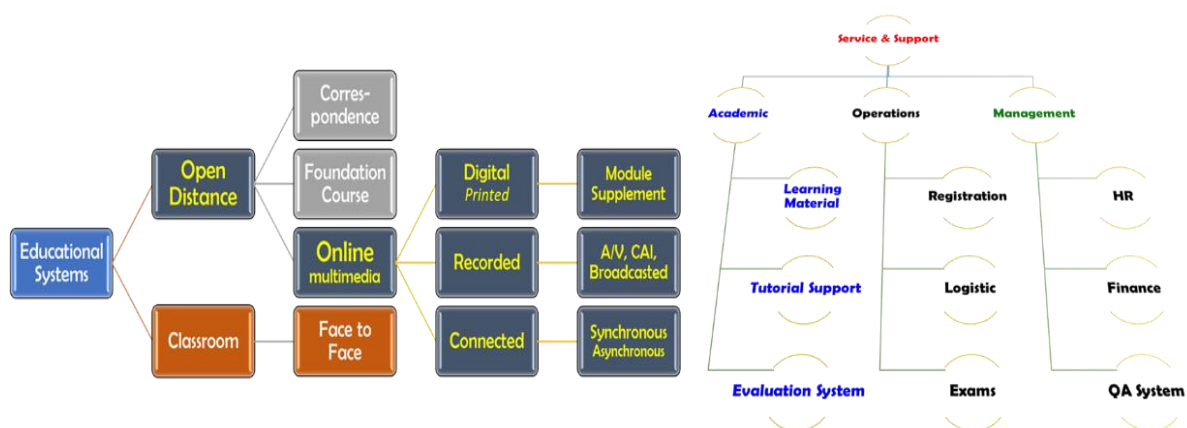
Figure 3. Online Learning Systems and Operations

An online learning system that can penetrate the constraints of space and time takes maximum benefit from ICT-based multimedia existence. Online learning with a multimedia-based system provides services and access in written, recorded, and connected forms. Modules and supplements are examples of materials provided in written form. Products in the packaging of audio/video programs and computer-assisted instruction are examples that were developed and provided in recorded form. Interactive interactions delivered via the internet, e.g., teleconferencing, are examples of connected categories (Sembiring, 2020).

This concept is suitable to be applied in current and future conditions. Of course, by meeting the prerequisites set so that it can be implemented effectively. It is also equipped with a digitally available multimedia package accompanied by modular printed materials. There are also teaching materials in the form of recordings in audio/video format. Including broadcasts via radio/TV. Learning material in this digital format is one-way because there are no interaction features available for its users. However, it can also be bidirectional, even multidirectional. This means that features are provided so that interaction activities can occur and are multi-directional.

The conceptual previous review illustrates that as long as the conceptual and operational rules are applied correctly, the effectiveness of online learning will not be different from offline learning. That is, by complying with standard conceptual and operational prerequisites, the implementation of online learning will not fall into the trap of emergency distance learning (Hodges, Moore, Lockee, Trust & Bond, 2020). Next, it will be explained what is meant and the differentiating factors associated with emergency remote teaching.

3.4 Online Learning versus Emergency Remote Teaching

So far, especially in the March – December 2020 period, many parties have stated that the learning carried out during the pandemic is online learning. Is that so? It is not entirely so. What happened was the practice of emergency remote teaching following the classification of Whittle, Tiwari, Yan, and Williams (2020). One of the analytical differences between online learning and emergency remote teaching is the issue of pedagogy. In emergency remote teaching, the application of pedagogy is merely following institutional force majeure. While online learning refers to pedagogic-based learning (Hodges, Moore, Lockee, Trust & Bond, 2020). The differentiating factors of online versus emergency remote teaching will be well understood by perceiving Figure 4.
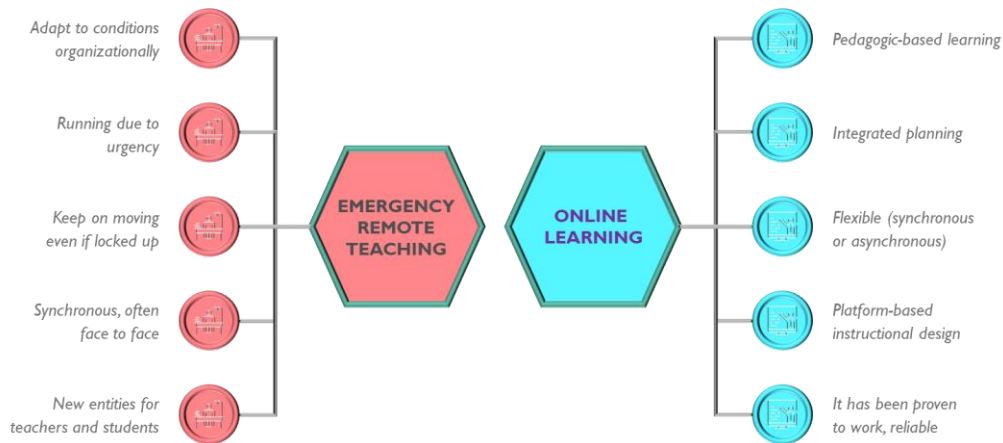
Figure 4. Differences between Online Learning and Emergency Remote Teaching

Correspondingly, online learning is principally designed and planned in an integrated manner. While emergency remote teaching, it takes place on an urgent basis. Online learning is generally flexible and can take place synchronously/asynchronously. While emergency remote teaching must take place even though the lockdown is in place. Online learning follows the principles that apply according to the rules of instructional design. It is based on a reliable platform. While emergency remote teaching is mostly synchronous with the dominant face-to-face proportion.

Lastly, but most importantly, online learning has a well-established theoretical basis and has proven to be effective. Meanwhile, emergency remote teaching is still considered unfamiliar not only to students but also to teachers.

From the description related to emergency remote teaching, we have a conceptual and operational basis for "sniffing" what learning practices happened during the early days of the pandemic. A description of the educational experience (Garrison, 2009), will then provide more ability to pursue online which is relatively as effective as offline learning.

3.5 Educational Experience

Conceptually, the educational experience is accomplished if the presence of cognitive, teaching, and social have appeared simultaneously. Social presence, according to Sembiring (2021a; 2021b), can be separated into social-emotional and physical/personal student presence. Creating a learning experience through efforts to expound students' cognitive, teaching, social, and physical presence is

the theoretical answer to avoid the trap of emergency remote teaching. In simple terms, it is easier to understand by scrutinizing the illustrations presented in Figure 5.
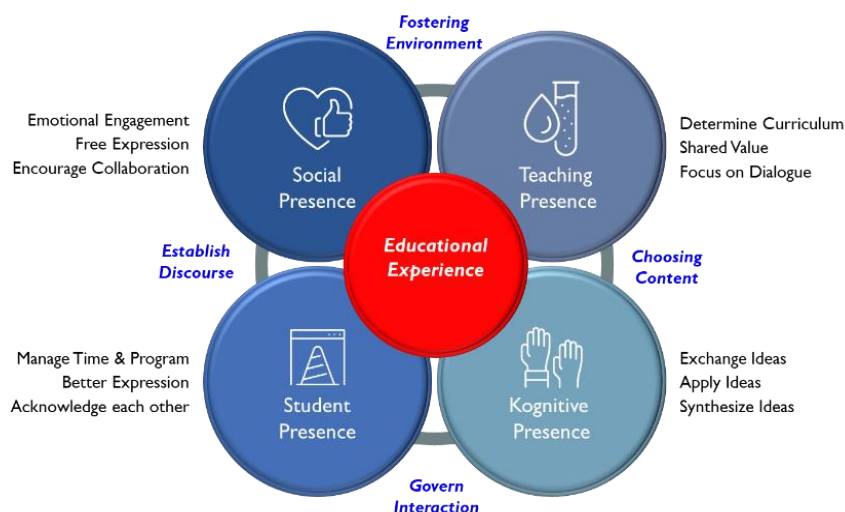
Figure 5. Realizing Educational Experience

The four presences can be pursued through various activities. For example, realizing teaching and cognitive presence can be done by selecting content according to learning objectives. Realizing the presence of cognitive and students is pursued by managing interactions. Realizing student and social-emotional presence is pursued by building a supportive learning environment. Realizing a socio-emotional and teaching presence is pursued by building a conducive learning environment for effective learning.

The five previous elaborations are used as a basis for finding breakthroughs, building pedagogies that are following the demands of online learning as well as supporting the 21st-century of learning. The results of this study are expected as a breakthrough in finding transformative pedagogy in terms of models and online learning systems accordingly.

3.6 Transformative Pedagogy of Online Learning

After progressing scientifically and methodically, this study obtained one main result with three supporting arguments. The main findings related to the transformative pedagogy of online learning. In the process, online learning pedagogy moves evolutionarily to respond to developments according to the needs and demands of online learning for the 21st-century era.

The series of evolutionary movements of pedagogy, andragogy to heutagogy have been well received. What's more in the context of offline learning. In line with that, in its interaction which is seen from the "ism" that follows it, the evolution of pedagogy also moves from cognitive-behavioralism, and constructivism to connectivism (Anderson & Dron, 2011).

The leap in technological development occurs rapidly and tremendously and is coupled with the acceleration of the implementation of online learning due to the Covid-19 pandemic. As a result, the three evolutions of pedagogy and existing patterns of interaction are deemed inadequate to suit the demands of the 21st-century of learning. So, what steps should be taken?

It is necessary to study and initiate a transformative pedagogy that can fill the gap that potentially occurs. The gap is simple. Namely, responding to the shifting demands of the 21st-century of learning as introduced by Sembiring (2021b). They are systematically and simply summarized in Table 1.

Table 1. Pedagogical Evolution for the 21st Century Learning

	Pedagogy *Children Learning*	**Andragogy** *Adults Learning*	**Heutagogy** *Self-Directed Learning*	**Maxiagogy** *Fully-Autonomous Learning*
Dependence	Learner is dependent. Teacher determines on what, how and when to learn.	Adults are independent. They strive for autonomy and self-direction in learning	Learners are interdependent. They identify the potential to learn from novel experiences and manage their own learning	Fully autonomous
Resource of Learning	Learner has few resources. Teacher devises transmission to store knowledge to learner's head	Adults use their own experiences and other's experiences	Teacher provides some resources but the learner decides the path by negotiating the learning	The Universe
Reasons for Learning	Learn to advance to the next level	Adult learns when they experience a need to know or to perform more effectively	Learning is not necessarily linear and , planned, but on the potential to learn in the novel situation	Humans who are infinitely useful for the universe
Focus of Learning	Learning is subject centred, focused in prescribed curriculum and planned sequences according to the logic of subject matter	Adult learning is a task or problem oriented	Learner can go beyond problem solving by enabling pro-activity using their experiences (reflection, interaction with others)	Joyful, in accordance with the development of civilization
Motivation	Motivation come from external sources	Motivation stems from internal sources. The increased self-esteem and recognition come from performance	Self-efficacy and knowing how to learn, creativity, ability to use this qualities in novel and familiar situation and working with others	Self-esteem Self-determined
Role of the Teachers	Designs the learning process, imposes materials, is assumed to know best	Enabler or facilitator, climate of collaboration, respect and openness	Develop learner's capability (How to learn, high self-efficacy, work with others)	Very specific

Table 1 exhibits that now and in the future, the existence of the existing pedagogy must also develop. The development shifted from the aspect of student independence, resource of learning, responses and focus for learning, motivation, and role of the teachers. Therefore, the "ism" that follows and is contained in it, also shifts. Therefore, transformative pedagogy and appropriate "isms" are needed, especially in online learning contexts.

In the beginning, we know pedagogy which goes hand in hand with cognitive-behaviorism. Over time, it also shifted to andragogy in line with constructivism. In turn, heutagogy was born along with cnnectivism. This shift can be understood by perceiving Figure 6.
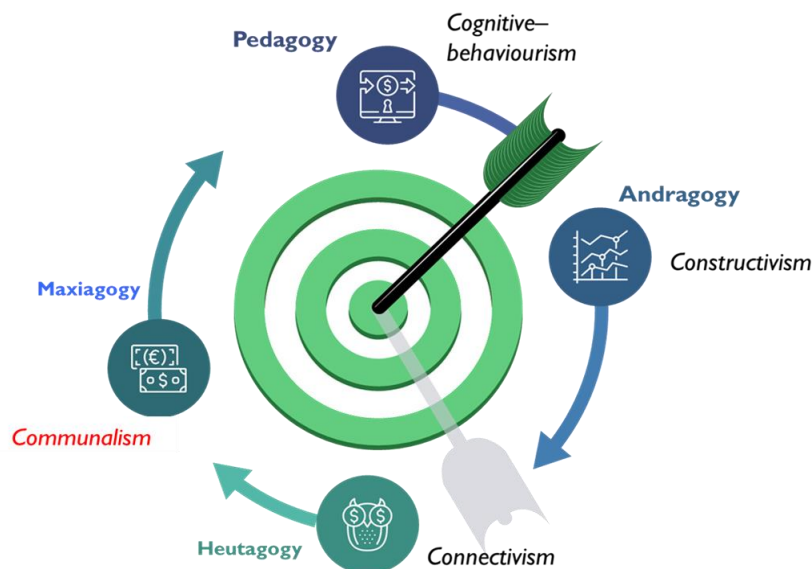
Gambar 6. The Evolution of Pedagogy Leads to Maxiagogy

The fundamental question is, why and what are the driving factors that transformative pedagogy is needed according to the demands of 21st-century learning?

Let us consider three supplementary notions as an argument for "why 21st-century education calls for 21st-century pedagogy?"

First, the online learning model revolution has now reached the Fifth Generation. This latest generation is called the Flexible Intelligent Learning Model. This generation is already based on computer-mediated communication. In addition, it also includes integrated auto-response and access to all web-based portals. When compared with the previous generation, which refers to connectivism, it then pedagogically is adequate. In addition, this Fifth Generation has more sophistication that demands adjustment of conception in terms of learning, especially in the pedagogical aspect.

Second, operational systems and online learning services are also moving in a more complex direction. The progress that occurs relies on the development of information and communication technology supports. The use of appropriate technology is intended to bridge the gap due to the shift in learning modes, from offline to online. Mediation is carried out by utilizing the latest ICT-based

learning media. The progress of this movement must take into account the existence of educational technology, especially the existence of instructional design. Thus, the shift from offline to online learning, with the help of appropriate learning media, will not create a gap in terms of learning outcomes and effectiveness.

Third, the existence and use of the Fifth Generation and the online learning operational system are believed can create a learning experience. If a learning experience materializes, whether learning is conducted offline or online, it does not make any difference. Offline and online modes are equally effective when learning is present and occurs. The learning experience is realized if the cognitive, teaching, emotional and physical presence of students are in the same moment as well as in the same space.

Based on the three main arguments above, it is believed that 21st-century learning does call for 21st-century pedagogy. The 21st-century pedagogy, in accordance and in line with the demands of modern online learning requires Maxiagogy. Communalism-based Maxiagogy is expected to be a transformative pedagogy. Through Maxiagogi, it is expected that the gap in the effectiveness of offline and online learning can be scientifically and technically anticipated and mitigated.

4   CONCLUDING REMARKS

The shift from offline to online learning requires a pedagogical insert so that the effectiveness of learning does not indicate a difference. This breakthrough is expected to be a panacea to reduce the gap in learning effectiveness due to the use of different modes. Through a transformative pedagogical idea, known as Maxiagogy, complaints that arise can be anticipated and conceptually countered. If followed by more tactical steps at the operational level, it is hoped that all parties (teachers, students, and schools) are already in the same dimension, namely in a fully online learning mode.

Given the fact that the idea of Maxiagogy is still at an early stage. Further studies are encouragingly needed. Follow-up studies with theoretical studies and methodologies that are more complete and integrated will provide a way for education stakeholders to generate comprehensive ideas. Through conducting studies on synergistic and continuous activities, the potential complaints of online learning operations can be progressively anticipated.

Education and the learning process still need an integrated and continuous effort so that the implications of the shift from offline to online learning can be seized. In the future, the trend toward

learning will undeniably lead to online. Therefore, synergistic efforts are needed so that the conceptual, operational, and social implications of shifting learning modes can be apprehended. It will not decrease the belief that online learning is as effective as offline providing educational precautions, specifically learning experiences, are present.

It is wished that further comparable inquiry will be able to strengthen the idea of Maxiagogy to become a transformative pedagogy of online learning. The existence of transformative pedagogy will be a pillar of detecting and mitigating doubts about the effectiveness of the implementation and results of online learning.

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E-LEARNING IN ISLAMIC BOARDING SCHOOL; PERCEPTIONS OF DAYAH STAKEHOLDERS IN ACEH TAMIANG, INDONESIA

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Abstract

The industrial revolution 4.0 brought many changes in various sectors, including education. Information technology is increasingly being applied by educational institutions, including Islamic boarding schools, to support the teaching and learning process. Some Islamic boarding schools in Java have begun to utilize information technology by applying online learning or e-learning. For this reason, this article wants to examine Islamic boarding schools that exist outside Java, namely in Aceh Tamiang. Islamic boarding schools throughout Aceh are called Dayah. This paper explores stakeholders' perceptions regarding the application of e-learning in the Pesantren environment. After exploring their perception of the application of e-learning, it can then be analyzed about the opportunities and challenges of implementing it.

Keywords: E-learning, Stakeholders, Islamic Boarding School/Dayah

1 INTRODUCTION

Pesantren is a traditional Islamic educational institution and one of the milestones of Islamic education in Indonesia that still survives today. Pesantren produces human resources who understand religious science and can be experts in other sciences. Islamic boarding schools are spread throughout the country in urban and rural areas and Aceh. Pesantren in Aceh is called "Dayah" Aceh cannot be separated from Dayah. Dayah is an Islamic identity and authenticity (indigenous) Aceh. However, its spirit and spirit still come from the Islamic education system practiced by the Prophet Muhammad during the early Islamic period (Suyanta, 2012).

The role of Dayah in Aceh is significant, including in producing old u that maintains and guides the government and society to stay within the corridors of Islamic teachings, as well as giving birth to human resources with religious science and other sciences that can be useful for the community and the country. Therefore, it can be said that Dayah is one of the lives of Aceh. Dayah is spread throughout Aceh Province, one of which is in Aceh Tamiang Regency, the eastern part of Aceh directly adjacent to North Sumatra Province. The number of Dayah/Pesantren in Aceh Tamiang Regency is 25 Dayah consisting of 16 traditional Dayah and 9 modern/integrated Dayah (Dinas Pendidikan Dayah Aceh, 2018). The two types of Dayah are characteristic of Islamic boarding schools in Aceh, especially in Aceh Regency.

Traditional Dayah is also called Dayah Salafi because its scholarship refers to and is based on books written by Salafi scholars called the yellow book. The Salafist Dayah retains its traditional elements,

such as huts, mosques, Tengku/Kyai, Santri, and classical books. All of the parts are complementary and interrelated. So it is called a society with a distinctive culture of traditional people in rural areas, characterized by the embedding of a collective way of life, which is one of the manifestations of the spirit of cooperation joint in rural communities (Suyanta, 2012).

Traditional Dayah's teaching and learning curriculum differ from one Dayah to another. Furthermore, modern or integrated Dayah is Dayah which implements a current education system, such as several Islamic boarding schools in Java whose curriculum and education system are based on the National education system. Along with the times where openness and speed of access toinformation are the main characteristics in the current era of the industrial revolution 4.0, many changes are happening quickly in various sectors, including education. *Dayah*, as one of the essential educational milestones in Aceh, should also be able to accept and adapt to these changes by sticking to these religious and *Dayah* values.

These changes, for example, include using information technology as a learning medium or a medium for da'wah *Dayah* to the outside world or society. This information technology is a modernization product that can be utilized in the form of innovation to improve and improve the effectiveness, efficiency, and quality of the teaching and learning process and the role of *Dayah* in society. One of these innovations is the application of *distance* learning through electronic learning or *E-learning* as a new means in Islamic boarding schools' teaching and learning process. Therefore, it is essential to examine E-learning development opportunities in the *Dayah* / Pesantren environment, especially in the Aceh Tamiang Regency area.

Based on this background, this article aims to show the perceptions of *Dayah* stakeholders of Aceh Tamiang Regency regarding *E-learning* in the *Dayah* / Pesantren environment and the opportunities and challenges of its implementation.

2 LITERATURE REVIEW

2.1 E-learning

Learning anywhere and anytime is the central concept of e-learning. Now that the development of information technology allows us to access e-learning easily through various kinds of gadgets with the internet network. *E-learning* is alternative learning that can make it easier for someone who wants to learn but does not have the time and opportunity to come to college. Some literature, in general,

suggests that *e-learning* or *electronic learning* is learning through computer technology or the internet. One of them, as Epignosis LLC argues (2014);

> *"E-learning is a computer-based educational tool or system that enables you to learn anywhere and at any time."*

Permendikbud No. 109 of 2013 concerning the Implementation of Education Distance in Higher Education also defines e-learning;

> *"Electronic learning (e-learning) is learning that utilizes information technology-based information packages and communication for the benefit of learning accessible by learners anytime and anywhere."*

Some of the trends and trends of e-learning globally (ITB, 2017) include:

a.   *Massive Open Online Course* (MOOC)

Massive Open Online Course (MOOC) is an online course with an open learning system that aims to unlock unlimited participation that can be accessed via the *web*. MOOCs have interactive user forums that help build for teachers and learning participants and provide conventional course materials such as videos, readings, and discussion of issues. MOOCs are the latest developments in terms of distance education (e-learning).

b. *Cyber University*

Cyber University is a college model with a very different method from traditional universities in teaching and learning. This form of the university has been applied by the Open University in Indonesia. Lecturers do not have to teach and attend directly in front of the class as in general face-to-face learning, but lecturers can teach in front of a video camera or through an electronic page. A model of the teaching and learning process requires high motivation from students and lecturers.

c. *Micro-Learning*

Micro-Learning is learning carried out with a concise duration. The content is limited to 1 subject or sub-subject per learning session and learning resources (modules/literature/slides) that are easy to learn. *Knowledge Nuggets* or *Learning Snacks* is another term for *Microlearning*. It is called simple because it can take the form of infographics, daily broadcasts, and short videos, which support the implementation of the main learning program.

The three forms of e-learning trends above can be applied according to the needs and goals of an organization utilizing this learning mode.

Rohmah (2016) stated several benefits of *e-learning*, including, namely; First, *e-learning* can shorten learning time and make study costs more economical. Second, students can share information and access materials at any time and repeatedly, with such conditions, and they can further strengthen their mastery of learning materials. Third, *e-learning* can further facilitate the interaction between students and material materials. Fourth, students can be actively involved in the teaching and learning process that does not only occur in the classroom but with the help of computer equipment and internet networks.

According to Munir (2009), the first step is needed to develop and implement e-learning-based learning, namely a need analysis. Users are the main determinants of the benefits of e-learning, meaning that the effectiveness and output of e-learning depend primarily on the user in viewing or assessing the e-learning. The application of *e-learning* is essential when it is already a necessity. A needs analysis is needed to determine whether a person or educational institution needs e-learning. The need for e-learning can be studied by whether the supporting facilities are adequate. Is there any support from policymakers? If, based on the needs analysis, the decision is that *e-learning* is needed, then a feasibility *study* needs to be held. There are several components of assessment in a feasibility study that need to be considered, including:

1. Technical matters, for example, the internet network, can or cannot be installed along with supporting infrastructure, such as computer networks, electrical installations, telephone lines, etc.
2. Human resources with knowledge and abilities or skills are needed *to* operate and understand e-learning.
3. Economically whether the activities carried out with e-learning are profitable or not, whether it will cost a large or small amount.
4. Socially, whether people's *attitudes* can accept or reject e-learning as part of information and communication technology. Therefore, it is necessary to create a positive attitude towards information and communication technology in general, as well as *e-learning* in particular, to understand its potential and impact on learners and society.

3   METHODOLOGY

The research used is qualitative by collecting data through interviews. According to Moleong (2002), an Interview is a conversation with a specific intention, which is carried out by two parties, namely the interviewer (researcher) who asks the question and the interviewee (informant) who answers the question that has been given. Interviews in this study will be conducted with *Dayah* stakeholders, consisting of the *Dayah* Education Office, leaders, managers, *Dayah* students, and the community around *Dayah*. The interviews in this study aimed to obtain data in the form of understanding and opinions of pesantren stakeholders regarding *e-learning* as a learning medium. Data analysis of this study was carried out with 3 steps of qualitative research analysis according to Miles and Huberman in Moleong (2002), namely by reducing, presenting data, and drawing conclusions.

4   FINDINGS AND DISCUSSION

4.1 Perceptions of *Dayah* Stakeholders in Aceh Tamiang Regency regarding *E-learning* in the *Dayah* / Pesantren Environment

Perceptions of *Dayah* stakeholders in Aceh Tamiang Regency regarding the introduction of e-learning in *Dayah* are very diverse; based on extracting the views of *Dayah* stakeholders, there are several of their perceptions regarding the application of *e-learning* in the *Dayah* environment.

Table 1. Perception of Dayah Stakeholder about E-learning

Dayah Education Office	Modern *Dayah* (Unified)	Traditional *Dayah* (Salafi)
just heard the term	I have heard of the term online learning (e-learning), even some teachers have used e-learning for their subjects.	Never heard of e-learning, but learning via electronic, such as Facebook or video call, know and never follow.
It is challenging to implement due to *Dayah* rules that restrict and prohibit the use of electronics	Very good and helpful for teachers, students, and people outside *Dayah* (community)	Strongly agree that there is *Dayah* online learning for the community because sometimes people are embarrassed to come to *Dayah*'s minder because of their age of one of them.
Less effective, internet negative reviewers are difficult to control	Students are happy and enthusiastic about doing assignments through e-learning	The students and Tengku here are outstanding if you can study or study online while still not leaving *Dayah*

Inadequate facilities and infrastructure, as well as human resources	Obstacles must have a solution, and internet network problems sometimes go down	The problem is that the human teaching resources are *Dayah*, who does not understand IT, but if there is cooperation, we are ready to learn.
There is an instruction from the regent to advance science and technology in Dadah, but the official decree does not yet exist.	It doesn't hurt to try to apply	-

1. *Dayah* Education Office Perception's

The *Dayah* education office, as the government, is a *Dayah* stakeholder responsible as a facilitator and coach of all types of *Dayah* in Aceh Tamiang. Trying to explore the views of these stakeholders regarding the application of e-learning, the party representing the education office of *Dayah* Aceh Tamiang stated that *e-learning* is a new and new term to hear. A brief explanation of e-learning is presented to explore their perceptions when

e-learning is applied in the *Dayah* environment. Informant H representing the head of the *Dayah* Aceh Tamiang Education Office, revealed:

> "*E-learning, as you said, seems to be implemented here due to Dayah rules that restrict and prohibit the use of Electronics.*"

Besides expressing the difficulty of implementing e-learning in the Dayah environment due to the Dayah rules regarding restrictions on the use of electronic and communication devices, Informant H also stated that the negative impact of the internet on students would be difficult to control. Considering that the number of students and teachers is very different, the control over them will certainly not be optimal. The second reason informant H is pessimistic about implementing e-learning in *Dayah* is that the infrastructure and human resources in *Dayah* are inadequate, making it challenging to develop. Informant H expressed doubts about whether or not the implementation of e-learning in *Dayah* could be implemented but expressed his support for the development of science and technology in *Dayah* as conveyed by the Regent of Aceh Tamiang. Based on the story of

informant H, the regent wanted *Dayah* to progress in science and technology. Still, the official policy to support this did not yet exist.

2. Integrated *Dayah*/ Modern Sabi'ul Ulum Perception's

Dayah Sabi'ul Ulum is the only integrated *Dayah* with type A in Aceh Tamiang Regency. *Dayah* is from the morning to noon, and students enter formal classes of MTS (Madrasah Tsanawiah, which is at the junior high school level) and MA (Madrasah Aliyah, which is SMK), then in the afternoon until evening is a religious activity as in *Dayah-Dayah* generally. In this *Dayah,* some teachers or teachers do not live in *Dayah* or go home, and there are also teachers called Tengku who live in *Dayah*. The author explores perceptions about the application of *e-learning* in the *Dayah* environment from several stakeholders in *Dayah*, namely managers as representatives of *Dayah* leaders, teachers, Tengku, and *Dayah* students. The management, teachers, and Tengku stated that they had heard about electronic learning; even one of the teachers, namely Informant R, said:

"If you use web-based e-learning, Edmodo is one of them. We use the Edmodo system; in learning, we share the material, there is a division of questions, and students immediately answer and get a score there 24 hours. The time limit is there".

One of the teachers of *Dayah* Sabi'ul Ulum has been applying *e-learning* to the subjects he has been studying for one year. The teacher stated the great benefits he felt while using e-learning, namely:

"For example, if a student can't attend for a week, he can access lessons through e-learning at home or wherever it can be accessed. There he also learned the lesson without having to ask different words because if we ask friends, sometimes say this is the case, but if it is with e-learning, he can immediately see the real material there. For his duties, he can direct access, and cheating can also be reduced".

The next stakeholder is the religious teacher, namely Tengku. There are two Informants who are tengku , namely informant D and informant N. They are *Ustadzah* or known as Tengku, and have served for about 10 years in the *Dayah*. Although both are unfamiliar with e-learning, they believe that e-learning, if applied in *Dayah,* can provide many benefits to all parties.

"In our opinion, it's good because it can be useful not only within the scope of Dayah but also for people. Sometimes people are busy with work and can only see electronic devices, so recitation is

electronic, for example, on Facebook. Sometimes it doesn't have time, so there are many benefits".

(Informant N)

"*It helps; proselytizing from electronics can help.*" (Informant D)

Furthermore, the *Dayah* manager expressed an opinion on the application of *e-learning* in the *Dayah* environment.

"if *the term is learning through a cellphone, now it's already easy, yes, rame, you don't have to be far2, my son, he is the same as far away, if he wants to learn to use a cellphone, wants video calls, wants to record the voice earlier, anyway, he is younger. It's easier for us to understand, sometimes we're embarrassed if we meet in person, but if we get o, then if we need, we can repeat it, replay it again. It's better to see, thank God*".

Stakeholders from the management expressed personal experiences regarding some of the benefits of using electronics and information technology in supporting the teaching and learning process. Therefore, they are optimistic about trying to apply *e-learning* in *Dayah* Sabi'ul Ulum both as a medium for learning students and as a medium for proselytizing to the broader community.

"*Insya Allah, we can apply it because if we haven't tried it, we don't or, if the term vegetable has not been entered, it is not good, but if we have run it, every problem must have a solution. We're looking for the same; if the term is to be better, what's wrong with us trying*".

Another Perception of *e-learning* in the *Dayah* environment is that the students as one the stakeholders in *Dayah*.

"*It's better, mom. If I don't attend or come home from Dayah, I can still study, do assignments, and not be left behind. The spirit also learns through the Edmodo. Hopefully, other lessons will also be used".*

The student's statement above shows Dayah students' enthusiasm for using e-learning because they feel the benefits and expect other subjects also to start using *e-learning*.

3. Traditional *Dayah* Mi'rajul Ulum Diniyah Islamiyah (MUDI)

Dayah Tradisional Mi'rajul Ulum Diniyah Islamiyah (MUDI) is one of the oldest traditional Islamic boarding schools in Aceh Tamiang Regency that still survives today. The students who studied in *Dayah* came from various regions, not only from Aceh but from several neighboring provinces and

countries, such as Malaysia. Traditional *Dayah* does not have a formal level like modern *Dayah*, so some of its students in the morning some leave *Dayah* to attend formal school or study at university. In addition to the students who are accepted to study, people also usually come to study in this *Dayah*. Tengku M, the leader of *Dayah* Mi'rajul Ulum, responded positively about open learning with e-learning in *Dayah*.

"I agree because when they are old, people are shy and lack the confidence to go to dayah to study. If it's possible remotely, it's better, but you can't directly ask; that's just the drawback. If something is written in the comments, it cannot be answered immediately because the recitation is taking place. I think it's good, and it's just better to meet the teacher face to face. If you want to make it possible here, a good method, technology where everyone is there". (Informant M)

Tengku M, one of the stakeholders in *Dayah,* showed an open attitude and positively welcomed if there was distance learning with e-learning in *Dayah*. According to him, there are shortcomings and obstacles, but there is nothing wrong with applying them in *Dayah*.

4.2 Opportunities and Challenges for the Implementation of E-learning in *Dayah*/Islamic Boarding Schools in Aceh Tamiang District

4.2.1 *Opportunities*

The development of opportunities and the application of e-learning-based learning in the *Dayah* environment in Aceh Tamiang Regency can be carried out in two main steps (Munir, 2009), namely by a needs analysis and feasibility studies. Analysis of needs (Need Analysis) of users as the primary determinant of the use of e-learning. The effectiveness and output of e-learning depend highly on the user's assessment and assessment of the e-learning. The application of e-learning is essential when it is already a necessity. A needs analysis is needed to determine whether a Dayah educational institution requires e-learning. Analyze needs in the implementation of e-learning can be studied by, among others;

- Are the supporting facilities sufficient?
- Is there any support from policymakers?

If based on the needs analysis, e-learning is needed, then a feasibility study needs to be conducted. There are several components of assessment in the study that need to be considered, including:

1. Technical issues include whether or not the internet network can be installed and its supporting infrastructure, such as computer networks, electrical installations, telephone lines, etc.

2. Human resources; have the knowledge and ability or technical skills related to e-learning.

3. Economically whether the activities carried out with e-learning are profitable or not, and whether it will require high or small costs.

4. Socially, whether the attitude (attitude) of the community can accept or reject the use of e-learning as part of information and communication technology. Therefore, it is necessary to have a positive attitude towards information and communication technology in general, as well as e-learning in particular, to understand the potential for students and society.
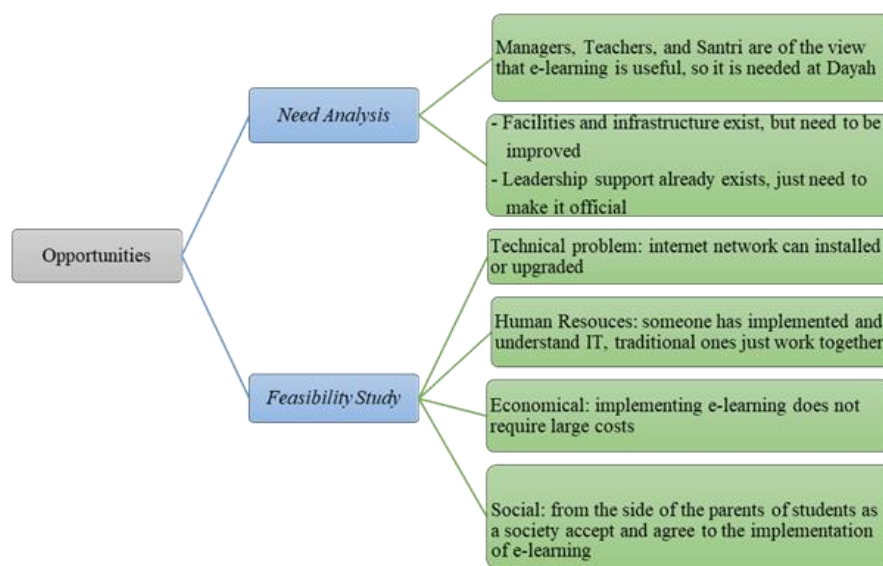
Figure 1. Analysis of Implementation of E-learning Dayah/Islamic

4.2.2 Challenges

There are several challenges faced in implementing e-learning in the *Dayah* environment in Aceh Tamiang District, namely:

1. Local government policy support that does not yet exist

2. Procurement of supporting facilities

3. Internet stigma keeps students away from religious lessons in *Dayah*

4. The belief is that meeting directly with Tengku will be better and get blessings in learning.

5   CONCLUSION

The perceptions of *Dayah* Stakeholders in Aceh Tamiang Regency about the implementation of E-learning are:

- E-learning is needed to support student learning in *Dayah*, Aceh Tamiang Regency. The Aceh Tamiang Regional Government must fully support the *Dayah*, especially in need of science and technology equipment and teaching human resources.
- Socialization of learning models in the industrial revolution 4.0 era to all stakeholders, including government officials, leaders, management staff, teachers, *Dayah* students, parents, and all levels of society, needs to be done.
- Making one of the integrated and traditional *Dayah* as a pilot project to implement e-learning in Aceh Tamiang Regency.
- MOOCs, as one form that needs to be developed in *Dayah* as a medium of da'wah and the existence of *Dayah*'s role in the education of Aceh Tamiang.

ACKNOWLEDGEMENTS

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OPEN EDUCATIONAL RESOURCES IN FLIPPED CLASSROOM MATHEMATICS

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Abstract

Open Education Resources (OER) as an open source of learning is getting more and more qualified in line with the development of learning media in the modern era. OER has the potential to facilitate the learning process and improve the quality of education. OER is available in various media openly (implementing an open license) and free of charge to be accessed, reused, or adapted, and redistributed by its users. The use of OER in the flipped classroom ensures that the implementation of learning in the classroom is varied and interesting for students. Flipped classroom learning gives students the opportunity, before studying in class, to study the material first at home according to the assignments given by the teacher. The method works very well when there are students who are not present in class for some reason. The teacher gives a video of the material being taught to those who do not enter the class so that students do not miss the lesson. This article reveals how mathematics teachers perceive the benefits of OER in flipped classroom learning and its effect on the quality of student learning.

Keywords: flipped classroom, mathematics, open education resources

1   INTRODUCTION

Technological developments have a strong influence on business processes in various sectors including education, thereby changing the old pattern of implementing education. Globalization has shifted the world of education from face-to-face education which has been going on for a long time to open education. Education that takes place synchronously (at the same time between teachers and students) and asynchronously (Romisky & Mason, 1996). Synchronous and asynchronous education is highly used in the use of Computer-Based Multimedia Communication. The use of technology in learning is called electronic learning or e-learning. E-Learning is a learning method by utilizing electronic tools in a network or online.

E-learning has the potential to provide a teaching and learning process that can be done by anyone without being constrained by distance and time. Distance and time are no longer a barrier to doing activities, including in this case learning. Almost all schools and colleges have utilized e-learning. The changing times that have become completely digital, coupled with the global Covid-19 pandemic, have motivated educators to carry out their business processes online.

One form of the use of e-learning and the use of technological developments is the flipped classroom learning method. Flipped classroom (Brigman & Sam, 2012) is a learning model that combines

various learning methods by providing online material outside the classroom and doing assignments in the classroom.

Learning in the new normal era after the covid pandemic gets an alternative learning strategy that is in great demand by teachers, namely Flipped Classroom learning. Flipped classroom allows students to access a variety of subject matter more flexibly. Student involvement in learning can be more active. The thing that makes the Flipped classroom more chosen by teachers in carrying out their learning is because the flipped classroom provides opportunities for teachers to assist students better and is more accommodating for students with different needs and characteristics to be able to learn well.

There are many kinds of learning resources that can be used by teachers for the learning process in the classroom, without exception for Flipped Classroom learning, such as ranging from printed textbooks to digital books, pictures, videos, infographics, video games, and other media. The development of internet technology allows these learning resources to be easily accessed online because of their wide and fast distribution. Teachers can take advantage of learning resources with much lower production and distribution costs.

Although not all learning resources in cyberspace are freely accessible, because some learning resource providers charge fees to users, there are still many options that allow teachers to take advantage of online and free learning resources in cyberspace. Even some owners of learning resources allow their users to send them to partners, of course with direct permission by the creator with a license provision so that there is legal certainty. These learning resources are called open learning resources or Open Educational Resources (OER).

This paper is a descriptive study of the use of Open Educational Resources in Flipped Classroom Mathematics by mathematics teachers in Indonesia. This study illustrates the implementation of Flipped Classroom learning that utilizes Open Educational Resources, including its advantages and disadvantages.

2 METHODOLOGY

This qualitative study was conducted to understand the use of Open Educational Resources by teachers in implementing Flipped Classroom learning. This study describes teachers' perceptions of the advantages of using Open Educational Resources, and what obstacles are experienced by teachers in obtaining and utilizing them. Regarding the implementation of Flipped Classroom learning by

teachers, this study also describes the teacher's own perceptions about Flipped Classroom learning and the obstacles in implementing it.

3   FINDINGS AND DISCUSSION

Why do teachers in the global era need to develop learning that is accommodating to technological developments, not just relying on textbooks? The main thing, which needs to be considered is that textbooks have weaknesses and are less accommodating to student learning styles in the global era. One of the weaknesses is, as stated by Schramm (1984:386) that the textbook media has several shortcomings, for example, not "live", only presents a passive image, can't present sound, and tends to lag era.

Many teachers have made learning innovations, especially during the pandemic, teachers are more challenged to organize lessons that can ensure students continue to study even though they must stay at home. Learning that is accommodative to these conditions is flipped classroom learning. In fact, after the relatively recent pandemic has passed, many teachers are still using flipped classroom learning.

In flipped classroom learning, the teacher, before discussing the material that will be taught in class, provides learning media to students, which contains materials and assignments, so that students first learn the material in the learning media. Flipped classroom learning requires students to be more independent because students must study the material first before there is a meeting in class. Flipped classroom learning also makes students more active because students' curiosity is higher.

OER has attracted the attention of teachers and has become an alternative source of learning in delivering material to students, because, according to Alnatheer and Assiri (2019), the important role of OER is in providing flexible learning opportunities. Dutta (2016) report that OER provides many educational opportunities for teachers, students, and the education process.

OER strengthens individual learning and teaching and improves the quality of general education and higher education. OER also has the potential to create intellectual capital for innovation and creativity in various fields.

In the flipped classroom approach, what used to be homework is now done in the classroom, after students have studied the instructional content at home (Heo & Choi, 2014). The subject matter learned is packaged as a video that is easy for students to use. Many OERs are also produced commercially, obtained through Open Educational Resources (OER), or directly (locally) produced by teachers.

Following is some of the implementations of Flipped Classroom by several teachers, which provide an opportunity for readers to find out more about how Flipped Classroom is implemented and how teachers perceive the advantages and disadvantages. Implementation of flipped classroom learning that utilizes Open Educational Resources.

Flipped classroom learning provides an opportunity for students to study the subject matter at home according to the assignments given by the teacher before student's study in class. Flipped classroom learning is very useful for students when there are students who are not present in class for some reason, by the way, the teacher provides videos that he developed about the material to be taught to students who are not in the class. The video is also used by students who have studied in class to re-learn to deepen the material they have learned.

The results of the research by Alnatheer and Assiri (2019) aim to determine the extent to which OER is used in learning mathematics in high school at a transitional stage characterized by abstraction and complexity in the subject matter, it can be concluded that the teacher encounters a constant challenge of developing educational practices inside and outside the classroom. OER affect the students, change their attitudes, and increase their achievements. Because they take a long time to implement, they raise the teacher's concern about the utilization of instructions. It is suggested that evaluation tools should be developed to highlight the mechanism for utilizing OER.

Rahmah and Ikashaum (2021) state that in carrying out Flipped Classroom learning, learning videos can be downloaded from various educational service providers such as Educational TV and Learning Houses or can also be downloaded for free from private education service providers. In his research conducted in the Way Tenong area, West Lampung, Sumatra Island, it was found that students' understanding of mathematical concepts using the Flipped Classroom model had better conceptual understanding skills than students' conceptual understanding skills using the lecture model. The superiority of the learning he carried out was that the learning videos used provided more opportunities for students to learn anytime and anywhere. The video provided can be played repeatedly until students understand the material given.

Meanwhile, Kurniawati, et al. (2019), their research in Banjarmasin, South Kalimantan, concludes the results of their research that the blended learning process with the Flipped Classroom model assisted by Google Classroom is in the very good category. Student responses to the model used are also in the good category. This is because the media used involves technology, so it attracts greater student interest than face-to-face learning or online learning only.

Widyastuti, et al. (2018), the results of their research in Yogyakarta, Central Java, show that the Flipped Classroom model can improve students' creativity and mathematics learning outcomes. When playing the learning video, students look active so that students can answer the questions given because they understand the material given. Creativity in answering questions is also seen when students work in groups.

The results of Saputra and Mujib's research (2018) show that students' understanding of mathematical concepts using the Flipped Classroom model is better. The learning videos used provide more opportunities for students to learn anytime and anywhere. The video provided can be played repeatedly until students understand the material given.

4   CONCLUSION

The teachers who carry out learning with the Flipped Classroom by utilizing open learning resources, state that flipped classroom learning is very effective and increases activities and better learning outcomes. Open learning resources used are very easy to obtain and quite useful in teaching concepts to students.

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AN ANALYSIS OF STUDENT SATISFACTION WITH EDUCATIONAL SERVICES AT UNIVERSITAS TERBUKA: A STUDY ON DISTANCE-LEARNING SUPPORT SERVICES AT UPBJJ UT MAKASSAR

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Abstract

Learning assistance is of utmost importance to distance-education systems in higher education institutions. At Universitas Terbuka, learning assistance schemes are provided by Learning Assistance Center at the head office of Universitas Terbuka and are further administered by the sub-units of learning assistance at UPBJJ (Distance Learning Program Unit, which serves as Universitas Terbuka's unit on regional levels). One of the core functions of the sub-units is to provide distance-learning support compulsory for new students. The compulsory support includes New-Student Orientation, Distance-Learning Training, Assignment Workshop, and Exam Clinic. The present study delves into student satisfaction with the learning support particularly Distance-Learning Training, Assignment Workshop and Exam Clinic. The study is designed in an ex post facto research with a descriptive quantitative approach. Data is collected using a modified Likert-scale questionnaire. The assessment of student satisfaction looks into the instructors, the lesson materials, and the facilitators. Respondents comprise the entire students who attend Distance-Learning Support Service across the regions within which UPBJJ UT Makassar holds administration. Data collection is carried out in the last session of each of the learning support programs and is distributed both online and offline. In average, the results of descriptive statistical analysis on student satisfaction with the learning support programs based on the three aspects of assessment are greater than 3,5, culminating to a very good category. This current finding indicates that UPBJJ UT Makassar has thrived a successful distance-learning trajectory in terms of its learning support schemes. In the long run, the study suggests that UPBJJ UT Makassar ensures appropriate control and evaluation to maintain and improve its benchmarks of quality and excellence in distance-education landscapes.

Keywords: service, quality, orientation, student

1   INTRODUCTION

Following its establishment in 1984 as an early pioneer of distance education in Indonesia, Universitas Terbuka marks its 38th anniversary to reflect on its wide-ranging experiences in distance-education administrations including student recruitment, learning support services, and alumni and learning evaluation. Learning support services remain the most pivotal among others. Higher educations that implement distance education must bring out resources, strategies and practices to support students' academic trajectories, both individually and in group, as a complement to learning-material services. The fundamentals of learning support services lie on three tenets, i.e., cognitive, affective and systematic (Tait, 2000).

Learning support services of Universitas Terbuka are provided by the Coordinators of Learning-Material Assistance, whose major task is to set up and conduct a range of academic practices from the first stage in the preparation to the stage of implementation. It also provides student welcome

service called LPKBJJ that stands for Layanan Pendukung Kesuksesan Belajar Jarak Jauh (Distance-Learning Support Service), which includes Orientasi Studi Mahasiswa Baru–OSMB (Student Orientation), Pelatihan Kegiatan Belajar Jarak Jauh–PKBJJ (Distance-Learning Activity Training), Workshop Tugas–WT (Assignment Workshop) and Klinik Ujian–KU (Exam Clinic). Universitas Terbuka initially had OSMB as the only part of the student welcome services. Since 2019, it has expanded its offerings and embraced a more comprehensive array of activities for its official welcome programs. These programs seek to equip students with a substantial ability that enables them to demonstrate a sense of competence and preparedness for committing to a range of academic processes in a distance-learning trajectory through which they accomplish academic goals at Universitas Terbuka. During LPKBJJ, students are provided with key insights into the conception of distance education and educational system at Universitas Terbuka, learning skills that nurture academic success, and a variety of educational services both offline and online. For many students, LPKBJJ is also their first opportunity to connect with the campus and to learn their way around their study including guiding them to the ability of problem solving without other's help (Universitas Terbuka, 2019). Soria et al. (2019) concur with the sentiment; student welcome services are particularly essential when it comes to navigating students toward social identity in a higher-education institution and promoting a sense of belonging in the university so as to foster academic performance, and in turn student retention.

During 2021-2022 academic year, LKPBJJ at UPBJJ UT Makassar is carried out both online and offline, depending on the students' preference, distance of residence, and the status of COVID-19 outbreak. Universitas Terbuka makes LKPBJJ for all first-year students mandatory. However, it is advisable for current students struggling with course assignments, access to learning applications, practicum sessions and other difficulties in learning experiences to re-engage in LKPBJJ in order to assist the students to the fullest by preparing them well.

LKPBJJ is carried out in accordance with the guidelines of Learning Assistance Center of Universitas Terbuka. To ensure whether objectives or goals being established are achieved, each activity of LPKBJJ is evaluated by the facilitators. Within that standpoint, the present article looks into student satisfaction with the learning support services particularly Distance-Learning Training (PKBJJ), Assignment Workshop and Exam Clinic at UPBJJ UT Makassar.

2 METHODOLOGY

The population of the study comprises the entire students engaging in the three activities of LPKBJJ, i.e., PKBJJ (Distance-Learning Activity Training), Workshop Tugas–WT (Assignment Workshop) and Klinik Ujian–KU (Exam Clinic), at UPBJJ UT Makassar in the registration term 2022.2. The required samples are determined using simple random sampling. The instrument of data collection is a standard questionnaire compiled by the Learning Assistance Center of Universitas Terbuka. The questionnaire uses a modified Likert scale in a 4-point scale (from 1= fair to 4= very good).

Questionnaires are distributed to the entire participants of OSMB (New-Student Orientation) and LPKBJJ UT Makassar both online and offline (hardcopy mode). While hardcopy questionnaires are distributed to the participants of LPKBJJ, online questionnaires using Google form at https://sl.ut.ac.id/DaftarHadirOSMB80Sep22/ are distributed to those of New-Student Orientation. Both are distributed at the end of programs. The number of questionnaires returned by LPKBJJ and OSMB participants are 850 and 888, respectively. Difference in return rates is subject to difference in time of the programs.

Data analysis fits in a descriptive analysis by calculating the mean, median, and mode in SPSS 20. The results are presented in tables. The criteria that constitute student satisfaction is based on the mean of calculation of each instrument item: 0 – 1,5 = very poor, 1,6 – 2,5 = poor, 2,6 – 3,5 = good, dan 3,6 – 4,0 = excellent (Riduan & Akdon, 2013).

3 FINDINGS AND DISCUSSION

3.1 New-Student Orientation (OSMB)

The New-Student Orientation (OSMB) of Universitas Terbuka in 2022.2 Enrolment (Odd Semester 2022/2023) engages 1.625 incoming students who come from 24 regencies/ cities in South Sulawesi and 70 regencies/ cities across other provinces in Indonesia.

Table 1 Distribution of Incoming Students at UPBJJ UT Makassar in 2022.2 Enrolment

No	Regency/ City	Number of Students (2022-2)
1	Selayar Islands Regency	55
2	Bulukumba Regency	62
3	Bantaeng Regency	22

4	Jeneponto Regency	37
5	Takalar Regency	33
6	Gowa Regency	120
7	Sinjai Regency	16
8	Bone Regency	56
9	Maros Regency	120
10	Pangkajene Islands Regency	91
11	Barru Regency	29
12	Soppeng Regency	22
13	Wajo Regency	41
14	Sidenreng Rappang Regency	45
15	Pinrang Regency	34
16	Enrekang Regency	30
17	East Luwu Regency	113
18	Luwu Regency	35
19	Tana Toraja Regency	73
20	North Toraja Regency	25
21	Makassar City	374
22	Pare Pare City	30
23	Palopo City	22
24	North Luwu Regency	29
25	Regions outside South Sulawesi (70 Regencies/ Cities)	111
	Total	1,625

OSMB is carried out online in a Zoom meeting. 1.625 incoming students are grouped into 5 virtual classes that are integrated in Teams. Microsoft Office 365. Each session is conducted for 10 hours starting from 08.00 to 17.00 WITA. The whole activities of OSMB are held from 17 to 21 September 2022.

The analysis results in SPSS from 888 respondents are presented in Table 2, Table 3, and Table 4 below.

1. Instructor

In Table 2, the aspect of instructor accounts for 5 items, with means ranging between 3,57 and 3,76.

Table 2 Analysis Results of Student Perception of New-Student Orientation (OSMB) at UPBBJ UT

Makassar in Odd Semester 2022/2023 (2022.2)

Aspects of Assessment on Instructor	N	Mean	Mode	Std. Deviation	Sum
A. Subject Mastery	888	3.7646	4.00	0.4840	3343
B. Delivery Mode	888	3.7297	4.00	0.50826	3312
C. Interaction with Participants	888	3.6509	4.00	0.55557	3242
D. Responsiveness to Questions	888	3.5676	4.00	0.61725	3168
E. Appearance	888	3.7106	4.00	0.52084	3295

The achievement of OSMB is measured by how an instructor masters subject materials, delivers them, interacts with participants, and responds to participants' questions. In Table 2, the highest mean is 3,7646 ± 0,484 for Subject Mastery, while the lowest mean is 3,5676 ± 0,6172 for Responsiveness to Questions. These four abilities are closely related to the core competence of an instructor. Competence encompasses an underlying characteristic based on one's intellectuality and attitudes to demonstrate superior, long-lasting (stable), and effective performance in one's field of work (Eliza). As such, instructor's high-level competence is mandatory for the success and effectiveness of OSMB at Universitas Terbuka.

2. Materials of OSMB

Materials presented in OSMB of UPBJJ UT Makassar include Introduction to Higher Education System and Distance and Open Education, Four Pillars of Nationality, Learning Guidelines at Universitas Terbuka and Becoming a SMART Student, Introduction to Practicum Courses, Registration and Exam, Introduction to Student Activity and the Policy of MBKM (Freedom of Learning-Independent Campus), Library Service and Information Center, and How to Best Learn and Develop Learning Motivation in a Higher-Education Institution. Analysis of student perception is based on 3 aspects, i.e., attractiveness, usefulness and relevance of materials with student activities. Of 888 respondents, results show that student perception ranges between 3,67 and 3,77. The materials of OSMB are fundamentally subject to the three aspects to set a path of achieving its desirable goals. These goals are principally about empowering students to: 1) learn their way around the environment of UPBJJ UT Makassar, including Universitas Terbuka as a whole, as an academic ecosystem and its existing mechanisms: 2) get insights into how to leverage academic infrastructure to the fullest: 3) obtain pre-knowledge of the discourse of nationality and education that underlies human values: 4) set out an independent-learning trajectory and comply with the existing norms most notably

students' code of conduct: 5) nurture a sense of belonging and togetherness in the academic community in order to create a comfortable, orderly and dynamic environment: and 6) foster awareness of academic and social responsibilities according to the Three Pillars of Higher Education (Tridarma).

The current finding is consistently similar to Arhin & Wang'eri's finding (2018) that orientation considerably governs students' behavioral changes during academic transition to higher education. Orientation is further considered as part of strategic and comprehensive schemes for student retention. As Nyar (2020) puts it, student orientation is a key element to student retention and hence should be conducted in a structured manner. It is also important to note that the process of instructor-participant interactions serves an essential role in both learning and training achievement (Nugraheni, Zuhairi, Sajati, Hardini, & Isman, 2012).

Table 3. Student Perception of the Materials of New-Student Orientation (OSMB) at UPBJJ UT Makassar 2022-2

Aspects of Assessment		N	Mean	Mode	Std. Deviation	Sum
1. Introduction to Higher Education System and Distance and Open Education	a). Attractiveness	888	3.7354	4.00	0.48519	3317
	b). Usefulness	888	3.7489	4.00	0.47839	3329
	c) . Relevance to student activities	888	3.6971	4.00	0.50645	3283
2. Four Pillars of Nationality	a). Attractiveness	888	3.7230	4.00	0.49101	3306
	b). Usefulness	888	3.7500	4.00	0.48715	3330
	c). Relevance to student activities	888	3.6959	4.00	0.52223	3282
3. Learning Guidelines at Universitas Terbuka and Becoming a SMART Student	a). Attractiveness	888	3.7399	4.00	0.48531	3321
	b). Usefulness	888	3.7748	4.00	0.47122	3352
	c). Relevance to student activities	888	3.7286	4.00	0.50207	3311
4. Introduction to Practicum Courses	a). Attractiveness	888	3.6971	4.00	0.52180	3283
	b). Usefulness	888	3.7218	4.00	0.51175	3305
	c). Relevance to student activities	888	3.6903	4.00	0.52859	3277
	a). Attractiveness	888	3.7050	4.00	0.50331	3290

Aspects of Assessment		N	Mean	Mode	Std. Deviation	Sum
5. Registration and Exam	b). Usefulness	888	3.7241	4.00	0.49279	3307
	c). Relevance to student activities	888	3.6982	4.00	0.51045	3284
6. Introduction to Student Activity and the Policy of MBKM (Freedom of Learning-Independent Campus)	a). Attractiveness	888	3.6948	4.00	0.50733	3281
	b). Usefulness	888	3.7072	4.00	0.49788	3292
	c). Relevance to student activities	888	3.6926	4.00	0.51040	3279
7. Library Service and Information Center	a). Attractiveness	888	3.6712	4.00	0.53088	3260
	b). Usefulness	888	3.7095	4.00	0.50593	3294
	c) Relevance to student activities	888	3.6779	4.00	0.51569	3266
8. How to Best Learn and Develop Learning Motivation in a Higher-Education Institution	a). Attractiveness	888	3.7399	4.00	0.48762	3321
	b). Usefulness	888	3.7523	4.00	0.47662	3332
	c). Relevance to student activities	888	3.7230	4.00	0.48871	3306

3. Quality of Implementation

Student assessment on the quality of OSMB implementation is subject to 5 aspects, i.e., conforming to the implementation schedule, teaching aids used by the instructor, the quality of implementation, and the attitudes of the committee and instructor. The mean for the quality of OSMB implementation ranges between 2.23 and 3,72, with the attitudes of the committee and instructor being the lowest and conforming to the implementation schedule being the highest as Table 4 shows below.

Table 4. Student Perception of the Quality of New-Student Orientation Implementation at UPBJJ UT Makassar 2022.2

Aspect of Assessment	N	Mean	Mode	Std. Deviation	Sum
1. Conforming to schedules	888	3.7173	4.00	0.51805	3301
2. Teaching aids	888	3.6340	4.00	0.55585	3227
3. Implementation quality	888	3.5642	4.00	0.59908	3165
4. Committee and instructor attitudes	888	2.2309	1.00	1.28896	1981

The overall student perception of the quality of OSMB implementation fits into a good and very good category, with the only exception of the attitudes of the committee and instructor. The considerable lack of committee's and instructor's attitudes leaves plenty of room for improvement of OSMB implementation.

3.2 Distance-Learning Skill Training (PKBJJ)

3.2.1 Instructor

As part of student welcome programs, PKBJJ is mandatory for incoming students. Current students are advisable to engage in PKBJJ to update their knowledge and skills for acculturating to the academic trajectories at Universitas Terbuka. PKBJJ is carried out offline throughout 26 classes incorporated with a virtual class at Learning Management System (LMS) of Universitas Terbuka. Face-to-face class focuses on imparting subject materials directly to participants, while virtual class at LMS encourages participants to answer quizzes, which is mandatory for certification requirement. The certification is an official document attesting to participant's achievement of distance-learning skills.

Table 5 Descriptive Statistical Results of the Evaluation on Distance-Learning Skill Training (PKBJJ) at UPBJJ UT Makassar

	A.1	B.1	C.1	D.1	E.1	A.2	B.2	C.2	D. 2	E.2
N	850	850	850	850	850	850	850	850	850	850
Mean	3.81	3.75	3.76	3.73	3.76	3.81	3.72	3.73	3.74	3.77
Mode	4	4	4	4	4	4	4	4	4	4

Std.	0.41	0.45	0.44	0.48	0.44	0.40	0.47	0.47	0.45	0.44
Devi	4	1	9	4	0	6	7	8	9	1
Sum	3236	3191	3197	3171	3197	3119	3119	3171	3166	3198

Description: A = Subject Mastery; B = Subject Delivery; C = Interaction with Participants;
 D = Responsiveness to Participants' Questions; E = Appearance; 1 = Resource Person 1;
 2 = Resource Person 2

PKBJJ is carried out on 24 and 25 September 2022 throughout 19 locations, i.e., East Luwu Regency (Malili), East Luwu (Tomoni), Palopo City, Tana Toraja Regency, Enrekang Regency, Pinrang Regency, Sidrap Regency, Wajo Regency, Parepare City, Barru Regency, Pangkep Regency, Maros Regency, Makassar City 1, Makassar City 2, Gowa Regency, Jeneponto Regency, Bulukumba Regency, Bone Regency and Selayar Islands Regency. As for the students from outside the province of South Sulawesi, PKBJJ is held in November 2022. Evaluation on the instructor of PKBJJ from 850 respondents is presented in Table 5.

3.2.2 Materials

The analysis results of 803 responses that fit in SPSS 20 are presented in Table 6. The overall rate of student perception of the implementation of PKBJJ at UPBJJ UT Makassar in 2022.2 is 3,5. This finding indicates that the activities provided at PKBJJ are meaningful, useful, and relevant to the student activities at Universitas Terbuka.

Table 6. Student Perception of the Materials Presented in the Distance-Learning Skill Training (PKBJJ) at UPBJJ UT Makassar 2022.2.

Aspects of Assessment		N	Mean	Std. Dev	Sum
Academic Integrity	a). Attractiveness	803	3.68	0.48	2958.00
	b). Usefulness	803	3.77	0.44	3027.00
	c). Relevance to Student Activities	803	3.67	0.49	2948.00
Online Tutoring Discussion and Assignment	a). Attractiveness	803	3.68	0.49	2958.00
	b). Usefulness	803	3.71	0.47	2978.00
	c). Relevance to Student Activities	803	3.69	0.48	2961.00
Participation and Assignment of Face-to-Face Tutoring or Web Tutoring	a). Attractiveness	802	3.65	0.51	2925.00
	b). Usefulness	803	3.69	0.48	2960.00
	c). Relevance to Student Activities	803	3.62	0.51	2907.00
Course Assignment	a). Attractiveness	803	3.61	0.54	2896.00
	b). Usefulness	803	3.62	0.51	2908.00
	c). Relevance to Student Activities	803	3.58	0.54	2875.00
Practice and Practicum	a). Attractiveness	803	3.69	0.49	2962.00
	b). Usefulness	803	3.73	0.46	2994.00
	c). Relevance to Student Activities	803	3.67	0.51	2943.00
Research Work	a). Attractiveness	803	3.72	0.47	2985.00
	b). Usefulness	803	3.74	0.45	3000.00
	c). Relevance to Student Activities	803	3.70	0.49	2970.00
Materials for Student Performance	a). Attractiveness	803	3.66	0.51	2941.00
	b). Usefulness	803	3.69	0.49	2964.00
	c). Relevance to Student Activities	803	3.66	0.51	2935.00

3.2.3 Quality of Implementation

The quality of PKBJJ at UPBJJ UT Makassar based on student evaluation is presented in Table 7, which stands at >3,5, indicating quality excellence in the implementation. Quality excellence is also noticeable in the implementation schedule, location, and food and beverage. Committee's attitudes

and teaching aids, however, range between 3,0 and 3,5 (<3,5), suggesting the importance of continuous improvement within UPBJJ UT Makassar.

Table 7. Student Perception of the Quality of Distance-Learning Skill Training (PKBJJ) Implementation at UPBJJ UT Makassar 2022.2

Aspect of Assessment	N	Mean	Median	Std. Dev.	Sum
Schedule	850	3.66	4.00	0.51	3115.00
Teaching aids	850	3.38	3.00	0.70	2872.00
Quality of Implementation	850	3.49	4.00	0.61	2966.00
Committee's attitudes	850	3.27	3.00	0.82	2777.00
Location	850	3.86	4.00	0.35	3282.00
Food and beverage	850	3.86	4.00	0.38	3284.00

The lack of quality of teaching aids is presumably due to poor Internet connection in particular locations, which eventually impedes online training. As many regular trainings at schools or educational agencies that do not have their own Wi-FI network, poor Internet connection raises concerns around the access to online training in PKBJJ. Topping it all off, PKBJJ suffers from the lack of number of committees who at the same time serve as instructors, which results in non-optimal services for participants. It is, therefore, highly advisable that the coordinators of PokJar (Study Groups) and SALUT (UT Service Center) be engaged in the training to stick with the planning workflow and achieve the desirable milestones.

The overall excellent rate of student assessment on the implementation of OSMB and PKBJJ is predictably obvious given that the participants find the materials provided in both programs new and interesting, particularly concerning the details of higher education and distance learning. They also have the opportunity to get insights into the differences in the types of higher education, a myriad of educational facilities provided at Universitas Terbuka and how to leverage them, effective learning strategies, types of learning service modes, how to create and navigate an online account, and examination-related information. This finding corroborates Watt's (2019) finding that defines the benefits of student orientation in assisting student to prepare learning experience, to understand the terminologies associated with learning processes, and to interact with peers.

4 CONCLUSION

This recent study has provided a comprehensive understanding on student satisfaction with educational services at UPBJJ UT Makassar. Current findings reveal that student perception of OSMB and PKBJJ ranges between 3,5 and 4.0, indicating quality excellence in the implementation. Items that score less than 3,5 are worth noting and improving to enhance Universitas Terbuka's all-inclusive milestones of quality and excellence in distance-education landscapes.

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USING MICROSOFT TEAMS APPLICATION IN ONLINE LEARNING OF ART EDUCATION COURSES AT OPEN UNIVERSITY OF PINRANG REGENCY

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Abstract

This study aims to determine the benefits of using the Microsoft Teams application in online learning of art education courses at the Open University (UT) at Pinrang Regency. This study uses descriptive qualitative research methods as research procedures which produce descriptive data in the form of written or spoken words from people and observable behavior. The sample of this research was 8 students who took art education courses. The results of the research are divided into several discussion indicators, the first is how students know about Microsoft Teams, students know that Microsoft Teams is a supporting application to help in the learning process and Microsoft Teams itself has been known by students since 2021 to assisting the learning process in art education courses in elementary school. Then regarding the indicators for the Microsoft Teams benefit, it's found that a distance is not a problem anymore in learning, the students can still discuss, and they found their self can save more time, energy and costs in the learning process. But apart from that, the stability of the network really become a major problem that faced by the students and its become an evaluation to be solve for the future online learning using Microsoft Teams.

Keywords: benefits of microsoft teams, online learning

1 INTRODUCTION

The implementation of the learning process at this time has changed from what usually uses a face-to-face system to an online or online learning system. This is influenced by the pandemic that hit Indonesia, and the world in global and has an impact on all fields of education (Wirza and Ovianto, 2021). Distance learning itself is not new at the Open University, where since the beginning of the establishment of the Open University, distance learning has been implemented. Since the implementation of the online learning system, there have been many media or platforms to carry out online learning such as Google Classroom, Edmodo, Zenius, Microsoft Team, Zoom Meeting and others Fazar (Wirza and Ovianto, 2021). In supporting the creation of an optimal online learning climate, one of the IT facilities in the form of a digital platform used is Microsoft Teams (Ms Teams). At the highest level of education, this platform is designed to make it easier for students to collaborate through an integrated learning management system that is easily accessible anywhere and enable the lecturers to track each individual's progress proactively, Purnamasari, Meilinda, and Syukri (2022). One application that provides face-to-face interaction facilities for educators and students virtually via video conference with a PC or laptop or smartphone is Microsoft Teams Cloud Meeting. This application is used as a medium for remote communication by combining video conferencing, chat,

online meetings, and mobile collaboration. Microsoft Teams as an available online interactive learning media application.

Microsoft Teams is a modern application that allows users which in a big or small organization to collaborate and communicate easily wherever they are. Each user can make adjustments to add notes/other applications using the conversation or chat feature to communicate with coworkers. In addition, users can make edits to a document directly simultaneously without opening another application, Yuniartu, Rakhmawati, Harsani (2021). Based on this background description, the problem formulation is How are the benefits of using the Microsoft Teams Application in online learning in art education courses at the Pinrang Regency Open University?

2 METHODOLOGY

This study uses descriptive qualitative research methods as research procedures that produce descriptive data in the form of written or spoken words from people and observable behavior. This research uses a total sampling technique by taking the entire study population. The population of this study were all students of UPBJJ-UT Makassar Pokjar, Pinrang Regency who took art education courses, especially in the 2021/2022 academic year. The sample of this research amounted to 8 students who took art education courses. This research used interview to collecting the data of the research.

3 FINDINGS AND DISCUSSION

3.1 The result of the interview

3.1.1 *Students Knowledge of Microsoft teams*

The results of interviews with the 8 total number of students regarding problem indicators with several questions, including "how do students know about Microsoft Teams". The researher found that the student almost have the same perspective. Here are some results of student interviews from the students who were interviewed, they answered with almost the same answer, such as Microsoft Teams was used for Tuweb (online) learning and already used since they know it in 2021. "I use the Microsoft Teams application in 2021 with the aim of studying art education courses in elementary school"

Dogmen in Aristorahadi (2008) characteristics of distance learning is the existence of an organization that regulates independent learning, learning materials are delivered through the media and there is

no direct contact between the teacher and the learner. Mackenzie in Aristorahadi (2008) said distance education is a learning method that uses correspondence as a tool to communicate between learners and teachers.

3.1.2   How to use the Microsoft teams

The 8 students who were interviewed about the indicator of the problem " how you use the microsoft teams". The researcher found that, their answered is "Using the Microsoft Teams application in the online learning process (Tuweb) is very good because it is easier to used and understand because among our friends we can discuss the material with each other"

"I think using the Microsoft Teams application is very beneficial because we can learn without using much of our energy and time. can also get to know each other among colleagues "
Microsoft Teams is a service and application created by Microsoft for the convenience of connecting via virtual or direct gaway and can be done anywhere and provides good and clear video quality. Developed directly by Microsoft, and making it easier for users to work as a team in a group that has been created by users, Herminingsih (2021)

There are also students who think that distance learning using Microsoft Teams during online learning is unpleasant moment because the network does not support them well.

"I think the use of Microsoft Teams during the online learning process for art education courses in elementary school. I feel dissatisfied because the network does not support" "the use for online learning is good but because the network is not supportive, the learning process is not smooth"
Wirza, and Ofianto (2021) In the results of interviews conducted with teachers, other obstacles were found besides network constraints and the provision of internet quotas. According to one of the teachers interviewed, "Internet network is often problematic, this disrupts learning.

Then the researcher also found that there is a lack of discipline among students when learning, because during online learning it is difficult to supervise students and many students are not serious in participating in learning." So the obstacles experienced by teachers while carrying out online learning are unstable networks, the provision of internet quotas that consume quite a large amount of funds and student discipline problems that are difficult to supervise because of online learning.

3.1.3   Benefits of using Microsoft Teams

There were various feedback that the students give when they are asking about this indicator. One of the students said that "The benefits I get are i more understand about the   material given, I can understand because tutors also use discussion and question and answer strategy so that problems or materials that are not clear can be discussed with friends and tutors as mentors". This really saving time, saving costs, and energy, but a lot of learning experience is obtained without having to go somewhere".

"The benefits that I feel are other than easy used because we can communicate with friends as well as with tutors"

Wicaksono, Hasanah, Ahsan, and Ciani (2022) whose research discusses the use of Microsoft Teams at SD AL-FITYAN Tangerang, the results of his research show that microsoft Teams is very easy to use because educators and students are accustomed to using service products of Microsoft office. The Teams application has its own advantages compared to similar software because in the video, telephone, chat features, as well as giving and assessing assignments, it can be done in one time during the learning process, so there is no need to use separate tools in learning. Like a zoom device that can only do video conferencing, so when assessing tasks using other applications. This is in line with Ahmanuddi (Wicaksono, Hasanah, Ahsan, and Ciani 2022) that the use of Microsoft Teams in online learning for arts and culture subjects during the COVID-19 pandemic at SMP Negeri 4 Surabaya was very effective because Microsoft Teams had very complete features compared to others. other software to make learning easier. Besides there are those who feel the benefits are good, there are also those who feel the benefits are not good, from 8 students interviewed there is one student who feels the benefits are not good and the problem is the network problem

"The benefits are not very good because of the loading network factor" Wicaksono, Hasanah, Ahsan, and Ciani (2022) in their research, explained that based on the results of interviews, in implementing learning teams had their own challenges in dealing with them because students felt the lack of direct interaction between teachers and participants. students because only some students take direct face-to-face learning and some participants do not understand the learning material well because there are frequent network breaks or lack of interaction in learning. Garrison (Ahmanuddi (Wicaksono, Hasanah, Ahsan, and Ciani 2022)

Regarding the advantages and disadvantages of Microsoft Teams, there were several students who explained about the advantages and disadvantages of Microsoft Teams. There were several students who expressed their advantages and disadvantages, including "the advantage is that it is easy to access and the obstacle is the network factor, so it needs improvement"" the advantages are that it is easy to access, efficient, does not take time and learning resources can still be carried out" "the learning process can be carried out anywhere, saves time and costs" For the drawback is that the main factor is the problem of the network "the lack of a network that is less supportive and less enthusiasm for learning than face-to-face". This is in line with Rigianti (Ulya, 2021) Online learning does have various positive impacts, but apart from that it also has negative impacts. Changes in the learning process from face-to-face to online learning have indeed caused various forms of responses and obstacles in the world of education in Indonesia, as experienced by educators also have their own obstacles.

4 CONCLUSION

The conclusion of this research is that microsoft teams is an alternative for distance learning between teachers and students, microsoft teams has the function of helping the limited distance between lecturers and students to learn. Microsoft teams is quite easy for students to learn because they can still communicate with lecturers through the microsoft teams application, having each others with friends in discussion and sharing mode facilitated by the lecturer. This result of the course also have weaknesses and shortcomings, one of the factors is a network problems. This result giving a red line that the network must be consider for future program in case of using this aplication to maximize the succesfulness of the learning and teaching process. Of course by giving a good access will sum up the students motivation and gain the students achievement in studying.

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DESIGN DEVELOPMENT OF MOOCS FOR COMMUNITY SERVICE

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Abstract

Information technology is a study of the design, development, application and management of computer-based information systems for hardware and software. The influence of this information technology in the world is getting bigger and bigger, including in open access such as Massive Open Online Courses or known as MOOCs. The design of the MOOCs application development applied by the Open University for the Community Service (PKM) program is expected to provide a means to present MOOCs material material. One of the MOOCs materials developed is about Plastics: their utilization and dangers. The design of the PKM MOOCs program development, contains component components in developing a PKM MOOCs design or model based on the Learning Management System. There are n component components are; Outline of MOOCs program (GBPM), initiation material in the form of power points, discussion forums, quizzes, task completion forums, and ending with the work on summative tests. The results of the trial of 15 trainees showed that the development design of these MOOCs can be classified as good based on the clarity of the steps to be followed, the clarity of the stages of presentation, k hopefully the use of developed teaching material products, as well as the presentation of the ingredients.

Keywords: Training materials, Design MOOCs, Community Service.

1   INTRODUCTION

Massive Online Open Course or MOOC is a short lecture online yang available for free. MOOCs are online with the maximum and unlimited registration, which is open to anyone around the world. These short online lectures or MOOCs are   usually delivered in the form of short explanatory videos that can be watched at any time, reading texts, discussion forums and tests, and online assessments Massive Open Online Courses (MOOCs) are a new type of online class that allow anyone, anywhere, to participate via video lectures, computer graded tests, and discussion forums.

The definition of MOOC itself is used as a means to develop potential for anyone who wants to increase knowledge through online learning. Currently, many institutions   have developed MOOCs including Higher Education institutions. The various models and designs it has developed, and

generally uses... Learning Management System (LMS). The MOOCs developed are not only related to the course but can also be used for the topic of discussion which can later be accumulated into the equivalent of one course. The presentation of MOOCs for each topic of discussion at the Open University is known as the MOOCs of Community Education (PKM). In this regard, how to develop MOOCs for PKM, and the purpose of this study is to get information and input on the MOOCs that have been developed.

2 METHODOLOGY

This research is a development research, which is to develop the design of PKM MOOCs. The eyes chosen are Plastic. This material was chosen because plastic is a material that is often used by the general public and is widely found in the surrounding environment. The developed MOOCs are analyzed or reviewed by material experts and developers of online teaching skills. The results of this development were tested on 15 espondents from teachers, employees, and lecturers. The selection of respondents was based on that they still wanted to learn or increase knowledge even though they did not have to pursue a degree. All respondents were given training on how to use the program and were given a questionnaire as an instrument of this study The data obtained were analyzed descriptively qualitatively.

3 FINDINGS AND DISCUSSION

3.1 Development of MOOCs Desain

The development of these MOOCs begins with developing a MOOCs Program Outline MOOCs (GBPM) that contains a small topic topic of knowledge. The developed GBPM contains 8 sessions and ends with a summative test to determine the achievement of the learning program. Furthermore, the teaching process was developed which consisted of material sajian, both in the form of power points, material descriptions and program videos. Furthermore, a formative test was developed for participants to work on to find out how much the level of mastery was after participating in learning in session 1. If the participant has reached a score of 80 from the results of his formative test, he can continue in session 2. And so on until session 8 and ending with a summative test. If the participant has successfully completed the summative test well and has completed all his learning activities, the participant gets a certificate of completion of learning through MOOCs are given.

The series of MOOCs developed, among others, are presented as follows as stated in attachment, but among them are illustrated as follows at Figure 1.
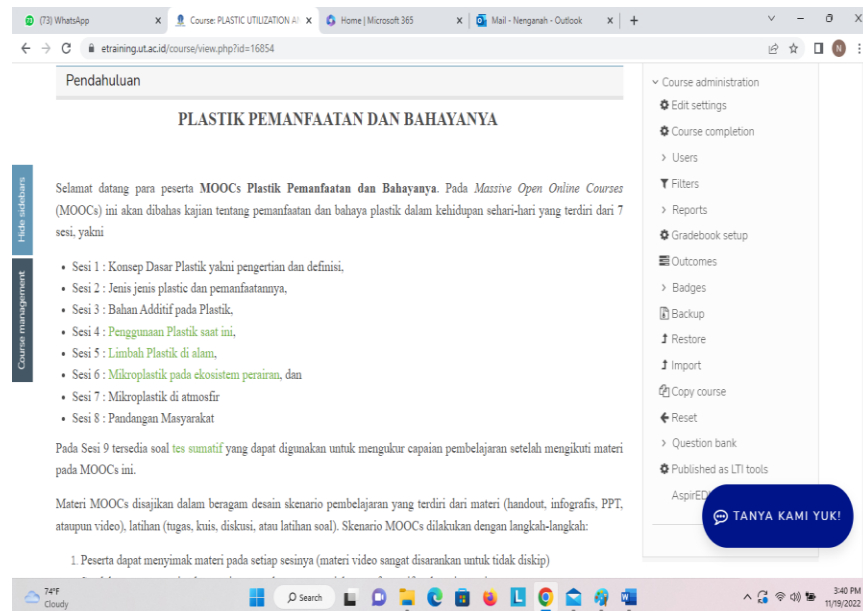
Figure 1. Part of the MOOCs design steps

3.2 Student response to the MOOCs Design
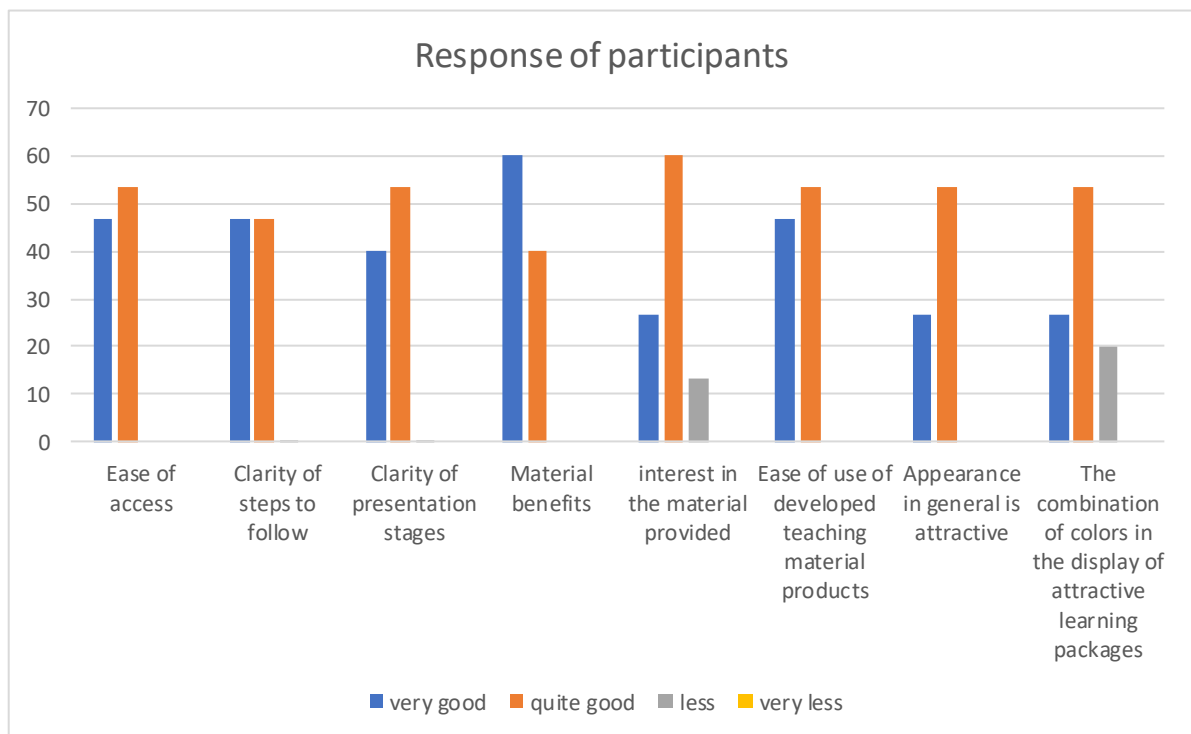
Figure 2. Participant's Response about MOOCs Design

The participants' responses were described as stated in Figure 2.

Through the Figure 2, it can be explained that the results of the development of these MOOCs can be classified as good based on the clarity of the steps to be followed, clarity of presentation stages, usefulness of the material, interest in the material provided , ease of use of developed teaching material products, the general appearance is attractive, the combination of colors in the appearance of the learning package is attractive.

4 CONCLUSION

MOOCs have not been in great demand by many people to follow suit. However, MOOCs have several advantages including being available at an affordable price, very far from the price of public lectures. can be accessed anytime and from anywhere, so everyone around the world can start learning as quickly as possible. The development of MOOCs is expected to make participants more excited.

ACKNOWLEDGEMENTS

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MICRO LEARNING FOR LEARNING BIOLOGY IN DISTANCE EDUCATION

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Abstract

This paper investigates the utilization of micro learning in distance education at Universitas Terbuka. Micro learning is the use of short content material. In distance learning, micro learning includes using material from youtube or powerpoint. In this study, students who take BIOL4219 Genetics course at Department of biology, Faculty of Mathematics and Science, Universitas Terbuka are interviewed with open-ended questions on how and why micro learning are important. The respondents are 5 students who take the course. In this course, they are required to learn youtube video provided by the tutor. The result shows that they like the youtube video.

Keywords: Micro learning, youtube, biology, distance education.

1 INTRODUCTION

Micro learning is based on limitation of human brain, which can only process information in limited time. A longer learning process will create Pembelajaran mikro didasarkan pada teori bahwa kemampuan otak manusia umumnya akan lebih baik mengingat materi pembelajaran yang diberikan dalam waktu yang singkat. Bila belajar dalam waktu yang lama, akan terjadi kebosanan atau kejenuhan pada mahasiswa.

Components of micro learning are content, time, curriculum, form, process, mediality, and learning type are the dimensions of micro learning (Jomah, et. al, 2014).

A benefit of micro learning is that it helps avoiding stressed out of the brain. Besides, micro learning is fun and more attractive to students (Jomah, et. al., 2014).

Students in distance learning have problems with distraction such as social media and games . they need learning media that makes learning material interesting and easy to learn. Therefore, learning material is provided in short segments. For example, learning material consists of short video in 1-3 minutes duration, one-page infographic, or picture. The benefit of micro learning is that it is short, so that students easy to understand. It contains examples and practices as well. The duration is also short. In addition, it can be produced according to the need (Elise, 2017).

2 METHODOLOGY

This is a qualitative study. A list of open-ended questions is sent to students who take BIOL4219 Genetics course at department of biology, Faculty of Science and Technology in 2022.

Research question are:

Why micro learning is important.

Why the use of micro learning help students learn better:

What are the obstacles of using micro learning

Research method:

The researchers carry out interview. The questionnaire is based on Jomah et. al. (2014) with some revisions.

3   FINDINGS AND DISCUSSION

Learning material uploaded in youtube help students to learn material in the textbook. This finding is in line with Jonah (2014) that micro learning is more interesting.

One respondent pefers learning from youtube since youtube have audio-visual feature, allowing him learn faster compared to reading the textbook. Each individual has different learning style. For those who are more familiar with audio-visual presentation, the youtube short video is ideal.

The material is easier to access. As everyone has gadget, the youtube video of biology is available to all students. They can access the material anywhere.

Other students can also learn the content.

Students also like additional face to face to understand the material.

A weakness of the youtube is that the sound is not clear enough.

4   CONCLUSION

The conclusion is that students need the youtube to learn biology.

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STICKING PLASTER OR LONG TERM OPTION? TAKE HOME EXAMINATION IN UNIVERSITAS TERBUKA; STUDENTS' PERCEPTION

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Abstract

The shift from close book examination to take home examination raises many questions. One of the questions is about the quality of the students. In order to find the question, the stakeholders are seeking way to perform a valid and reliable test. However, in finding the best way, students' perception of the way they are examined should be one of consideration. Therefore, this paper explores students' view and also test students' anxiety of take home examination. 134 students from various department who have experienced two kind of tests; close book and take home examination involved in this study. The instrument was a questionnaire consisting 13 items to measure students' perception on take home examination and 17 items to test students' anxiety in performing take home examination. The finding indicate that most of students prefer take home examination than close book examination. Students' viewed that take home examination is better than close book in term of concept mastery, test score, accessibility, and low exam anxiety. Instead of using many types of test, Universitas Terbuka should investigate the way to strengthen the effectiveness of take home examination due to it shows a positive perception from students.

Keywords: Take home examination, open book exam, close book exam, perception, anxiety.

1 INTRODUCTION

The whole world is implementing new education system to adapt to the conditions of pandemic era. Many institutions and teachers are struggle to fulfill students' need in term of learning process and assessment. However, not all innovation are still effective to be used in the post pandemic era.

Universitas Terbuka (UT) as the pioneer of open and distance education in Indonesia also experience this condition. Many innovation are tried to facilitate students to study without decreasing the quality. In learning process, for example, in the beginning of pandemic era, UT has taken a policy to substitute face to face tutorial to web based tutorial. UT did not take much effort to familiarize students with this shift, because UT is known as the cyber campus.

Nevertheles, in term of assessment, UT still in the process to find the appropriate system. Before pandemic, UT conducted offline examination. This examination is held by cooperation with schools in some regencies and cities in South Sulawesi. Previously, students had to print the test taker's identity card (KTPU), then be present at the specified exam location. The examination is carried out simultaneously for all students in all units of Universitas Terbuka. The questions that have to be answered by the students are in the form of multiple choice which are done by filling out the answer sheet provided (paper based test).

In the beginning of pandemic era, 2020.1 academic period, final examination is removed and the students' final score is achieved from tutorial score or course assignment. Then, in 2020.2 academic period, based on the decision letter of the vice chancellor for academic number 40166/UN31.WR.1/PK.04.11/2020, as of December 1, 2020 the final semester examination system was changed to Take Home Exam (THE). THE as new final semester examination system requires students to download questions from the THE application page (the.ut.ac.id) and upload the answers in the same application page. Students download the questions according to the specified schedule with a maximum processing time of 12 hours. The 12 hours timeframe are calculated based on download hours. Then, students have to upload the answers on the same day as the download time. THE questions are in the form of descriptions with the HOTS (Higher Order Thinking Skill) question model and students can work on anywhere and can open books or use other reference sources without violating the principle of originality.

However, as a new system, one of the obstacles that may arise is the credibility of the assessment system. It is still questioned whether the assessment carried out can provide an accurate picture of students' abilities and knowledge. Students' learning outcomes are usually measured using several assessment components, such as assignments, attendance, participation in discussions/tutorials, and final semester exams. The final semester exam is intended to measure the achievement of learning objectives comprehensively. The grades that students have achieved in Web-based tutorials (*Tuweb*), or Online Tutorials (*Tuton*) or Course Assignments, will only contribute if THE or final exam scores achieved minimum 30% of maximum point of THE.

THE carried out by using the open-book examination system in the form of case-based description questions, while the face to face examination carried out by the closed-book examination system in the form of multiple choice questions. If the desired learning target is high-level learning ability that includes in-depth understanding, application, analysis, synthesis or the ability to construct alternative problem solving, then the type of questions used should be case-based descriptions, and carried out with an open book system. Open book examination system enable students to increase ability in handling large amount of information, higher taxonomical level and have a good effect on long-term retention (Kruger, 2018). In exams with an open book system, students are allowed to use various reference sources, both textbooks, other notes and internet. It is resulted on students' anxiety and retention. Students feel calmer and less anxious in taking the final exam because they can open

references (textbooks, modules) when needed in the exam (Gharib, William and Noelle, 2012). Moreover, Open book system probe students' content mastery, gained knowledge and solve the problem creatively (Theophilides and Koutselini, 2000).

Although take home exam using the open book system is considered more suitable for higher educational levels that target high-level abilities, the use of this system has also been criticized. In fact, in performing take home exam, there are students who spend their exam time just flipping through the pages of textbooks. They are trying to find parts of books or modules that can be used because they tend to less time preparing and less threatening level (Rowlands and Forsyth, 2006). The other thing that should be consider is the use of JOKI examination is unavoidable.

Examination for courses with a large number of students usually rely on a close book examination system and use a multiple choice form of test. This system is considered to encourage students to put more effort into mastering the substance of the lecture, but it make easier for lecturers or institution to correct. In a study conducted on second-level university students, it was found that when preparing for the 'closed book' system exams, students tended to use a deep learning approach (Heijne Penninga, Kuks, Hofman, and Cohen-Schotanus, 2010). Furthermore, when facing a close book examination, students examination performance especially in preparing examination were greater than open book (Durning, Dong, Ratcliffe, Schuwirth, et al, 2016). Students takes a longer time to prepare because they need to memories many things. However, the multiple-choice closed-book examination system has been criticized for not being able to provide an accurate indication of students' abilities. It is undeniable that some students may just study intensively before the exam, memorizing notes and concepts that are deemed necessary, and then forgetting it.

Another fact that is should be considered is students' score. In the closed-book examination system, students tend to find it difficult to get the maximum score, in contrast to the open-book examination system where it is easier for students to get the maximum score. Among researchers there are still disagreements about the relationship or influence of the exam system used with student learning outcomes. Brightwell, Daniel, and Stewart (2004) found that there was no significant difference between the students' mean scores of the open book and close book examination, it was depend on the constructed questions. However, Francis (1982) found that students who take an open book test achieve a higher grade than their peers who take a close book test. In addition, Krasne, Wimmers,

Relan and Drake (2006) state that final exam results using the book-opening system were higher than the book-close system).

Take home exam carried out the open book examination system is still not used widely in many institutions in the world, especially in Indonesia. In addition, the studies on the effect of this system on the students' score are still debated. The other questions that interesting to be answered through this research are students make adequate preparations in performing take home exam? Between take home and face to face exam, which one do students prefer and why? Do students think that it is easier for students to get better test scores on take home exam than on the face to face exam? After pandemic, should take home exam still be used or not (based on students' perception)?

2 METHODOLOGY

This research used an exploratory descriptive study, using a survey to explain students' perceptions about the final semester exam with take home exam system. The research survey method was carried out using a questionnaire consisted of 13 items to measure students' perception on take home examination and 17 items to test students' anxiety in performing take home examination and it used a 5 (five) Likert scale. 13 of the items used to test students' perception were adopted the questionnaire items from the research of Suciati (2016) under the research title of students perception and preference of open book exam in a graduate program. While 17 items to test the students' anxiety of take home exam were adopted from the Hamilton Anxiety Rating Scale (HAM-A) (Hamilton, 1959). It was conducted on large and small populations, but the data studied were data from samples taken from the population, so that the relative incidence, distribution and relationship between variables were found (Sugiyono; 2013).

The questionnaire has sent to 1710 students of Universitas Terbuka Makassar who have experienced both take home and face to face examination. Nevertheless, only 134 students who responds the questionnaire due to the accuracy of the contact number and the ability of students in using google form. All data collected are analyzed quantitatively and then described descriptively by describing, and explaining problems related to the object of research.

3 FINDINGS AND DISCUSSION

This study investigates the students' perception on take home examination. It can be one of considerations in deciding whether take home exam will still be used or will be left. The students'

perception studied based on several dimension namely students' understanding and literacies, students' preference, and students' anxiety on take home exam. The questionnaire used 1-5 Likert scale. Score 5 indicates a strongly agree response and 1 means a strongly disagree response.

3.1 Students' understanding and literacies on take home exam

Table 1. Students' understanding and literacies

Item	N	Minimum	Maximum	Mean	Std. Deviation
Take home exam is more suitable for education system at Universitas Terbuka compared to close book examination.	134	1	5	4.41	.758
Take home exam is more suitable to assess the students' learning outcome due to the thick modules of Universitas Terbuka	134	1	5	4.20	.940
The system used in Take home exam confused me	134	1	5	1.89	1.128
THE questions assess high taxonomy level such as analysis	134	1	5	4.31	.929
In performing THE, most of my time allocated to find the answer in the book	134	1	5	2.46	1.199
In performing THE, I copy a lot from books or notes rather than make analysis	134	1	5	2.57	1.126
I am not preparing myself seriously for THE exam because I can looking for the answer later in the book	134	1	5	2.13	1.160

There have been a rapid movement in education especially in higher education institutions post pandemic. Universitas Terbuka with a huge variety of students' background has to strive for this to ensure that students are achieve support to gain a skill for good academic practice especially skill in doing the assessment. Therefore, Universitas Terbuka held clinic assessment to all students, to ensure

all students can understand and have a good literacy on their assessment. It is important especially when the students are facing a new system of assessment (Koutselini, 1997).

The data pictured that Universitas Terbuka has embedded a good understanding and literacy of take home exam on their students. It can be seen from the data that the students doesn't feel confused in performing take home exam with mean score 1.89 (the item used a negative tone). Moreover, the students has known that take home exam assess high taxonomy level and limited time with mean score 4.31 and 3.50 respectively. The students need to be prepared to optimize their exam performance (Kruger, 2020). This good preparation affects the students' approach in answering the question in exam. During take home exam, students make analysis rather than copy a lot from book (mean score is 2.57 using negative tone). Furthermore, it keep students use their time efficiently rather than use most of their time to flip the book (mean score is 2.46 with negative tone). The item of the conformity of take home exam with education system and thick modules of Universitas Terbuka also support the positive perception of students on take home exam with mean score 4.41 and 4.20 respectively.

This good understanding and literacy of the assessment system may drive the students to change their learning style and make a better preparation before the examination (Suciati, 2016). It is in line with a study that was found that when preparing for the 'closed book' system exams, students tended to use a deep learning approach (Heijne Penninga, Kuks, Hofman, and Cohen-Schotanus, 2010). Furthermore, when facing a close book examination, students examination performance especially in preparing examination were greater than open book (Durning, Dong, Ratcliffe, Schuwirth, et al, 2016).

3.2 Students' preference

Table 2. Students' preference

Item	N	Minimum	Maximum	Mean	Std. Deviation
Take home exam is easier than face to face exam held in particular location.	134	1	5	4.37	.939
THE questions are easier than face to face questions	134	1	5	3.15	1.306

Time allowed (12 hours) for doing the exam is enough	134	1	5	3.50	1.291
I master more concept and have a good learning retention after performing THE	134	1	5	4.04	.888
I achieve better grade or score in THE system than in face to face exam system.	134	1	5	4.38	.793
I more enjoy with THE than face to face examination.	134	1	5	4.49	.753

According to the student response statistics presented in Table 2, the mean score of all the items indicate that students more prefer take home exam than face to face exam. The highest mean score is on the item of the convenience in performing take home exam than face to face examination (mean score 4.49). Doing an exam in home with sufficient time, read modules and notes, open other source from internet, consult other make students more relax and feel less tense (Akulwar-Tajane et al., 2021; Dave et al., 2020; Özdin & Bayrak Özdin, 2020). Another factor of students' preference is the students can achieve higher score in take home exam than in face to face exam. The comparative study of score achieved in take home exam and face to face in Universitas Terbuka has not done yet, but from the questionnaire, most of students agree that they achieve better grade in take home exam than in face to face exam with mean score 4.38. Students' positive views' on take home exam can increase students' performance (Senel & Senel, 2021). Moreover, after performing take home exam, students thinks to have a good retention and concept mastery with mean score 4.04. Take home exam using higher order thinking skill question type that need analysis rather than memorizing. A study stated that open book examination system which is used in take home exam can increase students' ability in handling large amount of information, higher taxonomical level and have a good effect on long-term retention (Kruger, 2018). Furthermore, in need of embedded deeper understanding on learning, the use of take home is an opportunity (Meeran and Davids, 2022).

3.3 Students' anxiety

Table 3. Students' anxiety

Item	N	Minimum	Maximum	Mean	Std. Deviation

My head is a bit heavy during take home exam	134	1	5	2.13	1.109
I felt a headache or migraine when I am doing take home exam	134	1	5	1.93	.983
I felt uneasy during take home exam	134	1	5	1.84	.951
My body feel stiff during take home exam	134	1	5	1.67	.856
My palms of my hands are sweating during take home exam	134	1	5	1.83	.922
I sweated profusely during take home exam	134	1	5	1.66	.796
My feet are sweating during take home exam	134	1	5	1.68	.889
My heart beat faster during take home exam	134	1	5	1.84	.916
I felt weak when during take home exam	134	1	5	1.70	.876
It is difficult for me to breath during take home exam	134	1	5	1.58	.807
I felt like about to defecate while taking take home exam	134	1	5	1.60	.785
I felt like about to urinate while doing take home exam	134	1	5	1.65	.825
I felt hasty while doing take home exam	134	1	5	1.90	.933
I am afraid that I will not be able to finish my exam on time	134	1	5	2.75	1.313
I am afraid that I will not able to answer the questions on take home exam	134	1	5	2.51	1.187
I am afraid that I unable to use the application page of take home exam.	134	1	5	2.08	1.124
I am afraid that my answer will not be uploaded in take home exam application page.	134	1	5	2.83	1.301

Examination anxiety refers to students' tendency to perceive to be evaluated in performance, such as

a difficult exam, fears of achieving negative judgment by others (e.g., teachers, peers or parents), or

of not being able to achieve their educational or score targeted (Putwain, 2008). In order to face this problem, a studied suggested that open book exam is set to reduce exam anxiety (Durning, Dong, Ratcliffe, Schuwirth, et al, 2016). Another studies also found that students tend to feel less anxiety in open book test than in close book exam (Block 2012; Gharib and Phillips 2013; Karagiannopoulou and Milienos 2013). The result of this study also indicates that take home exam carried out open book system can reduce students' anxiety.

As a new system of final examination in Universitas Terbuka, take home exam surprisingly can make students' feel less anxiety. It can be seen from the mean score of all items which is varied between 1.58 and 2.83 with the range of strongly disagree to strongly agree. Based on the data of anxiety test, it is found that during the exam, students doesn't feel anxious. It may be caused by some factors. The students don't need to memorize many thing, they just need to understand the concept. Take home exam using open book system has several advantages, including preventing students from simply memorizing and getting closer to reality in the world of work (van Der Fleuten, Lambert and Schuwirth, 2005; Steinberg, 2008). This system is considered to free students from test anxiety in exams (Broyles and Korsen, 2005). In addition, take home exam system enable them to open book or other resources (Suciati, 2016). Furthermore, doing the test wherever they want, there is no teacher who supervised the exam (the text environment) also reduce the students' fear.

The data also reveal that the high fear of students is about the fear of failed to upload the answer. The mean score for this item is 2.83 with 1.301 std. deviation. It indicates that students has understand the system. It could be one reason why the students do not feel anxious during the exam.

4 CONCLUSSION

Take home exam has been applied during the pandemic by Universitas Terbuka. Now, in post pandemic era, especially for undergraduate program, the proportion of subject that is assessed using this system is decreased and there is a tendency to back again to face to face exam. Moreover, the shift of the assessment system is not easy. However, this article provides insight from students' view that Universitas Terbuka has done a great effort to struggle in pandemic era to ensure that all students understand about the way they are assessed. This study also indicate that in general, students have a positive perception of take home exam. This assessment system is claimed to suit with Universitas Terbuka education system which has a thick modules, has easier questions than in face to face exam, could promotes deep learning and higher retention and less anxiety. Due to the students' positive

views, this system has a good potential to be consider as the assessment system applied in Universitas Terbuka. However, there are many unobserved aspectss that could support this finding such as the learning process, the construction process of questions, the use anti-cheating system, and the scoring system. These aspects could be an interesting topic to be studied further.

ACKNOWLEDGEMENTS

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THE IMPLEMENTATION OF CONTINUING EDUCATION PROGRAM IN OPEN AND DISTANCE EDUCATION LEARNING

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Abstract

Universitas Terbuka (UT) is a university that implements open and distance learning (ODL) that reaches students from all over Indonesia and abroad. As a university that has an extraordinary mandate from the government to provide affordable higher education for all Indonesians, UT organizes various educational programs, including continuing education program. Continuing education program is a non-degree program offered to a wider community who want to improve their professional skills. It is developed in accordance with the real needs of national development. To improve UT's continuing education program, it is necessary to evaluate the program. This study aims to analyse the characteristics and processes of managing the continuing education program at UT and to evaluate the certificate program at UT. This study was designed as mixed methods research that combines quantitative and qualitative data to draw conclusions. A quantitative survey was conducted on participants and graduates, lecturers, and staff at regional offices. Meanwhile, interviews were conducted with several officials related to the continuing education program. The quantitative survey succeeded in obtaining data from 131 participants with questions divided into motivation to participate in the program, application of information technology systems, public relations models, interaction, learning achievement, and evaluation. In addition, a survey was also conducted on continuing education program organizers and lecturers with questions covering the application of information technology systems, resources, public relations models, interaction, learning achievement, and evaluation. One important result of this study showed that motivation of participants in participating this program are because they feel this program is important, there is internal encouragement, and they believe that this program is useful and are committed to showing the best performance. Other results also showed that in general, the participants felt satisfied with the program. In terms of program implementation, several improvements are needed including policies, information technology, public relations, resources, follow-up, evaluation and satisfaction. As for lecturers, they need to be involved in policy formulation so they can play a role and give positive input in the development and implementation of the programs.

Keywords: continuing education program, distance education, mixed method, program evaluation.

1   INTRODUCTION

The dynamics of national development demands human resources who have the ability to carry out their duties and functions properly. Every organization needs good quality of human resources and it can be fulfilled through education or trainings. To facilitate those needs, UT is developing a Certificate Program called Continuing Education Program or Program Pendidikan Berkelanjutan (PPB). Continuing Education Program is designed in a modul program which consists of several teaching materials. Continuing Education Program provided by UT are as follows: Village Government Leadership (Program Kepemimpinan Pemerintahan Desa/PKPD), Village Government administration Program (Program Penyelenggaraan Pemerintahan Desa/P3D), and Early childhood educators Certificate Program (Program Sertifikat Guru Pendamping Muda PAUD atau PS-GPM PAUD).

Village Government Leadership or PKPD and Government administration Program or P3D is designed for the village staff administration. By conducting workshop or guided trainings, this program provides some village administration staffs to have the ability in managing village government professionally. Young Assistant Teacher Certificate Program or PS-GPM PAUD is designed for young teachers at kindergarten (Pendidikan Anak Usia Dini) who does not have educational background in Education for Early Childhood, but they are needed by the school and community in their surroundings.

By the year 2020-2021, this Continuing Education Program has been reconstructed in order to accommodate the government policy which focuses on the enhancement of good quality of human resources so that UT needs to manage the Continuing Education Program. Some points to be managed are analyzing the community needs, curriculum adjustment, improving the modul of Continuing Education Program, and the operational guidelines. The curriculum of Continuing Education Program has been developed based on the needs analysis for developing and improving the human resources in formal education and nonformal education, and also in managing the village government.

This article will analyze the characteristics and the process of managing the certificate program at UT and to evaluate the certificate program at UT. The article will focus on motivation to join the program, application of information technology systems, public relations models, interaction, learning achievement, and evaluation from the participants, staff of UT's branch offices and lecturers.

2   METHODOLOGY

The design of this research is mix method (qualitative and quantitative). The purpose of the research is to know the characteristics and the process of Continuing Education Program in UT. The quantitative survey developed towards the participants, graduated students, and the lecturers and staff in regional office. The questionnaires are given to 137 participants: 7 staff of UT's branch offices and 8 lecturers. Meanwhile, the researcher has done some interview about continuing education program with the leader of the university.

3   FINDINGS AND DISCUSSION

Here are the results of questionnaire analysis from the participants, UT's branch offices Staffs, and Lecturers

3.1 Participants

Part 1: Participants' demographic data

Table 1. Ages of Respondents (n=134).

	Ages	Total
1	Below 20 years old	3
2	20 – 30 years old	49
3	31 – 40 years old	50

Table 2. Gender (n=134).

	Ages	Total
1	Male	12
2	Female	122

Table 3. The Purpose of Respondents follow a certificate program.

	Purpose	Amount
1	To get a certificate	5
2	To develop knowledge and professional skills	107
3	To transfer into Undergraduate Program or Diploma diploma	19

Table 4. questionnaire analysis from the participants (n=134).

	Question	Mean	Standar Deviation	Description
1	**Information Technology System**			
	The Information technology systems is effectively responsive to the operation of the non-degree program management	3.92	0.90	High
2	**Non-degree Program Public Relations**			
	Public relations model of non-degree program can reach the target audience comprehensively and thoroughly.	3.95	0.97	High
3	**Application of media and technology**			
	The application of media and technology is diverse and responds to the needs of learners.	4.10	0.86	High
4	**Teaching and learning management**			

	Teaching and learning management promote proper learners-teachers and learner-learner interaction.	4.18	0.80	High
5	**Follow-up evaluation**			
	Follow-up evaluations of learners are carried out both during and at the end of the program.	4.11	0.87	High
6	**Student learning support services**			
	The counseling and learning support services are provided to students throughout the non-degree program.	4.14	0.84	High
7	**The number of graduated students / students' learning achievement**			
	Students' learning achievement is in line with the objectives of the non-degree program.	4.11	0.81	High
8	**Satisfaction towards non-degree program management**			
	The satisfaction towards the non-degree program management	4.30	0.75	High
9	**Benefits of learners**			
	Learners gained knowledge, skills and experience according to the set goals.	4.31	0.75	High
	Learners can apply their knowledge, skills, and experience in practice.	4.30	0.74	High

Based on the purpose of the respondents who join the certificate program, there are 81.7% respondent express that the aim of joining the program is developing their knowledge and skills. It implies to the design of continuing education program that should be matched with society needs, especially programs that will support professional skills.

The result of the survey of managing the certificate program showed **High** answers. The questionnaire items are about (1) Information Technology usage; (2) public relation program; (3) teaching-learning program; (4) evaluation; (5) counseling services, and (6) the implementation of skills of the community.

In Information Technology usage, the respondents evaluate that the IT usage in the certificate program is good and being used by the participants effectively and responsively in accordance with

the participants needs. In public relations aspect, it is evaluated as good and can reach all communities comprehensively. It fits the spread areas of the UT's services in Indonesia and overseas. The teaching-learning process aspect also get a good evaluation especially in supporting the interaction between the participants, learning achievement based on the aims of the program, getting some knowledge, skills, and experience are fits to the purpose of the certificate program.

In this certificate program, survey gets deepen by asking the respondents about the teaching-learning process related with the certificate program. The survey is divided into eight questions; (1) participants' motivation; (2) *perceived learning;* (3) academic performance; (4) interaction between the participants; (5) interactions between participants and lecturers; (6) participants' involvements; (7) learning structure (8) satisfaction.

The result of the survey showed that the participants' motivation in joining the certificate program because it is very important, mostly comes from their internal motivation, and they are confident that the program will be beneficial so that they have commitment to show their best performance. In each item of the questionnaire, the answer of the respondent is High, it means that the motivation of the participants are high. Another variable is *perceived learning.* Caspi dan Blau (2008) define *perceived learning* as a set of beliefs and feelings that a person has about learning that occur. Therefore, the teaching learning process being experienced is retrospective evaluation from learning experience. *Perceived learning* showed that how students express their feelings about the learning process that has been done. When they experience some interesting and enjoyable experience in learning, ~~so~~ they will be more motivated through online learning. It is different with the learning process in the classroom, online learning urges the students to have high motivation in finishing one subject learning. Since the students and the tutor are in different area, so the *engagement* being made in every person will support the positive perception of learning.

In perceived learning, all respondents gave a high score in each item. It is showed that during the learning process of certificate program, all participants feel a positive experience that helps them to understand the teaching-learning materials so that they also improve their communication skills and other issues related to practice and theory. It is also related to the academic performance of participants which show good level. Most of the participants express their agreements to each item of questionnaire. It is also showed at interaction variable and the *engagement* that showed a positive evaluation.

3.2 Staff of UT's branch offices

Beside the participants of continuing education program, the survey is also given to the staff of UT's branch offices to get some opinions about the managements of certificate program. The questions are about the policy of management of certificate program, Information Technology, human resources, implementation of certificate program, evaluation, satisfaction, and follow-up. The respondents evaluate that the policy of certificate program is clear and can be implemented.

Table 5. Total Respondent of staff UPBJJ.

	UPBJJ	Total
1	Jember	1
2	Bandung	2
3	Makassar	1
4	Denpasar	3
	Total	7

Table 6. Result (n=134).

	Question	Mean	Standard Deviation	Description
1	**Institution policies**			
	The clarity of the non-degree program management policies	3.71	0.45	High
	The ability to implement the policies	3.71	0.45	High
	The participation of related staff in policy formulation	3.86	0.64	High
2	**Organization establishment**			
	The appropriateness of organization establishment to be responsible for the non-degree program	3.71	0.45	High
	The appropriateness of job specifications and responsibilities assigned	3.86	0.35	High
3	**Information Technology System**			

	The Information technology systems is effectively responsive to the operation of the non-degree program management	*3.71*	*0.45*	*High*
4	**Infrastructure /Resource System**			
	The technological infrastructure is effectively responsive to the operation of the non-degree program management such as learning platforms, the Internet, etc.	*3.86*	*0.35*	*High*
	The effective non-degree program management resources such as budget, materials, etc. are effective.	*3.86*	*0.64*	*High*
5	**Need Analysis of the target group**			
	The coverage of the needs analysis of the target group	*4.14*	*0.35*	*High*
6	**Design of the non-degree programs**			
	The appropriateness of approaches used in designing the non-degree program	*4.14*	*0.64*	*High*
7	**Non-degree Program Public Relations**			
	Public relations model of Non-degree program can reach the target audience comprehensively and thoroughly.	*4.00*	*0.75*	*High*
7	**Application of media and technology**			
	The application of media and technology is diverse and	*4.00*	*0.53*	*High*

	responds to the needs of learners.			
8	***Teaching and learning management***			
	Teaching and learning management has achieved the objectives of the non-degree program.	*4.28*	*0.45*	*High*
	Teaching and learning management promote proper learners-teachers and learner-learner interaction.	*4.43*	*0.50*	*High*
9	***Follow-up evaluation***			
	Follow-up evaluations of non-degree programs are continuingly and appropriately conducted on a regular basis.	*4.14*	*0.64*	*High*
	Follow-up evaluations of learners are carried out both during and at the end of the program.	*4.28*	*0.70*	*High*
10	***Student assistance services***			
	The counseling and learning support services are provided to students throughout the non-degree program.	*4.28*	*0.45*	*High*
11	***Satisfaction towards non-degree program management***			
	The satisfaction towards the non-degree program management	*4.14*	*0.64*	*High*
12	***The application of the non-degree program management assessment results for further improvement***			

	Assessment results are used in the non-degree program management.	4.14	0.64	High

Lecturers

1) The Total of Respondents (Lecturers)

Table 7. Total Respondent of Lecture.

	Lecturers	Total
1	Program Sertifikat Guru Pendamping Muda Pendidikan Anak Usia Dini (PS-GPM PAUD)	4
2	Program Administrasi Pemerintahan Desa (APD)/ Paket Kepemimpinan Desa	3
3	Pengelolaan Keuangan Daerah/desa	1
	Total	**8**

Table 8. Result (n=134).

	Question	Mean	Standard Deviation	Description
1	**Institutional Policies**			
	The clarity of the non-degree program management policies	3.62	0.70	High
	The ability to implement the policies	3.87	0.60	High
	The participation of related lecturers in policy formulation	3.62	0.48	High
2	**Organization establishment**			
	The appropriateness of organization establishment to be responsible for the non-degree program	4.25	0.66	High
	The appropriateness of job specifications and responsibilities assigned	4.12	0.60	High
	The adequacy of the responsible person	3.12	1.27	High

	The suitability of the responsible person	*3.87*	*0.60*	*High*
3	***Information Technology System***			
	The Information technology systems is effectively responsive to the operation of the non-degree program management	*4.00*	*0.50*	*High*
4	***Infrastructure /Resource System***			
	The technological infrastructure is effectively responsive to the operation of the non-degree program management such as learning platforms, the Internet,	*3.87*	*1.05*	*High*
	The non-degree program management resources such as budget, materials, etc. are effective.	*3.87*	*0.60*	*High*
5	***Need Analysis of the target group***			
	The coverage of the needs analysis of the target group	*3.75*	*0.66*	*High*
6	***Design of the non-degree programs***			
	The appropriateness of approaches used in designing the non-degree program	*3.87*	*0.60*	*High*
7	***Non-degree Program Public Relations***			
	Public relations model of non-degree program can reach the target audience comprehensively and thoroughly.	*4.00*	*0.70*	*High*
8	***Application of media and technology***			
	The application of media and technology is diverse and	*4.12*	*0.60*	*High*

	responds to the needs of learners.			
9	***Teaching and learning management***			
	Teaching and learning management have achieved the objectives of the non-degree program.	*4.25*	*0.66*	*High*
	Teaching and learning management promote proper learners-teachers and learner-learner interaction.	*4.00*	*0.50*	*High*
10	***Follow-up evaluation***			
	Follow-up evaluations of non-degree programs are continuingly and appropriately conducted on a regular basis.	*3.75*	*0.66*	*High*
	Follow-up evaluations of learners are carried out both during and at the end of the program.	*3.87*	*0.60*	*High*
11	***Student learning support services***			
	The counseling and learning support services are provided to students throughout the non-degree program.	*4.12*	*0.60*	*High*
12	***The number of graduated students / Students' learning achievement***			
	The number of graduated students meets the target.	*4.00*	*1.00*	*High*
13	***Satisfaction towards non-degree program management***			
	The satisfaction towards the non-degree program management	*4.00*	*0.71*	*High*
14	***The application of the non-degree program management assessment results for further improvement***			

Assessment results are used in the non-degree program management.	*4.00*	*0.50*	*High*

The survey of managing certificate program has been done by some lecturers who are responsible for developing the certificate program, those are preparing the curriculum and teaching materials. Minimum number of lecturers as respondents is caused by the difficulties in tracing the lecturers who developed the certificate program in the previous years. However, the answers from the respondents (Lecturers) can be considered as evaluation materials. The questionnaire for the respondents is about the management policy of certificate program, information technology, human resources, implementation of certificate program, evaluation, satisfaction, and follow-up.

Based on the answers and the result of the questionnaire, there are some lecturers who still disagree with the clarity of the policy. It means that certificate program is still not clear enough for the lecturer who developed the program. For the question about the participation of the lecturers in arranging the policy, some lecturers answered "netral". It means that the lecturers are not asked to arrange the policy besides the assignments of developing curriculum and teaching materials needed.

Beside the assignment of developing curriculum and teaching materials needed, the improvement is needed to be done. The lecturers should be involved in arranging the operation of certificate such as developing teaching materials, learning process, and the implementation at staff of UT's branch offices. In general, needs involvement of lecturers in arranging the policy so that they are not only end their activities in developing curriculum and teaching materials, but also need to do some evaluation about the implementation of the program.

4   CONCLUSION

Continuing education program that has been held by UT requires continuous improvement. As a program that supports community professional skills, this program must be developed according to community needs. This is in accordance with one of the results of this study showing that the majority of respondents stated that their goal in joining the continuing education program were to develop professional knowledge and skills. In addition, other results from this study indicate that according to staff at branch offices, continuing education programs have clarity so that they are easy to implement it. From the lecturer's perspective, there are very meaningful inputs, that lecturers should

continue to be involved in program implementation so that they can evaluate for improvements in the future. Currently, lecturers are only in charge of developing curriculum and teaching materials, and their activities are completed when the program is implemented. Lastly, the result also show that respondents mark all aspects in continuing education program as high or good aspects.

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LEARNING MEDIA OF CUBE NETS USING AR AUGMENTED REALITY (AR)

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Abstract

This study aims to produce a learning model with AR assistance on Spatial Geometry material. In this study, it focused on the topic of the nets of the cube space, where the topic of the nets of the cube space is considered difficult for students because students must imagine how a space builds when opened. With the help of AR, the cube net material is expected to look more attractive in the learning process because in AR the visual display is more dominant so that students are expected to be more interested and motivated to learn mathematics material, especially the problem of the nets of the cube space. The methodology in this study is the Luther method, which is a multimedia development method consisting of 6 stages, namely Concept, Design, Material Collecting, Assembly, Testing, and Distribution.

Key word: AR, Cube nets, Mathematics Learning in schools

1   INTRODUCTION

Human nature always wants to develop according to the dynamics of life. The development of society and science demands that the world of education must also adapt to complex changes. The education system seeks to produce humans who are in accordance with the times to build society in various fields of life. Education is seen as the main aspect which means placing humans as a central position in development. The success of education is a very important issue as an effort to determine the level of progress of a nation. To develop human resources, one of the universities that manages distance education is the Open University (UT) which has played a significant role in increasing opportunities and equity in obtaining education, especially higher education that implements the distance education system. The Distance Learning System (SBJJ) implemented by UT requires students to study independently. In independent learning, students are required to have their own initiative or initiative in studying teaching materials, doing assignments, strengthening skills, and applying their learning experiences in the field or work. Independent learning in many ways is determined by the student's ability to manage time and study effectively. Thus, students must have self-discipline, initiative, and strong motivation to learn. Independent learning can be done individually or in groups by using printed or non-printed teaching materials as learning resources. Helbert (1985) learning is a process that produces relatively permanent changes in knowledge, skills/behaviours on a practical basis. Likewise, according to Sudjana (1991), learning is a change in behaviour. Changes that are realized and arise because of practice, experience, practice, and the moon by chance. The formation of behaviour because of learning has three main characteristics, namely: 1). The behaviour is in the

form of actual and potential abilities, 2) the ability is valid for a relatively long time, 3) new abilities are obtained through effort. Meanwhile, Anderson and Krathwohl (2001) explain three important elements in learning, namely being active, having cognitive elements and constructive processes. In this case, the individual who learns is assumed to be active in carrying out learning activities, being selective about the information received and forming an understanding of the information. The process that occurs emphasizes how to involve the cognitive aspects of what can be known and the ability to give meaning to what is learned.

Understanding mathematical concepts is an important foundation for thinking and solving mathematical problems in everyday life. Understanding mathematical concepts that have been owned by students cannot only be communicated through definitions, but students must practice a lot of working on examples of questions that are relevant to what is in their minds. Therefore, the role and function of mathematics needs to be emphasized to students to have: 1) the ability related to mathematics can be used in solving math problems, other subjects, or problems in real life, 2) the ability to use mathematics as a tool for communication, and 3) the ability to use mathematics as a way of reasoning that can be transferred to use in every situation, such as critical thinking, logical thinking, systematic thinking, objective, honest, disciplined in viewing and solving a problem. According to Soedjadi (2000) mathematics has the following characteristics: (1) it has an abstract object of study, (2). based on agreement, (3) deductive mindset, 4). has a symbol that is empty of meaning, (5). pay attention to the universe of speech, and (6). consistent in the system. Mathematics as a vehicle for education can not only be used to achieve one goal, for example educating students, but can also shape the personality of students and develop certain skills and lead to the learning of values in life through mathematics.

Mathematics is given since elementary school (SD) to equip students with the ability to think logically, analytically, systematically, critically, and creatively, as well as the ability to work together. One of the materials in learning Mathematics is geometry with the subject of cubes, namely making cube nets. To help students understand the material for cube nets, the teacher should prepare props. The props are expected to make it easier to visualize the nets of a cube. Therefore, AR media is needed to help students learn cube nets. In this study, using augmented reality technology as a teaching aid in studying cube nets.

Building space or also known as geometry is a three-dimensional shape that has space and is limited by sides. Building space is a characteristic of concrete objects that we often encounter every day. Rapid technological advances in the world of information technology and computers also affect the world of education, which offers various conveniences and innovations. Augmented Reality or often abbreviated as AR is a technology that can combine real and virtual conditions at one time which is displayed in real time. With AR technology, it is expected to provide innovation and new learning experiences in recognizing and studying spatial structures, so that it can attract the interest of students who are studying it.

The development of information technology is now increasingly advanced. Almost all fields related to human activities have used easier, more effective, and efficient ways by using technology. And one form of technological development is Augmented Reality (AR). Augmented Reality is a technology that aims to combine digital content created by computers with the real world in real-time. With Augmented Reality, users can see a two-dimensional or three-dimensional virtual object that is projected onto the real world with the help of tools such as computers, Android phones or specially designed glasses.

One way to increase students' attention span and make subject matter easier to understand is to utilize Augmented Reality (AR) in the form of an Android application. AR can effectively summarize material that is not easily explained in writing or in two-dimensional or three-dimensional images, for example geometry material in the subject of Mathematics which requires a strong imagination of students to visualize. AR can help and accelerate students' understanding in the learning process.

Augmented Reality (AR) can bring virtual objects that exist in an artificial environment into the real world. The use of Augmented Reality (AR) as a learning medium is expected to improve student learning outcomes. Some research and development of Augmented Reality (AR) in education has also been carried out and shows positive results that AR technology can be applied in education, especially as a learning medium.

2   METHODOLOGY

The methodology in this study is the Luther method, which is a multimedia development method consisting of 6 stages, namely Concept, Design, Material Collecting, Assembly, Testing, and Distribution. The flow of this method is illustrated in Figure 1 below.
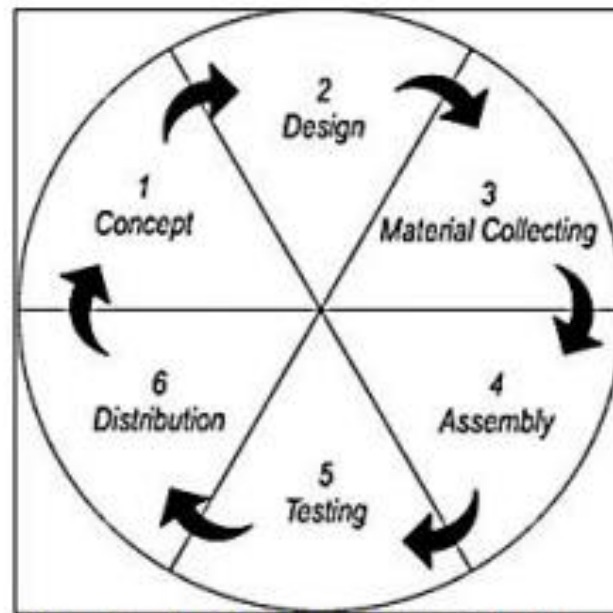
Figure 1. Luther method concept

The stages of the Luther Method which is a multimedia software development consisting of several stages, including: 1. Concept is the stage to determine the goals and who the program users are. And determine the type of application (eg: presentation, interactive, etc.) and the purpose of the application (eg: entertainment, training, learning, etc.). 2. Design is the stage of making specifications about the program architecture, style, appearance, and material requirements / materials to make the program. 3. Material Collecting is the stage of collecting materials in accordance with the needs to be carried out. This stage can be done in parallel with the assembly stage. 4. Assembly is the stage where all multimedia objects or materials are created. Application development is based on the design stage. 5. Testing is carried out after completion of the assembly stage by running the application/program and seeing whether there are errors or not. This stage is also known as the alpha testing stage (alpha test) where testing is carried out by the maker or the maker's own environment. 6. Distribution is the stage where the application is stored in a storage medium. At this stage, if the storage media is not sufficient to accommodate the application, then compression is carried out on the application. The following framework is a series of charts that describe the flow of the research process in making the implementation of augmented reality learning media for modeling three-dimensional shapes. Data collection techniques used are questionnaires and document studies. Questionnaires are used to get suggestions and input as well as assessments from media experts,

material experts and students. Meanwhile, the document study is to collect data related to space geometry material about cube nets.

3   FINDINGS AND DISCUSSION
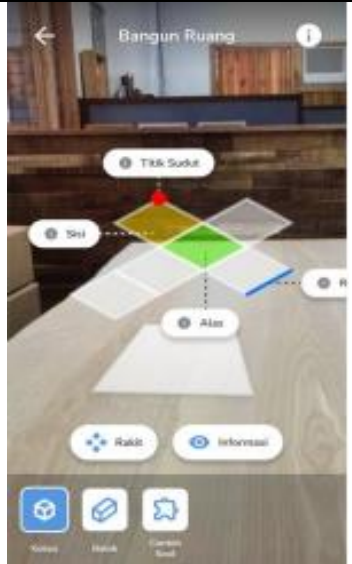
In the development of this augmented reality mobile application, a computer with an Intel(R) Core(TM) i7 CPU specification of 2.20 GHz and 4 GB of RAM is used. The software used is Unity to develop applications with augmented reality technology for the design of cube nets 3D objects.

At the concept stage / conceptualization is the stage to determine the concept, goals, and target users as well as matters related to the concept. In the concept stage, the details of the activities determine the type of application and the application design concept. At the Design stage with details of the activities of compiling application storyboards, application interface designs and 3D object designs. And at the Material Collecting stage with details of literature study, text collection, 3D objects creation and other components.

Table 1. The display of interactive cube nets

No.	Part	Picture
1	Opening	

No.	Part	Picture
2	Main Content 1	
3	Main Content 2	
4	Main Content 3	

No.	Part	Picture
5	Main Content 4	
6	Main Content 5	

The result of this research is an interactive cube nets augmented reality application that runs on a smartphone platform with a minimal Android operating system. This application utilizes the camera on the user's smartphone to capture markers that have been previously printed and use the marker location information to add 3D objects (cube images according to the type of marker) into the application and animate them in real-time. The display looks like the following Table 1.

4 CONCLUSION

The focus of media development activities in this study is the type of application using 3D Augmented Reality, Flatporm with Smartphone, Android OS, with the model using a target marker. Mathematics is one of the subjects that must be mastered by students from an early age. One of the learning materials in mathematics is cube nets. At the time of studying it students have difficulty in imagining so that it is difficult to determine the nets of the cube. With this augmented reality application, students can independently find all possible cube nets that can be formed.

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THE CONCISE LATEST REPORT ON THE USE OF MOBILE LEARNING TO SUSTAIN OPEN AND DISTANCE EDUCATION: LITERATURE REVIEW AND BIBLIOMETRIC ANALYSIS

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Abstract

Currently, numerous universities use an open and distance education system. In various countries especially in the Asian continent, there are many universities using mobile learning as learning aid media in learning process, Universitas Terbuka is one of them. However, the Speedtest Global Index reports that the speed of Indonesia's mobile internet network is 21.35 mbps in July 2021, compares to other countries in Southeast Asia, Indonesia's mobile internet speed is the slowest. Therefore, a bibliometric analysis was carried out to evaluate whether the application of mobile learning in the higher and distance education system in Indonesia was appropriate. As a recommendation, the results of this analysis provide further guidance and provide new arguments for the application of mobile learning in Indonesia.

Keywords: bibliometric analysis, open and distance education, mobile learning

1   INTRODUCTION

The COVID-19 pandemic has led to increased online learning at all levels of education, from kindergarten to higher education. Indeed, in the last 2 decades several universities have offered online education, but distance learning methods have become an absolute must, especially when face-to-face learning is discontinued for the common good. Distance learning, also known by various names such as distance education, e-learning, mobile learning, or online learning, is a form of education in which there is a physical separation between teachers and students during the teaching and learning process (Simonson, 2016). Distance learning is also an instructional practice that effectively utilizes various tools and technologies to enrich the student learning experience (Klein, 2016) and to facilitate student-faculty (especially with lecturers) and student-student communication (Simonson, 2016). The minimum technology requirements for distance learning are a computer, mobile device (cell phone), or webcam, some form of listening device, a video conferencing application such as WebEx or Zoom, a Microsoft Windows or Apple operating system, and a stable internet connection with a speed of approximately 56K (56,000) or more (Al-Tamimi, 2003).

Data on the number of universities/comparisons/increases in the number of distance learning methods. Advantages and disadvantages of distance learning methods. Compare with universities in Indonesia. Universitas Terbuka?

Keegan (1980); Perry and Rumble (1987) were the initial researches of the concept of distance education (distance education, distance learning) with the main characteristics: a) the separation of lecturers and students during the teaching and learning process; b) use of educational media (print, audio, video and computer); c) the important role of educational organizations in planning, preparation of study materials and student services; d) the availability of two-way communication; and e) individualization of the learning process (self-study). In Indonesia, the Universitas Terbuka (UT) is a state university that provides education through an open and long-distance system through various media, such as print media (modules) and non-printed (audio/video, computer/internet, radio broadcasts, and television).

It can be concluded that the learning system at UT does rely on technology. The materials, discussions, and assignments are carried out through Online Tutorials (Tuton).

2 METHODOLOGY

In order to develop the bibliometric analysis, we counted on three sources of information: (1) international research journals, (2) internet search engines with keywords related to mobile learning in higher and distance education, and (3) the knowledge of the authors about the analyzed areas.

This section consists of three parts. The first provides an overview of the adoption and implementation of mobile learning, then it followed by a critical and analysis of existing mobile learning models and frameworks, and lastly, a framework for higher and distance education system in Indonesia informed by critical findings is delivered.

The results of the synthesis of studies related to mobile learning in universities are presented in Table 1.

Table 1. Summary of Mobile Learning Research Developments from 2005 - 2022

No	Researchers	Subject/Population/ Sample	Research Variables	Method
1	Lee and Chan (2005)	First year undergraduate students of information technology.	The affective and cognitive benefits of mobile learning and podcasting.	Action research case study in two cycles.
2	Menkhoff and Bengtsson (2011)	Undergraduate students of entrepreneurship and business networks.	Pedagogical experiences with using mobile phones, wikis, and other mobile learning approaches.	Evaluative-exploratory case study

No	Researchers	Subject/Population/ Sample	Research Variables	Method
3	Fuegen (2012)	Research results/articles related to the use and impact of mobile devices and mobile technologies on distance education.	Impact of mobile technologies on distance education.	Study of literature
4	Ally and Prieto-Blazquez	Research results/articles related to the use and impact of mobile learning in higher education.	Impact of mobile learning applications in higher education.	Study of literature
5	Ranieri and Pachler (2014)	Workshops of mobile learning in adult education conducted in Italy and Britain.	The potential of mobile learning in adult education with a particular focus on identity formation and self-representation.	A case study approach
6	Bray and Tangney	54 students in three secondary schools	The impact of a transformative, mobile technology-mediated approach, RME, and a particular model of 21st century learning facilitates the development of mathematics learning activities to increase student engagement and confidence	Explanatory case study with multiple embedded units and a pre-experimental design
7	Borba, et al (2016)	Five sub-areas of research, important trends of development, and illustrating them using case studies: mobile technologies, massive open online courses (MOOCs), digital libraries and designing learning objects, collaborative learning using digital technology, and teacher training using blended learning.	Identifying recent advances in research on digital technology in the field of mathematics education	Literature survey

No	Researchers	Subject/Population/ Sample	Research Variables	Method
8	Oyelere, Suhonen, Wajiga, and Sutinen (2017)	142 third-year undergraduate students in a Nigerian university	The application of the design science research approach in the course of developing a mobile learning application, MobileEdu, for computing education in the Nigerian higher education context	Experimental method
9	Sarrab, Al-Shihi, Al-Manthari, and Bourdoucen (2018)	The results of applying the proposed set of educational requirements on three different M-learning systems. Instructional designers and educational software developers may find the requirements useful in the development of M-learning systems.	Standards for learning and mobile application software quality and guidelines.	Literature study
10	Grant (2019)	Research results/related articles.	The principles of mobile learning; definition, design, and implications for future research and instructional design.	Literature study
11	Alasmari and Zhang (2019)	The Saudi higher education students enrolled in all of the twenty-eight public universities in Saudi Arabia	Learning Expectancy (LE), Effort Expectancy (EE), Social Influence (SI), and characteristics of mobile learning	Mixed-method research
12	Pinto, et al (2019)	Research results/related articles.	(a) identify the most relevant journals that publish literature in this feld, (b) calculate the authors' average productivity and identify the most productive authors, and (c) discover the most significant trends in this academic feld, through statistical	Bibliometric analysis

No	Researchers	Subject/Population/ Sample	Research Variables	Method
			and co- occurrence word analyzes of the titles and the keywords used to index papers	
13	Bai (2019)	Scholarly peer-reviewed journal articles that were published between 2010 and 2017	(1) original research was reported; (2) data-based research in which data collection and analysis were described; (3) positive learning outcomes were reported; (4) mobile technology was used by students for learning; (5) mobile devices were limited to iPads, iPods, PDAs, tablets and mobile phones; (6) studies were conducted in K-12 and higher education settings	Literature study
14	Hall and Connolly (2019)	Papers that highlight key features of infrastructure in relation to mobile learning within teacher education and related areas (2014-2019).	Infrastructure in relation to mobile learning within teacher education and related areas	Literature study
15	Li, Zhao, Herencsar, and Srivastava (2021)	Teachers and students of sebior high schools in Shanghai	The main body and scope of collaboration, constructs a man-machine collaborative resource sharing model with large scale man-machine cooperation as the main model	Experimental research
16	Gounder and Kumar (2021)	103 papers retrieved from six different databases	The use of mobile learning applications in higher education institutes to; i) identify publication trends, ii) types of mobile learning applications used, and	A systematic mapping study

No	Researchers	Subject/Population/ Sample	Research Variables	Method
			iii) categorize the research papers published	
17	Okai-Ugbaje, Ardzejewka, and Imran (2022)	Studies conducted over four years (2018-2022), including the outcome of two empirical studies conducted in a Nigerian university	Mobile learning framework that considers the sociocultural and socio-economic contexts of low-income economies	Literature study

3 FINDINGS AND DISCUSSION

The text included in the sections or subsections must begin one line after the section or subsection title. Do not use hard tabs and limit the use of hard returns to one return at the end of a paragraph. Use as many sections/subsections as you need.

4 CONCLUSION

The conclusion needs to be concise and coherent.

ACKNOWLEDGEMENTS

Optional statement to thank other contributors, assistance, or financial support.

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ONLINE THESIS MENTORING IN UNIVERSITAS TERBUKA POSTGRADUATE PROGRAM

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Abstract

Universitas Terbuka is a university that implements a distance learning system. The term distance means that learning is not carried out face-to-face, including mentoring students in writing a thesis. One of the modes of thesis mentoring is online. The purpose of this study is to analyze online mentoring that has been carried out by supervisors and students in the Universitas Terbuka postgraduate program. This study uses a survey method that has successfully recruited 117 students and 106 supervisors from all regions in Indonesia. The results of this study indicate that 1) the most effective media in the mentoring process are Video Conference Applications (Zoom Meeting, Google Meet, Microsoft Teams, etc.) and Chat Applications (WhatsApp, Telegram, Line, etc.); 2) the most effective media for sharing files are email and chat applications (WhatsApp, Telegram, Line, etc.); 3) The most effective file format for the mentoring process is Word; 4) the most effective media for providing notes for improvement is a Word file with Comment facilities on Word and Video Conference Applications (Zoom Meeting, Google Meet, Microsoft Teams, etc.; 5) and 38% of students and 30% of supervisors think that online mentoring has not optimal.

Keywords: distance learning system, mentoring media, mentoring apps, postgraduate students

1 INTRODUCTION

Universitas Terbuka (UT) is a university that implements a distance learning system. This means that learning is not done face-to-face, but uses media, both print media (modules) and non-prints (audio/video, computer/internet, radio broadcasts, and television) (UT, 2021). The distance learning system is also applied in the UT Postgraduate. Student mentoring in thesis writing is carried out with a remote system. One of the modes of thesis mentoring is online.

The COVID-19 pandemic has forced all supervisors and students to choose an online mentoring mode. This is also the case throughout the college. Online learning opens up new solutions in the education world through the innovation of technology (Pratama et al, 2020). Various obstacles will arise due to changes in learning patterns from face-to-face to online (online) (Mahrus et al., 2021).

The online mentoring model that has been carried out so far is handed over to every supervisor and student. Mentoring is a power-free partnership between two individuals who desire to achieve mutual growth, where one of them usually has greater skills, experience, and wisdom (Weinstein, 1998). E-mentoring is conducted through computer-mediated communication tools such as emails and video

conferences without time and location restrictions and by serving all people regardless of their gender, ethnicity, or disability (Bierema & Hill, 2005).

The mentoring models and applications used by mentors are diverse. So, it is necessary to analyze the online mentoring models carried out by supervisors and students. Based on these models, through further research, a mentoring model will be developed for students of Universitas Terbuka postgraduate program. Effective mentoring brings positive outcomes for mentees, mentors and their organizations. The research related to e-mentoring points to many of the problems, traits, and concepts associated with distance learning (Iqbal, 2020). Modern mentoring is developing through employment of technology and thus it is important to better understand these new opportunities and their limitations (Tisdell & Shekhawat, 2019).

2   METHODOLOGY

The purpose of this study is to analyze online mentoring that has been carried out by supervisors and students in the Universitas Terbuka postgraduate program. This study uses a survey method that has successfully recruited 117 students and 106 supervisors from all regions in Indonesia. The survey method is used in this study because survey research is a study by collecting information from samples by asking through questionnaires or intervieu so that later it describes various aspects of the population (Fraenkel & Wallen, 1990). Questionnaires are distributed to all supervisors and students of the Universitas Terbuka postgraduate program with the following details,

Table 1. Respondents' Regional Distribution

Students		Supervisor	
Region	Sum	Region	Sum
Java and Bali	65	Java and Bali	74
Sumatra	30	Sumatra	12
Kalimantan	7	Kalimantan	3
Sulawesi and Maluku	4	Sulawesi and Maluku	7

NTT and NTB	4	NTB and NTT	6
Papua	7	Papua	4
Total	117	Total	106

The questionnaire consists of several questions to identify several things so that the research objectives can be achieved, namely: 1) what media has been used for online mentoring; 2) what media is most effectively used in online mentoring; 3) what is the reason the media is effectively used in online mentoring; 4) what media is used to share files in online mentoring; 5) what media is most effectively used for file sharing in online mentoring; 6) what is the reason the media is effectively used for file sharing in online mentoring; 7) what form of file is commonly used for online mentoring; what form of file is most effectively used in online mentoring; 8) the reason the form of the file is most effective in online mentoring; 9) how the supervisor notes the online mentoring; 10) what kind of mentor is effective in giving notes; 11) Opinions on optimization in online mentoring so far.

3 FINDINGS AND DISCUSSION

3.1 Thesis Mentoring Media

The following are the opinions of thesis supervisors and students about the most effective thesis mentoring media in the Figure 1. below,
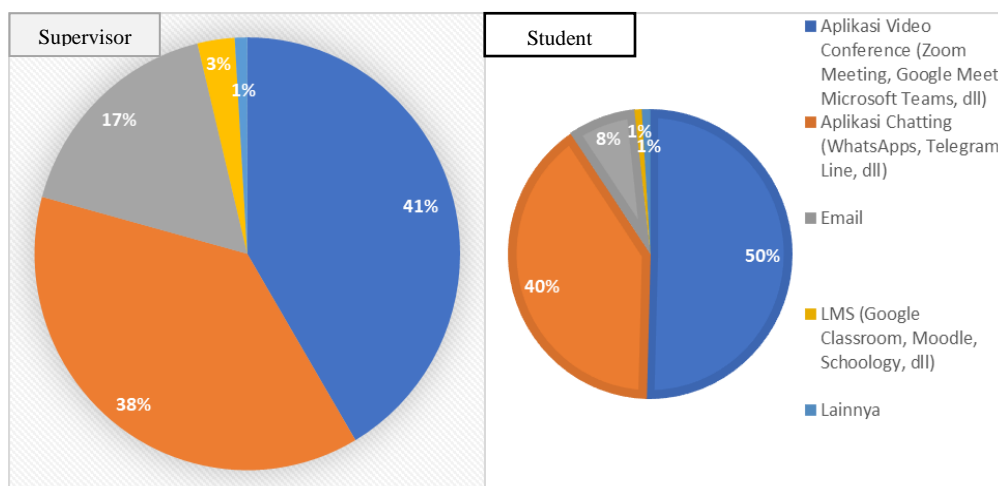
Figure 1.Online Mentoring Media

41% of mentors think that the most effective medium for mentoring is the Chat App. Likewise, 50% of students think the same that the most effective medium for mentoring is the Chat Application. Meanwhile, 38% of supervisors and 40% of students think that Video Conference Applications are the most effective. Meanwhile, 17% of mentors and 7% of students revealed the most effective was email. LMS and others are considered effective by only 4% of mentors and 2% of students. Here are the reasons why the majority of students and supervisors consider that Chat and Video Conference Applications are most effective in online mentoring,
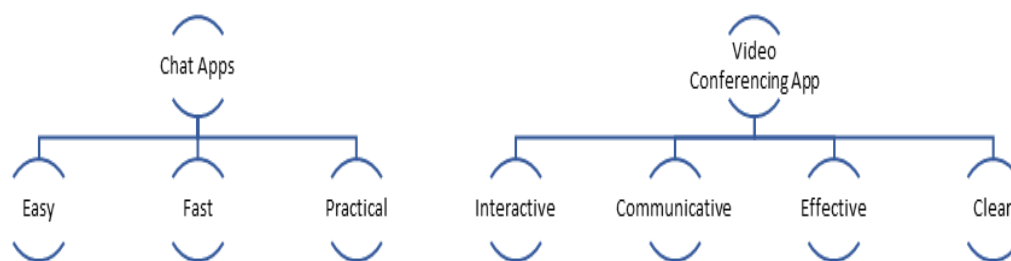
Figure 2. Reasons for Choosing an Apps

This is in line with the results of the RWSA Secretariat (Iqbal, 2020) that effective media for oral communication, brainstorming, and problem solving are Video Conferencing and Chat apps.

3.2 Thesis File Sharing Media

The most effective medium for sharing thesis files in the opinion of supervisors and students is shown in the following Figure 3.
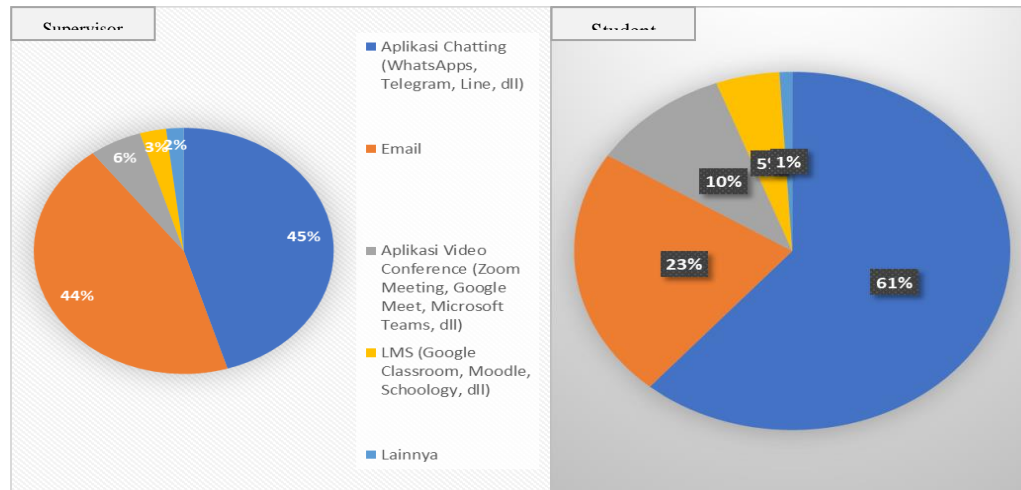
Figure 3. File Sharing Media

According to 45% of mentors and 61% of college students, the most effective medium for sharing thesis files is the Chat Application. Then 44% of mentors and 23% of college students think that email is the most effective file-sharing medium. Furthermore, 6% of supervisors and 10% of students consider that Video Conference Applications are the most effective for sharing TAPM files. As for the rest, only 5% of mentors and 6% of students think that LMS and others are the most effective. The reasons according to supervisors and students that the most effective chat and email applications for sharing files are as follows,
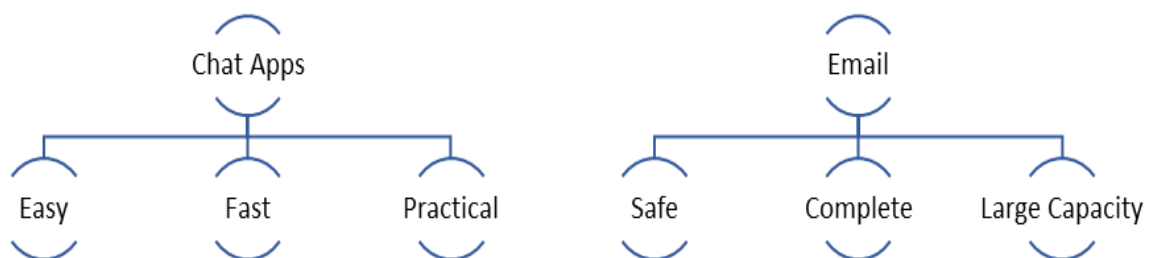
Figure 4. Reasons for Choosing an App

Regarding writing, the most effective media used for mentoring is email, online file storage applications (Google Drive, Dropbox, One Drive) (Iqbal, 2020)

3.3 Thesis File Form

Figure 5. below shows that the form of the file considered effective is as follows,
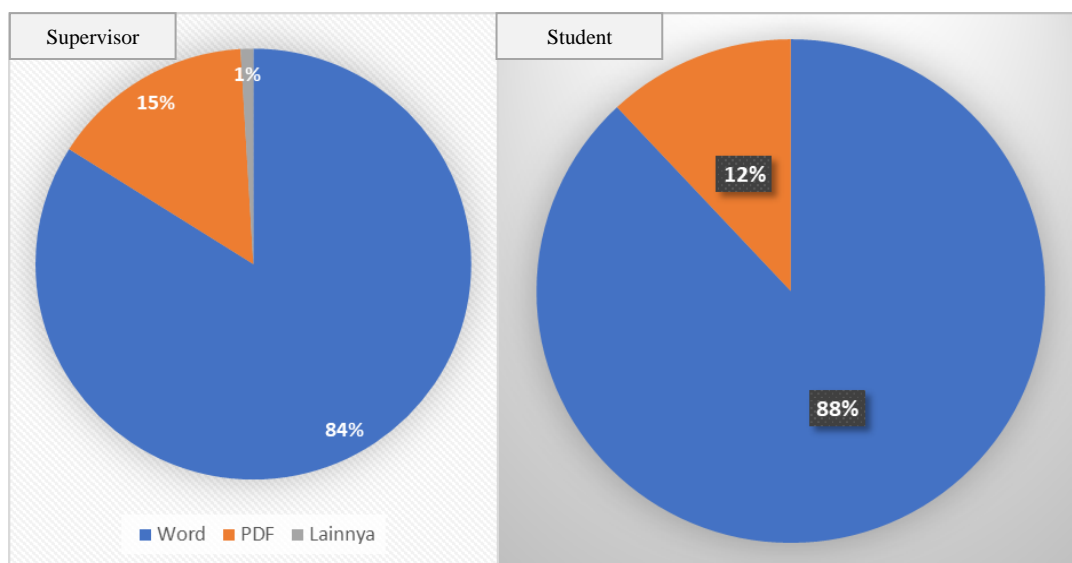
Figure 5. File Shape

As many as 88% of students and 84% of supervisors think that word is the most effective. Students argue that Word files are easy to correct, given input and suggestions, and easy to review by supervisors. While the rest, namely 12% of students and 15% of supervisors consider PDF to be the most effective form of a file.

3.4 Media to Provide Notes for Thesis Correction

The following Figure 6. shows the opinions of supervisors and students regarding the media to provide notes for the most effective improvement of thesis.

Based on the picture above, it appears that 65% of supervisors and 64% of students think that the Comment facility on Word is the most effective. Meanwhile, 11% of supervisors and 14% of students think that writing down directly the points that must be improved on the most effective Chat Application. 10% of mentors and 9% of students revealed that improvements delivered directly through the Video Conference Application are the most effective. While 5% of mentors and 7% of students, highlights in Word files are the most effective. Furthermore, 3% of supervisors and 4% of students said that directly writing down the points that should be corrected is the most effective email. As for the rest through the Comment facility in PDF and LMS.

■ File Word dengan fasilitas Comment pada Word
■ Aplikasi Chatting (WhatsApps, Telegram, Line, dll) langsung dengan menuliskan poin-poin yang harus diperbaiki
■ Aplikasi Video Conference (Zoom Meeting, Google Meet, Microsoft Teams, dll) dengan disampaikan langsung
■ File Word langsung dengan memberikan highlight
■ Email langsung dengan menuliskan poin-poin yang harus diperbaiki
■ File PDF dengan fasilitas Comment pada PDF
■ LMS (Google Classroom, Moodle, Schoology, dll) dengan fasilitas feedback
■ Lainnya

Figure 6. Media for Providing Mentoring Notes

The supervisors agree that the Comment facility in Word is more practical to write down the points that need to be corrected by students directly in the part of the manuscript or corrected writing. Comment facility in Word can provide more detailed notes on each word, sentence, paragraph, image, and table. so that students can easily understand parts that are not appropriate or inappropriate and need to be revised. Likewise, according to students, through the Comment facility in Word, students can immediately understand the errors that must be corrected through the comments of the supervisor and indirectly have highlighted the notes that must be revised on the thesis. Students can find out in detail the parts that get notes from the supervisor.

3.5 Optimal Mentoring

Supervisors and students are asked whether the guidance process that has been carried out is optimal. The result in the following Figure 7. According to 60% of supervisors and 49% of students, it is optimal, but 28% of supervisors and 32% of students think that the mentoring process is still not optimal. Meanwhile, 10% of supervisors and 14% of students stated that it was very optimal, while 2% of supervisors and 5% considered it not optimal.
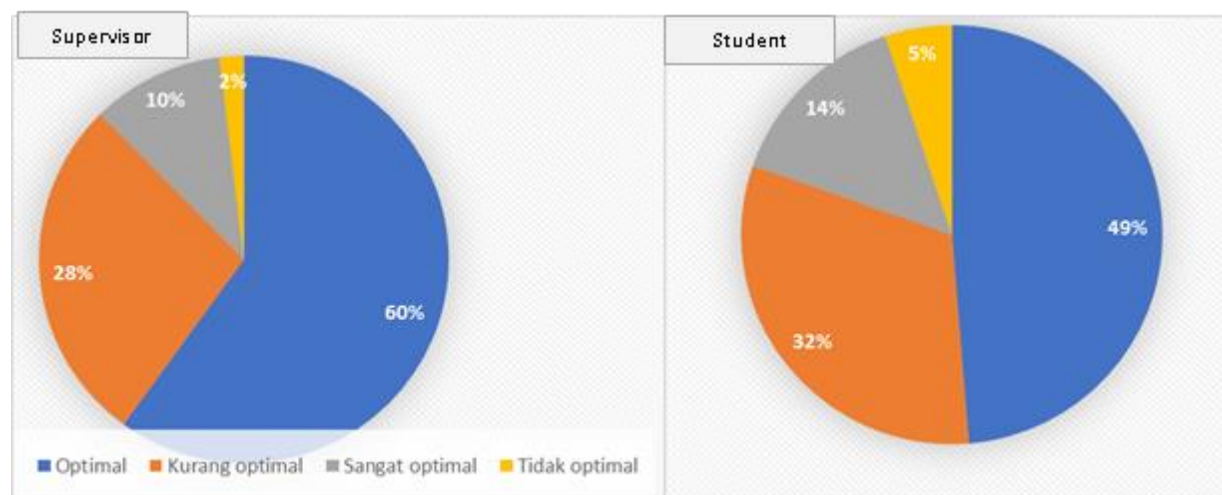
Figure 7. Opinions of Supervisors and Students about Online Mentoring

Online guidance is still not effective according to the supervisor because sometimes there is a lot of misinformation, which is caused by signal constraints so some cannot listen optimally. If it is only done through WA or email, it is also not necessarily able to be captured properly and is prone to misperceptions. Likewise, according to students, technology cannot read the expressions or character of the supervisor, so students often misconceptualize the revision of the supervisor.

The results of this study are in line with research that reveals that e-mentoring requires regular connection via phone, Skype / WhatsApp / Viber / Messenger, and maintaining communication via email and messages (Ladyshewsky & Pettapiece, 2015). In this form, mentors and students can be encouraged to meet online, at the request of mahasuswa, for guidance through the development of concepts and ideas. Students are responsible for organizing online meetings, making their expectations clear, and documenting the results (Schlager & Fusco, 2003).

4 CONCLUSION

The results of this study indicate that 1) the most effective media in the mentoring process are Video Conference Applications (Zoom Meeting, Google Meet, Microsoft Teams, etc.) and Chat Applications (WhatsApp, Telegram, Line, etc.); 2) the most effective media for sharing files are email and chat applications (WhatsApp, Telegram, Line, etc.); 3) The most effective file format for the mentoring process is Word; 4) the most effective media for providing notes for improvement is a Word file with Comment facilities on Word and Video Conference Applications (Zoom Meeting,

Google Meet, Microsoft Teams, etc.; 5) and 38% of students and 30% of supervisors think that online mentoring has not optimal.

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CLO 3D DATABASE FOR DIGITAL FASHION DESIGN AND PRODUCTION METHOD

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Abstract

Several factors such as: 1) the need to offer new products, 2) it takes time to develop a good design, 3) the constant changes in fabric inventory, 4) it is mandatory to meet production costs, 5) it is mandatory to meet the minimum quantity of production, 6) the need to reproduce items that sell well, and 7) fashion is a rotating trend; are the factors that influence the importance of having 3D database for clothing design and production process. This article was written, in collaboration with Lovadova, a clothing brand with remnant fabrics concept. Database was co-created and studied using Clo3D, with the aim to produce general guideline in using clothing database. Based on analysis and observations on Lovadova data for the past 10 years (product line, sales data, return data, R&D process, Lovadova workshop visits), it was found that there are 5 design methods of using database. Advantages of using database in designing clothes are: 1) reuse, design selected data in a short time, 2) efficiency for R&D and production. Behind the advantages, there are also many challenges and difficulties that must also be completed in order for the database to be effectively used. In the future, this digital method with Clo 3D, if used correctly, will be able to support the business process of fashion e-commerce clothing more quickly and efficiently.

Keywords: Database, Digital, Fashion, Design, Production

1   INTRODUCTION

In the Making Indonesia 4.0 roadmap, one of the five sectors that will pioneer the implementation of industry 4.0 is the textile and clothing industry. Currently, Indonesia is ranked 15th in the world with revenue in the fashion segment hovering around US$4,792 million in 2019. This revenue is expected to experience an annual increase of 25%, the market volume is around US$ 11,708 million by 2023. The largest segment was apparel with a market volume of US$3,349 million in 2019.
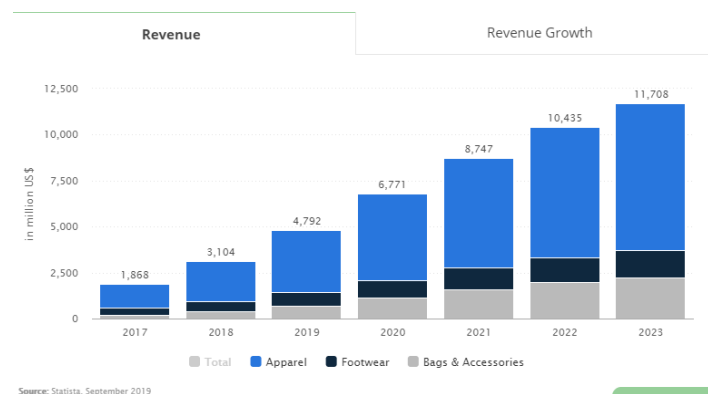
Figure 1. Indonesia Fashion Segment Revenue

The number of e-commerce platforms (both B2B, B2C, C2C), such as Zalora, Pomelo, Indonetwork, Bobobobo, and others also supports the fashion industry towards a more modern and digital direction, but generally only limited to the way of sales (marketing and online product presentation). In terms of production, there are still many productions encountered in completely manual ways. There is advantages of using manual way, but with the competitiveness of this industry, the digital way is a gap to bring this industry more advanced and competitive.

2   METHODOLOGY

Virtual garment simulations have also been researched for a long time since 2005 (Volino, et al., 2005; Choi & Ko, 2005; Fontana, et al., 2005; Luo & Yuen, 2005). Fashion design with virtual technology combines the design process and clothing display, effectively optimizing the design process for clothing designers. In recent years, with the rapid development of computer technology, many software have been developed and applied in clothing production, including CLO3D software. Compared to the traditional design process, virtual 3D design makes it easier for users to realize clothing results in visual 3D form, instant modification, save time and cost, provide an effect that seems more vivid (Mu & Cao, 2015). There were 649 job vacancies in StyleCareers.com in 2016 that showed many digital competencies sought as job requirements in 7 fashion areas, including design and production. This indication gives a sign that in the future with the industrial era 4.0, digital capabilities will be more useful in supporting the fashion business (Wang, Brookshire, 2018).

3   FINDINGS AND DISCUSSION

3.1   Brand Partner Clothing Database

Lovadova is a clothing brand that has been operating since 2012 with the concept of using remnant fabrics. There is only one type of clothing size produced, namely one size which is intended for the size of Vietnamese and Indonesian women. The concept of remnants and one-size fabric does have advantages and disadvantages. The advantage is that the brand never reproduces clothes with the same fabric so there is always novelty in every collection; and it is enough to make one pattern because there is only one size and it is cheaper in capital and production. The downside is, because brands always buy new types of fabrics (never restock old fabrics), the pattern must always adjust the character of the fabric used, so that there are many adjustments to the pattern, both small and large. Another drawback is the difficulty of finding the right size for Indonesia and Vietnam. With retail prices ranging from the middle market, the production price must always be maintained so as not to exceed the cost that it should be. Production costs are most affected by the amount of the fabric

used to produce one cloth. Making a pattern manually means that you can only find out the length of the fabric after the pattern is finished and cut. Meanwhile, through a software, fabric length can be easily estimated, so any design with fabric overuse can be adjusted immediately. Women's clothing models are also evolving every day with new pattern and sewing techniques. To remain relevant to market demand, new samples must always be developed. Through a manual pattern, it is not uncommon that the samples do not match with the designs, thus wasting time and costs for sample revision. Meanwhile, through a software, there is a 3D avatar that can be made wearing a sample that is being worked on, so that any discrepancies can be immediately revised instantly.

Figure 2. Pattern Revision (Dress Length) & Avatar Preview Avatar using Clo 3D

Lovadova 3D database has only been developed as of 2019. During the past years, there are about 900-1000 sku that have been produced, but only with physical data (paper patterns), so every time it needs to be reused, the paper pattern must be re-searched or re-modified. Over time the pattern accumulates, is difficult to find, disappears, takes up space and spends time again recreating. For this reason, digital solution is considered better for work efficiency. Because it is not possible (limited time and resources) to make all the data, the 50 best SKUs are selected which are considered good in terms of sales, size match, return rate, quality, ease of production, production price, and selling price. The 50 data were digitally reconstructed so that there is a computer version of the 2D pattern (A4 ready to print) and 3D rendering using avatars with the standard size of the clothing model. By using a combination of these 50 digital data, as of 2019, all Lovadova's collections are designed to get more efficient results. Here are some examples:

DATABASE (OLD SKU) → **NEW SKU**

Figure 3. Digital Database & Database Usage by Changing Clothing Model (Change Fabric, Change Pant Length & Hem Design)

DATABASE (OLD SKU)   **→ NEW SKU**

Figure 4. Digital Database & Database Usage by Changing Clothing Model (Change Fabric, Add Button Details on the Front Design)

DATABASE (OLD SKU)   **→ NEW SKU**

Figure 5. Digital Database & Database Usage by Changing Clothing Model (Change Fabric only)

3.2   Database Usage Method

There are 5 methods in using database:

Table 1. Redesign Works with Database

No.	Types of Database	Time & Effort	Activities
1	Creating new database	High	Re-measure the finished product, fabric character assessment, create 2D

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			patterns, create 3D visuals with avatars, make A4 print-ready patterns, provide catalog photos for data comparison between virtual and actual product
2	Use existing database: change clothing size and model	Moderate – high	Change bust/waist/hip size from A size to B size Change clothing model from straight to ruffle cut
3	Use existing database: add/ remove clothing parts	Moderate – Low	Change parts of a cloth (sleeve, button, accessories, collar, pocket, etc)
4	Use existing database: change clothing lengths	Low	Add/ cut lengths of a cloth
5	Use existing database: change fabrics	Low	No changes in pattern and size, only change the fabric and the 3D visuals

4 CONCLUSION

There are several advantages of using database in clothing design and production:

1. Can reuse, choose good data (best-selling) to design new ones quickly

2. Efficiency in R&D and production

3. Digital database is easy to store, search, and reuse; does not take up space

4. More helpful for items with complicated patterns

5. Helps better for user who have hands-on experience before with manual pattern and sample making

Behind the advantages, there are several challenges and disadvantages that must be solved to compile a good database:

1. It takes a lot of time to create an entire database from scratch (especially if there are too many product lines);

2. Manual data (paper patterns) tend to be more difficult to be measured and takes much space

3. Requires experts who understand special software to create digital database and 3D avatar previews, as well as those who have knowledge in pattern and sewing skills.

4. Less helpful for basic (timeless) items

5. Each fabric has different character, elasticity, thickness, texture, which is quite difficult to portray without actual tactile assessment. With too many or unknown fabric compositions (remnant fabrics), actual samples may be different than the avatar preview

6. Unable to replace the tactile experience of manual fitting and size fitness

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THE EFFECT OF *PROBLEM SOLVING* AND LEARNING MOTIVATION ON SOCIAL STUDIES LEARNING OUTCOMES AT SDN KEBAYUNAN

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Abstract

In general, the breadth of social studies material in elementary schools has an impact on students who are less motivated to learn. The teaching method used by the teacher so far is still dominant using the lecture method. This has the influence of students' understanding of the material and student learning outcomes are inadequate. Social studies learning objectives at the elementary level are expected that students are able to have honest, disciplined, responsible, polite, caring, and confident behavior in interacting with family, friends, teachers, and the community as well as love for the motherland. One of the efforts that can be made to make Social Studies learning interesting and able to motivate students during a pandemic is to apply an *problem solving* integrated thematic-basedThrough this learning, students are guided to solve a problem in a learning process that integrates several integrated thematic materials. Teachers and students carry out Learning From Home (BDR) assisted *Google Meet* with a series of materials for daily activities that can be directly applied by students in their environment. This research is a quantitative research with the type of experimental research and elementary school student respondents. The results showed that there was an influence of *problem solving* integrated thematic-based and student learning motivation on student learning outcomes in social studies learning. Learning characteristics are developed to contain material from several subjects at once which are packaged in everyday life situations in a theme.

Keywords: *problem solving,* integrated thematic, learning motivation, learning outcomes, social studies

1   INTRODUCTION

Going through education is one's effort to develop one's potential in order to have religious spiritual strength, self-control, personality, intelligence, noble character, and the skills needed by oneself, society, nation and state. Education is a necessity for everyone. So important is an educated human being that the government requires every child in Indonesia to go to school. With sufficient education it is hoped that they will be able to live a better life. An educated society will certainly have an impact on the country's development.

Humans as social beings really need other people in their lives. From birth to death, one cannot be separated from the help of others. Every day we interact with other people. Each other need each other so that there is reciprocity. One branch of science that studies social science is social science. In the 2013 curriculum it is stated that the social studies learning objectives in elementary schools are for students to have social attitude competencies namely "Showing honest, disciplined, responsible, polite, caring and confident behavior in interacting with family, friends, teachers and

neighbors as well as love of the land." water". Understanding social studies material well should be able to form the character of a society that is honest, disciplined, polite, caring, confident and responsible.

The character that is formed in society is not the result of instant habituation. It takes a continuous and continuous process. This can be started from when I was still in school. It is the students who are currently studying at educational institutions who must get this habituation so that in the future they become fully aware and responsible citizens. Through meaningful learning of course this can be realized. A meaningful learning process will certainly affect student learning motivation.

Student motivation is an important thing that should not be missed by the teacher's attention when teaching. The magnitude of a student's motivation will determine the magnitude of the quality of behavior that is displayed in learning because it is this motivation that functions as a driver and giver of hope (Hamdani, 2011). A student who has a strong urge to learn will certainly have high hopes in order to understand what is learned. Thus, it will certainly affect the mastery of the material being studied as well. Through mastery of good material, of course, it will affect learning outcomes. Seeing the importance of learning motivation, the learning delivered in class should be able to arouse student learning motivation well. Teachers must understand how important learning motivation is and be able to encourage students to have good learning motivation, especially for learning.

So far, social studies learning is still mostly delivered in a teaching style that seems monotonous, such as using only the lecture method or only with assignments. This is because Social Sciences material is considered very broad and a lot so that teachers worry about not being able to complete the material on time. Even though with this method, student activity is very low. With low student activity, it will certainly affect their learning motivation. The lecture method can also cause student boredom while studying so this will certainly affect the student's social studies learning outcomes themselves. The lack of variations in teacher learning methods in teaching is thought to be the main factor in low student learning motivation so that student learning outcomes are less than optimal. For this reason, it is necessary to vary teaching by applying methods that are in accordance with the characteristics of the IPS material. One method that teachers can choose is to use an *problem solving* integrated thematic-based *Problem solving* according to Hamdani (2011) is a way of presenting lessons by encouraging students to seek and solve a problem or problem in order to achieve teaching goals. Through learning *problem solving* students are trained to deal with various problems both

personal and group problems to be solved alone or together (Florean, 2016). The learning orientation is investigation and discovery which is basically problem solving. The main purpose of this study is to investigate and research the basis of problem solving. IPS subject matter is a study of real everyday life, so it is felt that it will be very appropriate if in learning to use problem-solving-based learning. In addition, learning that combines several materials from different subjects will also provide different learning experiences to students. Simultaneously students learn social studies material in Indonesian and Civics in one theme. This will make students unconsciously learn social studies material that was previously considered difficult.

In the Law on the National Education System number 20 of 2003 it is stated that the purpose of Indonesia's national education is to develop the potential of students to become human beings who believe, fear God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent, and become a democratic and responsible citizen (State Secretary of the Republic of Indonesia, 2003).

Through learning, it is hoped that one's potential can develop to the fullest. The ability from not knowing to knowing, not being able to be able to. This is as expressed by Yamin (2014) that learning is a conscious human effort to escape as much as possible from ignorance about many things. Learning is engineered in such a way as to be able to become a process of understanding situations and realities that are still biased in meaning. Through the learning process, a person is expected to produce more abilities than before learning. Sudjana (2011) suggests that learning outcomes are abilities possessed by students after they receive their learning experience. Learning outcomes according to Bloom (1979) in Rusmono (2014) are changes in behavior which include three domains, namely the cognitive, affective, and psychomotor domains.

Learning outcomes are not simply obtained by students. There are several factors that influence the acquisition of student learning outcomes in learning. These factors can come from within the students themselves (internal factors) or external factors (external factors). Internal factors include physical factors, health factors and psychological factors, while external factors come from parents, school and community (Nurul, 2020). Learning cannot just take place without involving related aspects. Syah (2017) explains that in principle, ideal learning outcomes must include all psychological aspects that change as a result of student learning experiences and processes. However, it is difficult to know the disclosure of changes in the behavior of all these aspects, especially aspects of students' feelings.

Therefore, what can be done is only to take snapshots of changes in behavior that are considered important and are expected to reflect changes that occur as student learning achievements, both those with dimensions of creativity and taste as well as those with intentional dimensions.

Students will be able to learn more effectively if they have great learning motivation. This motivation will encourage him to study better and harder than before. Motivation or interest in learning according to Hamdani (2011) is the desire to learn from an individual. Learning motivation can come from within the student or generated, enhanced, and maintained from external factors. Meanwhile, according to Rachman (2015) motivation is defined as a person's strength (energy) that can lead to a level of persistence and enthusiasm in carrying out an activity, both from within the individual itself (intrinsic motivation) and from outside the individual (extrinsic motivation).

In the context of psychological studies, Sondang and Makmun (2004) in Rachman (2015) suggest that to understand individual motivation can be seen from several indicators, namely (a) activity duration; (b) activity frequency; (c) persistence in activities; (d) fortitude, tenacity and ability to face obstacles and difficulties; (e) devotion and sacrifice to achieve goals; (f) the level of aspirations to be achieved by the activities carried out; (g) level of achievement qualification or product (output) achieved from the activities carried out; (h) the direction of attitude towards the target. A student who has the motivation to learn can learn more efficiently if he tries to learn optimally. Learning motivation can come from within students who diligently read books and have a high curiosity about a problem. Learning motivation can be generated, enhanced, and maintained by external conditions, such as the presentation of lessons by teachers with various media, appropriate methods, dynamic communication, and so on (Hamdani, 2011). Thus, if a teacher wants to increase student motivation in learning, this can be done by choosing learning strategies that are varied, interesting and in accordance with the circumstances of the students, the material and the environment the students are in. With this external motivation, it is hoped that motivation within the students themselves will slowly increase.

learning method *problem solving* according to Hamdani, (2011) is a way of presenting lessons by encouraging students to seek and solve a problem or problem in order to achieve teaching goals. In this learning activity students are trained to deal with various problems, both personal and group problems to be solved alone or together. Whereas Djamarah & Zain (2013) revealed that the *problem*

solving is not just a teaching method, but also a method of thinking, because in *problem solving* can use other methods that start with searching for data to draw conclusions.

The advantages of the problem solving method *according* to Hamdani (2011) are being able to train students to deal with problems or situations that arise spontaneously, students become active and take initiative and be responsible, education in schools is relevant to life, it is very difficult to determine which problems appropriate to the student's ability level. While the weakness is that it takes a long time, meaning that it requires a longer time allocation compared to other learning methods, passive and lazy students will be left behind, it is very difficult to organize lesson material.

Integrated thematic learning is a form of integrated learning model that combines a concept in several materials, lessons or fields of study into one particular theme or topic of discussion so that there is integration between knowledge, skills and values that enable students to actively discover scientific concepts and principles in a holistic, meaningful and authentic (Riadi, 2020). According to Tirtoni (2018) integrated learning is the linking of several subjects into one theme. In integrated learning, students can take advantage of the skills developed from studying the interrelationships between subjects. Integrated learning helps students to solve problems and think critically to be developed through skills in real or practical situations.

The characteristics of thematic learning according to the Puskur Team (2006) in Sukayati & Wulandari (2009) are student-centered learning, providing direct experience to children, separation of invisible or inter-mapped subjects, presenting concepts from various subjects in a learning process so that it is meaningful, results learning can develop according to the interests and needs of children.

The benefits of this thematic learning are numerous. Some of the benefits of thematic learning according to the Puskur Team (2006) in Sukayati & Wulandari (2009) are that a lot of the material contained in several subjects has related concepts, so that learning becomes more meaningful and intact, students easily focus attention because several subjects are packaged in one the same theme, students can learn knowledge and develop various competencies in several subjects in the same theme, thematic learning trains students to make more and more connections between several subjects, so that they are able to process information in a way that suits their thinking power, and allows the development of concept networks, saves time because several subjects are packaged in a

theme and presented in an integrated manner in the allocation of planned meetings. Other time can be used for strengthening, enrichment, skills development, and remedial.

The scope of IPS material teaches students to be able to become future generations and be useful for the interests of themselves, society and their nation. For this reason, the scope of social studies subject matter for elementary schools begins with an introduction to the environment and the closest community, starting at district, provincial, national and international levels. There is a connection between one region and another. The international environment in the scope of SD is limited to the introduction of the ASEAN environment. Social studies subjects aim to produce citizens who are religious, honest, democratic, creative, critical, enjoy reading, have learning abilities, are curious, care about the social and physical environment, contribute to the development of social and cultural life, and communicate productively. The scope of IPS consists of knowledge, skills, values and attitudes developed from society and social science disciplines. Mastery of these four contents is carried out in an integrated learning process through a process of reviewing knowledge content (Ministry of Education and Culture, 2017).

Thematic learning approaches in social studies are often called interdisciplinary approaches. The thematic learning model is essentially a learning system that allows students both individually and in groups to actively seek, explore, and discover concepts and principles holistically and authentically (Depdikbud, 1996) in Kartini (2016). Through thematic learning students can gain direct experience, so they can add strength to receive, store, and produce impressions about the things they learn.

Relevant research is used in this study as material to find out about the study and determine the differences in this research compared to previous studies. These other studies include research conducted by Dewi (2021) entitled Implementation of *Problem Solving* to Improve Social Studies Learning Outcomes and also research conducted by Hartmann et al. (2021) entitled *Preparatory effects of problem solving versus studying examples prior to instruction*. Another study by Rokhman & Ni'matullah (2020) with the research title *Problem Solving*, Learning Interest, and Learning Experience on Critical Thinking Ability. Also research by Sari & Zaiyasni (2020) entitled Improving integrated thematic learning processes using *problem solving models* in grade V SD.

2 METHODOLOGY

type of research includes quantitative research with experimental research methods. The main characteristic of experimental research is the existence of variable control by giving *treatment* to the experimental group. The treatment given in this study was the application of *problem solving* and learning motivation. Learning method *problem solving* was called the experimental group and the group that used conventional methods was called the control class. Each group will be divided into two categories based on the level of students' learning motivation, namely groups of students with high learning motivation and groups of students with low learning motivation.

As for the research population, all students at SDN Kebayunan, Tapos District, Depok City. The sampling technique was carried out by means of random sampling on sixth grade students at SDN Kebayunan which consisted of 32 VIA grade students and 32 VIB grade students. Group 1 consisted of 32 students in class VIA which were then divided into two categories, namely children with high learning motivation and children with low learning motivation. Grouping children based on motivation depends on the results of the learning motivation questionnaire distributed to students before learning is carried out. After that the results of the questionnaire will be calculated as a whole and the median value is sought. Students who have scores above the median are declared as children with high learning motivation while children who have scores below the median are declared as children with low learning motivation.

Group 2 consisted of 32 students in class VIB which were also divided into two categories, namely children with high learning motivation and children with low learning motivation. This grouping is the same as the grouping in the first group. Then group 1 received treatment with the application of *problem solving* while group 2 was taught using conventional learning strategies.

Data collection techniques in this study used tests, observations, questionnaires and documentation studies. Sources of data used are primary data and secondary data. The primary data source was obtained from the results of observations made during the lesson with *problem solving* on social studies material in class VI SDN Kebayunan, Tapos District, Depok City. Meanwhile, secondary data was obtained from a documentation study in the form of *problem solving* , a list of grade VI students' learning outcomes in social studies subjects.

The research was conducted during a pandemic with students studying from home. Learning is carried out using Google Meet media and also Google Form to collect student learning outcomes.

3   FINDINGS AND DISCUSSION

At the beginning of the meeting students were given a pretest and also filled out a motivational learning questionnaire. The initial test was carried out by giving 31 questions in the form of multiple choice questions and also a learning motivation questionnaire consisting of 28 statement items. These questions have been tested and declared valid. The average pretest result for the experimental class was 47.28 and for the control class was 54.44. As for the results of the learning motivation questionnaire, it was found that 16 students in the experimental class had low learning motivation and 16 students had high learning motivation. For the control class, there were 13 students with low learning motivation and 19 students with high learning motivation. After learning by applying the *problem solving* integrated thematic-basedThe questions used are the same as the questions given during the pretest, namely 31 questions in the form of multiple choices. The post-test results showed that the average value of the experimental class was 71.57 and that of the control class was 63.91. The data is as shown in Table 1.1 below:

Table 1.1 Gain Value and Standard Deviation

Tes	Statistik	Kelompok			
		Problem Solving based on Integrated Thematic		Conventional	
		High Motivation	Low Motivation	High Motivation	Low Motivation
Pretest	N	16	16	19	13
	Average	53	43	57	54
	Standard Deviation	10,27	14,11	14,94	17,06
Posttest	N	16	16	19	13
	Average	76	67	69	56
	Standard Deviation	9,80	16,26	15,45	18,10
N-Gain		0,50	0,42	0,18	0,05
Group N-Gain		0,46		0,12	

Based on the table above, it shows that the N-Gain value for students who study with the *problem solving* is 0.50 for students with high learning motivation and 0.42 for students with low learning motivation. While students who study using the conventional method, the N-Gain value for students

with high learning motivation is 0.18 and 0.05 for students with low learning motivation. This shows that students who study with the *problem solving* have higher N-Gain values than students in conventional classes, namely the total N-Gain for classes with *problem solving* of 0.46 in the medium category. while students with conventional learning 0.12 in the low category. Thus it can be concluded that the *problem solving* is more effective in improving student social studies learning outcomes.

Then the normality test and homogeneity test were carried out on the research data. The normality test was carried out to find out whether the study population was normal or not, while the homogeneity test was carried out to find out that the data obtained from the two study groups were similar or homogeneous. Based on the results of the normality test for the two groups, it was shown that the data for both groups included normally distributed data. Meanwhile, the results of the homogeneity test show that the data of the two groups are expressed as homogeneous or similar data.

Two-way Anova was used to test the statistical hypothesis with the following calculation results:

Table 1.2 Two-way Anova Hypothesis Test Results

Source of Variation	SS	df	MS	F-count	F-table
Learning method	945.5625	1	945.5625	6.932201591	3.99
Motivation learning	1885.785468	1	1885.785468	13.82525747	3.99
Interaction	339.3137223	1	339.3137223	2.487610418	3.99
Within	8184.08831	60	136.4014718		
Total	11354.75				

Based on the table above, the results for the learning method are 6.93 and the results are 3.99, for learning motivation is 13.82 and the results are 3.99, and for the interaction of the two variables is 2.48 and the results are 3.99. Thus for the learning method with the result = 6.93 > = 3.99 then it is rejected so the decision is that there is a real difference between the learning outcomes of students

who use *problem solving* and the learning outcomes of students who use conventional learning methods. This can happen because in the experimental class, using *problem solving* in the learning process even though learning is done online. Learning is carried out using the*Google Meet*. Thus, even though learning is carried out online, students can still learn actively in class discussions through the*Google Meet*. With direct interaction between teachers, students and learning resources, the level of student understanding is getting better. By seeing directly and conveying thoughts directly, students are unintentionally fully involved in learning. Student involvement in learning is a very good thing.

As for learning motivation with result = 13.82 > = 3.99 then it is also rejected so the decision is that there is a difference in learning outcomes between students who have high learning motivation and students who have low learning motivation. Motivation to learn becomes an influential thing in the learning process because students' great curiosity about teaching materials will encourage them to study these things more deeply. The amount of motivation to learn affects the attitude of students in learning. How strong a person's motivation is will determine how much the quality of behavior he displays, both in the context of learning, work and in his life (Rachman, 2015).

As for the interaction between learning methods and motivation to learn the results are = 2.48 < = 3.99 then it is accepted so the decision is that there is no interaction between learning methods and student learning motivation in influencing student learning outcomes.

The effectiveness of learning plans can be seen based on system theory so that effectiveness criteria must reflect the entire *input-process-output*, not only *output* or results, but also reflect the reciprocal relationship between the learning plan and the surrounding environment (Mulyasa, 2009). The learning method applied and student learning motivation will be able to influence learning outcomes if both are carried out simultaneously and supported by the surrounding environment, including the learning atmosphere and learning facilities (Sudjana, 2020). The learning method applied and students' learning motivation in class showed insignificant results which could be influenced by the learning atmosphere and learning facilities. The online learning atmosphere will certainly provide a different atmosphere from face-to-face classroom learning. One of the shortcomings in the implementation of distance learning is that some students find it strange to study alone without direct interaction with the teacher or with their friends. In addition, for students who lack motivation or high initiative it becomes a problem in the learning process and also access to networks or supports

such as quotas are also very influential in carrying out distance learning via online (Ministry of Education and Culture, 2020).

4 CONCLUSIONS

The conclusions that can be drawn from the results of the analysis and discussion are that the *problem solving* effective in improving student social studies learning outcomes. This is shown by the average score of students who apply the *problem solving* is higher than the average score of students who apply conventional methods. Student learning motivation is effective in improving student social studies learning outcomes. This is shown by the average score of students with high learning motivation is higher than the average value of students with low learning motivation.learning methods *problem solving* and learning motivation simultaneously have no effect on improving student learning outcomes. This is due to other factors that also influence learning outcomes in the learning process including the learning atmosphere that is less supportive because it occurs online without face-to-face meetings during the learning process.

Suggestions that can be conveyed are teachers can apply *problem solving* to social studies learning so that the impact of this learning will be directly felt by students, teachers can make improvements to learning by applying *problem solving* so as to improve student learning outcomes, For future researchers, they can conduct similar research by examining other variables to improve the methodological aspects so that the results are more accurate.

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METALAB AS A LABORATORIUM BIOLOGI METAVERSITAS

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Abstract

The impact of Covid-19, the increasing number of new technologies being applied in education, as well as increasing interest in the metaverse. Closely related to this virtual environment is life in the field of education. This study aims to explain the type of metaverse, the potential and limitations of its educational application. The four metaverse categories emphasize different functions, types, or sets of Metaverse technologies. There are four spectrums of technologies and applications in the metaverse, namely augmentation, simulation, intimate technology, and external technology. The application of augmented reality in health education in the form of virtual clothes so that it can examine the parts of the body as an anatomy laboratory simulation. Potential metaverse as an educational environment. The recent metaverse craze has begun again, befitting the transition to an unwise society due to the Covid-19 pandemic. As the metaverse is rapidly introduced to life today, several applications of the metaverse have been used in education. Therefore, it is necessary to understand the concept and types of metaverse as well as examples of educational applications. the concept of metaverse and types of metaverse and proposes thinking about metaverse as a connection point or combination of the real world and virtual reality. Avatars in the metaverse are identified with a person's true self. Avatars are involved in social, economic, and cultural activities in the metaverse world. Metaverse means a world where virtual and reality interact and evolve together, and social, economic and cultural activities are carried out in it to create value. During the COVID-19 pandemic, personal distancing was applied, making it difficult to practice in the laboratory. Thus, there are many metaverse developments to support the development of the use of virtual laboratories. Virtual laboratories in educational institutions can be used as an alternative and even the main choice in helping the teaching and learning process which will take place as a substitute for real laboratories if school and learning conditions are deemed inappropriate. To introduce a virtual laboratory, it is necessary to provide training and direct assistance to Biology teachers or lecturers who will use these media and methods in their learning. Activities can be started by conducting observations and field studies to check and get the right information regarding the state and condition of the laboratory and the learning process in schools and lectures that will use the virtual lab.

Keywords: Metaverse, Virtual Laboratory, Education.

1 INTRODUCTION

Biology is one of the subjects related to how to systematically find out about nature, so that Biology is not only the mastery of a collection of knowledge in the form of facts, concepts or principles, but also a process of discovery. Learning Biology is expected to be a vehicle for students to learn about themselves and the natural surroundings as well as prospects for further development in applying it in everyday life (Pangestuningsih, 2017). The learning problems experienced by educators for students are related to the cost of procuring tools and materials used to carry out practicum activities. Apart from the problem of costs, and the availability of tools during practicum in the laboratory. Learning during the Covid-19 pandemic. This is caused by a change in the design of the

implementation of learning that needs to be adjusted to the health protocol, so that temporarily learning cannot be entirely carried out offline. Learning problems during the Covid-19 pandemic can be substantial, such as curriculum. In addition, problems can also be technical in nature, for example problems in terms of practical implementation. The Covid-19 pandemic has greatly impacted various fields of education, especially education in Indonesia. Initially, the learning process was carried out at school. However, during the Covid-19 pandemic, learning was only carried out offline (Setiawan, 2020). So that during the Covid-19 pandemic it affected the practicum activities of biology students and biology education.

Development of a Virtual Biology Laboratory based on interactive multimedia as an alternative learning media and measuring the feasibility level. Virlab is an interactive simulation of an experiment in which all manipulations are performed on the computer (Špernjak & Šorgo, 2017). According to Abramov, et al. (2016) virlab is a software that simulates experiments in real laboratories. Virlab has been popularly used in most science learning, especially because it is supported by increased computer capabilities in information processing (Špernjak & Šorgo, 2017).

Virtual laboratories in educational institutions can be used as an alternative or even the main option in assisting the teaching and learning process which will take place as a substitute for a real laboratory if the school and learning conditions are deemed inappropriate. To introduce virtual laboratories, training and assistance are needed which are directly given to Biology teachers or lecturers who will use these media and methods in their learning. Activities can be started by making observations and field studies to check and get the right information regarding the conditions and conditions of the laboratory and the learning process in schools and lectures that will use the virtual lab (Suarja and Aswadi, 2016).

Virlab is an interactive simulation of an experiment in which all manipulations are performed on the computer (Spernjak and Sorgo, 2017). According to Spernjak and Sorgo (In Suryanti, et al, 2019) The use of virlab has several advantages, namely flexibility in setting practicum times and locations, practicum results are immediately available and reliable, practicum can be repeated immediately, no need to frequently buy laboratory equipment and materials, experiments safe and economical because it allows 'working' with hazardous or expensive materials, and shortens the duration of experiments.

Helping the practicum-based student learning process if you experience problems with limited practicum requirements, one of which is using a virtual laboratory. A virtual laboratory is a medium for simulating computer-based chemical practicum activities with the aim of describing chemical reactions that cannot be seen in real situations (Hikmah et al., 2017).

Online learning is a medium generated through programmed interactions via the internet, such interactions range from the complexity of simple downloads of instructional content to structured interactions that include assessments and assigned certifications (Daniel, 2013). According to Ziegler and Diehl (In Diki, 2015:29) suggest that the use of computer networks allows students to contribute ideas in parallel and increases their motivation through social competition. Students in online courses can share their ideas regardless of the contributions of other students. Even if other students contribute different ideas, the contribution of different ideas stimulates the generation of ideas for each student. (Diki, 2015).

The development of the virtual laboratory is currently developing using the metaverse. The metaverse concept was originally developed in 1992 in the science fiction novel Snow Crash by American novelist Neal Stephenson. The characters in Snow Crash become avatars and work in 3-dimensional (3D) virtual reality, and virtual worlds where people interact with each other and their environment without physical, real-world limitations called the metaverse. Metaverse in virtual reality that exists outside of reality. It is a compound word from "meta", meaning transcendence and virtuality, and "universe", meaning world and universe. The Metaverse is the start of creating something new, much like the early days of the Internet. After the metaverse concept emerged, extensive efforts and research were put into making the metaverse a reality. Metaverse as a layer between you and reality. Metaverse refers to a shared 3D virtual world where all activities can be carried out with the help of augmented and virtual reality services (Iswanto, et al. 2022).

According to Dunn, T.J. Kennedy (In Indarta, et al, 2022) Metaverse development also overcomes the weaknesses of currently developing virtual dimensional technology, which still has limitations on the sensations and experiences that are felt. The low self-perception created by 2D virtual technology makes it impossible for users to get an optimal experience when exploring virtual spaces.

A new model of Meta-education, Metaverse-powered online distance education, may emerge to enable new formal and informal learning experiences with the online 3D virtual campus concept (Kye

et al., 2021). Online learning in the Metaverse will be able to push the boundaries of social connection and informal learning. Physical presence in the classroom will cease to be a privileged educational experience.

2   METHODOLOGY

The method used in this research is literature study or literature study. That is, studies based solely on written studies, including published and unpublished studies. The library method is run by finding the relevant reading source and reading it first. Reading sources can be in the form of journals, academic papers, term papers, papers, papers, essays, and other sources that have been written before.

The data obtained were analyzed using descriptive analysis methods that explain the facts, followed by an analysis that not only explains the issues raised by the author, but also provides good understanding and explanation.

The metaversepedia flow, which begins with the Blender or Unity application, is made by students to create a Metaverse-based laboratory. Here we make a simple laboratory that will study cardiac anatomy and cardiac physiology.

3   FINDINGS AND DISCUSSION

By taking advantage of the infinity in the world of the metaverse, this scientific work initiated the idea of creating a metallab, namely a laboratory metaverse featuring laboratories and preparation of learning media. The media used is learning media for the anatomy and physiology of the heart.

At Metaverse Laboratory (MetaLab) we call Metaversitas Biology Laboratory.

Figure 1. Laboratory Metaverse in Front of View

Source: Metaverse Team-built apps, (2022)

Figure 2. View of Entering a Room in the Metaverse Laboratory

Source: Metaverse Team-built app, (2022)

Figure 3. Display of the Lab Workbench in Metaverse Laboratory

Source: Metaverse Team-built app, 2022
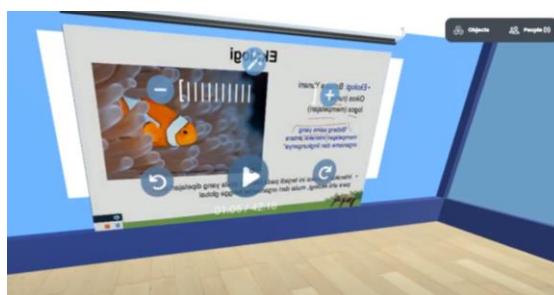
Figure 4 View of the Material Table in the Metaverse Laboratory

Source: Metaverse Team-built apps, 2022

4   CONCLUSION

Metaverse makes laboratory practicum activities more interesting, cheaper, because it doesn't use consumables, it can be used during the COVID-19 pandemic to help with laboratory practicum learning.

ACKNOWLEDGEMENTS

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MINI LAB KEARSIPAN DI UPBJJ SEBAGAI ALTERNATIF SARANA PRAKTIK KERJA BAGI MAHASISWA D IV KEARSIPAN

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Abstract

Sixty percent of the courses in the curriculum for the Diploma IV Archival Study Program must be feasible because it is a vocational program. Students can currently gain experience in archiving in regional archive institutions located in provinces, districts, and cities in addition to higher education institutions, albeit not all universities have such archival institutions. Additionally, the distance that students must travel to get to the practice area is rather far. Due to the shortcomings of this practice area, it is essential to establish an archiving practice area that is more convenient for students to practice archiving, both in terms of an easily accessible location and uniform archival administration. This descriptive study intends to offer a different location for students to practice archiving that is easily accessible and has standardized systems and amenities. The methodology used is interview with archive manager at UPBJJ-UT, site surveys and other documents that support the research objectives. Based on the data gathered from all UPBJJ-UT, it can be concluded that 23 UPBJJs meet the following criteria and can serve as a practicum site for Diploma IV Archive students: the implementation of official document procedures, the classification of archives in archival storage, the scheduling of archive retention during destruction, and the inclusion of an archive access security system. In the same way, Perka-ANRI-standardized equipment such as archive guides, archive folders, output indicators, archive organizers, and archive boxes have been employed in the equipment facilities.

Keywords: mini lab archives, distance learning, archive management

1   INTRODUCTION

Archiving is a very important part of office work. In order to the office effectively provide services, appropriate written information must be available when necessary. Archives are needed in the implementation of administration, because archives is the center of memory for every activity in an office. Without archives it is impossible for an archivist to remember all records and document completely. In order to manage its archives effectively, an office must consider an archive system that is in line with progress of the organization toward its objectives.

Archive is also said to be a source of management information. The archive is crucial to administrative tasks and carrying out an obligation of the institution. Given the importance of archive, it is necessary to have a systematic, effective, and efficient management system. The value of archives does not entail that all of the records of agencies should be maintained. Nevertheless, archives that have a high usage value must be kept there indefinitely, whereas archives that do not and have reached their retention value must be deleted. However, this does not mean that the

destruction of archives that have no use value can be done arbitrarily, but the destruction must follow a procedure that is in accordance with applicable regulations (Hasibuan, 2012).

According to what have been explained, it is very necessary for the role of archives must be both essential and extensive. With the Archive Diploma program of study at the Faculty of Law, Social and Political Sciences (FHISIP) of Universitas Terbuka, which is a vocational program, 60% of all courses taken are required to complete practical tasks, in this case, archiving practice. Due to the large number of students pursuing the Archive Diploma, their dispersion throughout Indonesia, including in underprivileged areas, and the considerable travel time required, it is extremely challenging for these students to reach the locations where they will be receiving their archiving practice. The regencies and cities has Archives Institution for Higher Education (*Lembaga Kearsipan Perguruan Tinggi*), although not all of these institutions have the means to practice archiving. Even the place for archiving practice must meet Perka-ANRI standard.

Based on the condition of the problem faced by D IV Archives FHISIP Universitas Terbuka students that have been explained, and with the limited place of practice, the formulation of the problem in this study is: "How to prepare the standardization of the archival lab for D IV Archives at the Universitas Terbuka". The aim of this study is to find out to what extent this archiving mini lab can be functioned as well as possible, making it easier for archiving D4 students to practice archiving well from an easily accessible location and good archival management. already standardized. For this reason, this research is entitled: "Mini Archive Lab at UPBJJ as an Alternative Work Practice Facility for Open University Archives D4 Students".

2 METHODOLOGY

This research uses quantitative methods. The analysis used in this research is descriptive analysis. Ali (1982) explains that descriptive research methods are used to solve and answer problems that occur in the present. It is carried out by taking the steps of collecting, classifying, and analyzing or processing data, making conclusion and report with the main objective of finding out how much difficulty is experienced by Archives D4 students in obtaining archiving practice courses.

The population of the respondent in this study is D IV Universitas Terbuka students, while the sample taken is D-IV Archives program of study students of Universitas Terbuka. This study uses a

questionnaire to obtain data. The questionnaire will be distributed online using the questionnaire link obtained from the Google form.

3 FINDINGS AND DISCUSSION

The need for standardization of the archives lab is to equip students to be able to manage archives according to the principles, rules, according to the Archives Law. With this standardized lab, after completing their studies at D4 Archives, students can apply their knowledge quickly and well where the student works. This standardization of the archival lab is not only useful for archiving D4 students but also for agencies around UPBJJ -UT, to practice, learn in archive management. Helping students in carrying out archiving practices .

The existence of a standardized archival lab at upbjj will make it easier for students to practice. If so far students have to dance to offices that have implemented archival standards in the implementation of archive management and there is a possibility that the location is far enough for students to take the location of the practice, then the existence of this mini lab can help students in carrying out archiving practices perfectly, because in terms of facilities and infrastructure, upbjj-UT has implemented an official script order, classification system, archive retention schedule and SKKAD. In terms of instructors, students can also be accompanied by upbjj-UT employees who are already trained in managing archives. Speed up student graduation. With an archives lab that is easily accessible, graduation for archiving D4 students can be faster because the implementation of practice can be carried out as soon as the student concerned meets the requirements to practice archiving.

The findings of this study will be advantage for theoretical benefits, which is the results of this study can add conceptual insight and theoretical basis regarding problems in archiving practice for D-IV Archives students specifically in Universitas Terbuka and the regional offices of Universitas Terbuka (UPBJJ-UT). Other than that, for the practical benefits, the results of this study can be used as a policy for UPBJJ-UT to implement and provide Archives Mini Lab facilities for D-IV Archive students, which are located in the respective archive rooms of UPBJJ, but of course these facilities are with the consideration that BIMTEK and supervision from the Central Archives have been carried out in accordance with Perka ANRI No. 10 of 2000.

4   CONCLUSION

With the holding of mini archiving lab facilities at UPBJJ-UT that are in accordance with the ANRI Perka standards for Open University Archives D4 students, one of the requirements for practicing courses of 60% can be achieved.

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GRADE POINT AVERAGE: A GOOD PREDICTOR OF STUDENT DROPOUT IN UNIVERSITAS TERBUKA INDONESIA

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Abstract

Dropout rates in university that uses distance learning methods are definitely higher than those in conventional universities, including at Universitas Terbuka (UT) Indonesia. The term "drop out" is called non-active student in UT. This research aims to investigating the best time to identify students who become non-active and the student characteristics that have a higher risk of being non-active in distance learning. The data used in this study was provided by UT's Academic Information System Database (secondary data). Email surveys collected additional data. Logistic regression analysis was performed to identify students that are likely to drop out by Sociodemographic characteristics and their academic performance of students. This study reveals that grade point average (GPA) is an excellent predictor to identify students becoming non-active, especially in the first semester. We need to monitor student GPA throughout the first semester to prevent non-completion of their study, and it will improve the prediction accuracy.

Keywords: distance learning, dropout, GPA, non-active student, Indonesia.

1   INTRODUCTION

Online learning in higher education has become popular recently, especially after the COVID-19 pandemic. The main problem that is still a challenge in online learning is the high dropout rate (Mubarak, Cao, & Zhang, 2022). It is known that the dropout rates in university that uses online learning methods are definitely higher than those in conventional universities (university with face-to-face learning). A study showed that the student persistence rate in open universities is 10-20% lower than in conventional universities, with only 50% of the student completing their study (Carr in Rovai, 2002). The problem of the high rate of student dropout also becomes a primary concern for Indonesia Open University (in Indonesian: Universitas Terbuka or UT), Indonesia's only public university that implements distance education. The term "dropout" is called non-active students in UT. Students are classified as non-active if they do not register for four consecutive semesters. The previous study showed that the percentage of non-active students in UT is quite high (42%) (Utami, Winarni, Handayani, & Zuhairi, 2020; Ratnaningsih, 2011). Based on the Universitas Terbuka's annual data, it is known that the number of active students as of 22 May 2022 is 346,584 (Universitas Terbuka, 2022). Compared to active students in 2015, the number decreased by 12.6% (Universitas Terbuka, 2015).

In general, dropout is caused by professional, academic, health, family, behavior, and individual reasons (Xenos, Pierrakeas, & Pintelas, 2002; Kotsiantis, Pierrakeas, & Pintelas, 2003; Mubarak, Cao, & Zhang, 2022). Specifically, some studies showed that demographic characteristics (e.g., age, gender, educational background in high school, & employment status), classroom characteristics (e.g., course difficulty), cognitive engagement (e.g., exercise, seeking help, studying on weekends), and behavioral engagement (e.g., interaction in the online tutorial) are contributing factors for students being drop out (Ratnaningsih, 2011; Saefuddin & Ratnanningsih, 2008; Park & Choi, 2009; Sembiring, 2014; Sembiring, 2015; Coussement, Phan, De Caigny, Benoit, & Raes, 2020). Furthermore, academic performance data serve as a good predictor and most important variable of dropout (Ortiz-Lozano, Rua-Vieites, Bilbao-Calabuig, & Casadesús-Fa, 2020; Coussement, Phan, De Caigny, Benoit, & Raes, 2020).

The high number of non-active student at UT need to be solved. One of the good strategies to reduce non-active students is to identify its predictors. Many existing studies found the variables to predict student dropout in distance learning, but a limited number of studies identify the time when students become drop out. Our study focused on investigating the best time to identify students who become non-active and the student characteristics that have a higher risk of being non-active in distance learning.

2 METHODOLOGY

2.1 Study Design

This research is a retrospective cohort study. We used data obtained from the Academic Information System Database of Universitas Terbuka. The data selected were data from students of the biology study program, who registered for the first time from 2012 to 2014, then observed student re-registration status in each semester until the end of 2017. The selection of data in the biology study program is based on the consideration that it has a relatively low number of students with a high percentage of non-active students (47%). Data collection for the past few years was carried out to ensure the status of each student observed could be categorized as an active or non-active student at the time the research was conducted. As previously mentioned, students are categorized as non-active students if they did not register for four consecutive semesters. So the minimum observation time required is three years.

2.2 Data Collection and Analysis

The research data is secondary data taken from the student registration database, which includes information about the student's name and identification, age, gender, employment status, previous educational level, grade point average, and the time of registration. In our study, the data of students' status are grouped as active and non-active based on the last observation we performed. Non-active status is classified as an event, and the student's registration date before being non-active is categorized as an event date. All the variables analyzed in this study are presented in Table 1.

Table 1. Description of Variables Used in This Study.

Variable	Description
Age	Age at the time of registration, categorized into three groups: less than 35, between 35 to 45, and more than 45 years of age.
Gender	Men or Women
Employment Status	Employed or Unemployed
Previous Education Level	The level of school that student have completed before applying Universitas Terbuka, categorized as bachelor, diploma, and high school.
Grade Point Average	This variable is classified in to three categories, namely the students with GPA more than 3.00, between 2.00 and 3.00, and less than 2.00

The data is analyzed using STATA SE12.0 (College Station, TX). Descriptive analysis was carried out on categorical data using frequency distribution. Kaplan-Meier analysis was used to identify the mean time between failure on non-active students (missing data/data missing will become sensors in this analysis). Cox proportional hazard model analysis was performed to identify students that are likely to be non-active by the sociodemographic characteristics and academic performance of students. The result obtained from this analysis is a crude hazard ratio (HR) and p-value with a confidence level of 95%. Further analysis was performed using cox regression. The p-value limit included in the multivariate analysis is less than 0,25, and variables with a p-value of <0,25 were analyzed into one cox regression model using the backward elimination method. Significant variables

are variables that have a p-value <0,05 after being diagnosed in each model. In the final model, the adjusted hazard ratio is obtained to determine the magnitude of the influence of independent variables on non-active students. The data fit the proportional-hazards assumption with p 0.7037 (p>0.05).

3   FINDINGS AND DISCUSSION

The number of students registered in UT's Biology Department in the period of 1st semester of 2012 to 2nd semester of 2014 is 354, with 198 (56%) categorized as active and 156 (44%) as non-active. Student characteristics are presented in Table 2. The majority (77%) of non-active students are less than 35 years old/ y.o., more than half (55%) are women, 67% of students are unemployed, and most students (89%) had previous education levels in high school. Based on student academic performance, most of the students (87%) had a grade point average (GPA) less than 2.00.

Table 2. Characteristics of the Student in Biology Department.

Student Characteristics	Non-active student (n=156)	Total respondent (n=354)
Sociodemography		
Age (years old)		
< 35	120 (77%)	281 (79%)
35-45	31 (20%)	63 (18%)
>45	5 (3%)	10 (3%)
Gender		
Female	86 (55%)	200 (57%)
Male	70 (45%)	154 (43%)
Employment		
Unemployed	104 (67%)	225 (64%)
Employed	52 (33%)	129 (36%)
Previous education level		
Bachelor	5 (3%)	6 (2%)
Diploma	12 (8%)	48 (13%)
High School	139 (89%)	300 (85%)
Student Academic Performance		

Grade Point Average		
>3.00	0 (0%)	20 (6%)
2.00-3.00	21 (13%)	111 (31%)
<2.00	135 (87%)	223 (63%)

There were 44% of non-active students from a total sample of 354 students during the observation period from 2012 to 2017. Moore and Kearsley (1996) stated that the percentage of 30% to 50% of non-active students in distance learning is categorized as a common condition. However, the percentage can be the main concern for UT, especially for Biology Department, and also the Faculty of Science and Technology has a lower number of students compared to other faculty at UT. Moreover, a study showed that non-active students can lead to a higher dropout rate (Ratnaningsuh, 2011), thus can potentially reduce the number of students in UT's Biology Department. Therefore, it is important to solve this by, among many other solutions, giving extra motivation for Biology student to finish their study. Based on the Kaplan-Meier analysis of all students, the incidence rate of non-active students in distance learning was 8.7 per 100 people per semester. The median time of this data was undetected, but only 25% of students who remain studied according to 1-semester observation (Table 3, Figure 1, and Figure 2). It means that 75% of students become non-active in the first semester. This study shows that the first semester is a critical period for students in UT's Biology Department to become non-active. This finding is similar to another study in Brazil's Open University, in which 85% of students withdraw from their studies during the initial semesters (Rodrigues de Oliveira, Aparecida Oesterreich, and Luci de Almeida, 2018; Ortiz-Lozano, Rua-Vieites, Bilbao-Calabuig, & Casadesús-Fa, 2020). Some of the main causes of student's dropout are time constraints, heavy workload and schedule in their job, and problems in utilizing technology and adapting learning methods in the distance education system (De La Varre et al., 2014; Rodrigues de Oliveira, Aparecida Oesterreich, and Luci de Almeida, 2018).

The high number of non-active students during initial semesters must be addressed accordingly, and this study reveals that the first semester is the best time to identify the student who is at risk become non-active. So, one good strategy to reduce the high number of non-active students is to improve academic monitoring and throughout the first semester. In addition, we can strengthen academic interaction between tutors and students through the provision of learning services, particularly in the

first semester. Thus, students in the early program of distance learning, which is known as a new learning system for most students, are able to understand and adapt to the learning system. In addition, an increase in understanding of distance learning needs to be strengthened by specific introductory courses or class sessions commonly applied to all new students.

Table 3. Median time of non-active student.

Status of student	Incidence Rate	No. of subject	Survival Time (semester)		
			25%	50%	75%
Active	0	198	.	.	.
Non-active	0.5842697	156	1	1	2
Total	0.0877884	354	2	.	.
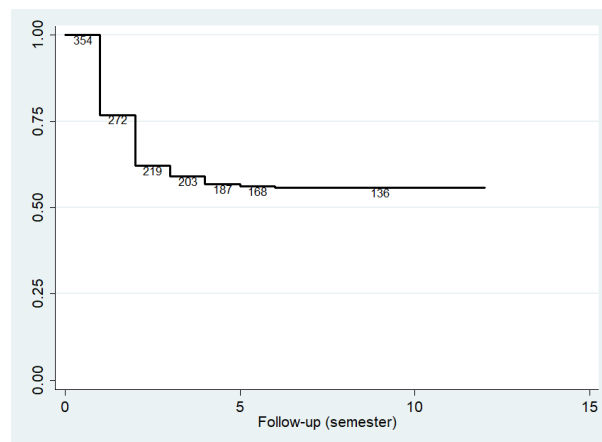
Figure 1. Kaplan-Meier survival estimate
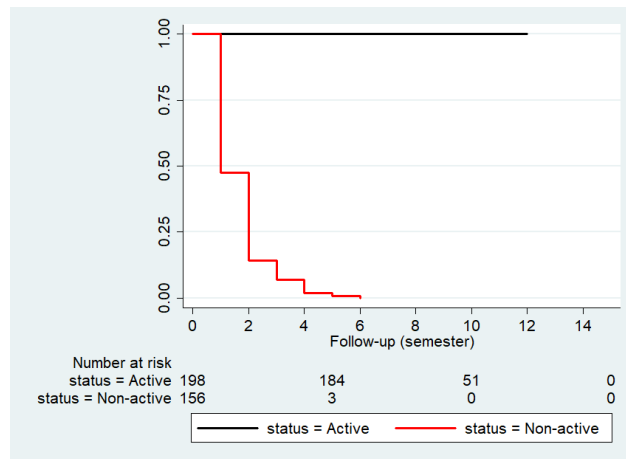
Figure 2. Kaplan-Meier curve based on active and non-active students

On univariate analysis, only one of the 5 variables tested had a p-value <0.25. There is no statistically significant difference in age, gender, employment status, and previous education level of students. However, based on the value of the crude hazard ratio (HR), students aged >45 y.o and 35-45 y.o have a risk of becoming non-active 1.2 times higher than students aged <35 y.o (Table 4). The tendency of older students to experience school dropouts is also found in previous studies (Carr, 2000; Saefuddin and Ratnaningsih, 2008). This is inversely proportional to other studies which suggest that older students in distance learning have a lower risk of dropping out of school (Ratnaningsih, 2011; Stoessel, Ihme, Barbarino, Maria-Luisa, & Sturmer, 2015). It is known that students at distance learning are not limited in age, year of entry, or year of graduation (Pannen, 2016), and generally students in distance learning are adults. The risk of male students being non-active is 1.08 times higher than females (Table 4). This result is also found in another study (Saefuddin & Ratnaningsih, 2008; Rumberger, 1983). The higher risk of dropping out in males is associated with lower learning resistance in males than in females. On the contrary, findings by Stoessel, Ihme, Barbarino, Maria-Luisa, & Sturmer (2015) showed the risk of dropping out female is greater than males, which can be contributed to the characteristics of distance learning students who generally are those who are already married (It can be associated with maternity, high household responsibilities, in-laws' restrictions, moving to a new city or other family obligations) (Carreira & Lopes, 2018; Muslim, Muhammad, Raza, & Touseef, 2017). Based on employment status, unemployed students have a risk of 1.2 times becoming non-active compared to those employed. Students who have bachelor's degrees have a risk of becoming non-active 5.8 times higher than

students who have diploma degrees (Table 4). The findings related to sociodemographic characteristics can be used as a reference in an effort to decrease non-active students. It is necessary to optimize distance learning activities that put more attention to the learning characteristics of adults and emphasize more on students classified as male, unemployed, and bachelor's degree as previous education level.

As mentioned before, only one variable that had a p-value <0.25 and was included in the multivariate analysis, namely grade point average. In the final model, having GPA less than 2.00 (adjusted hazard ratio [aHR]: 2.39, 95% CI: 1.51–3.80) is the strongest predictor of the non-active student (Table 4). This finding is in line with previous studies which found students with lower GPAs had a higher risk of dropout than students who have higher GPAs (Saefuddin & Ratnaningsih, 2008; Ratnaningsih, 2011). The results of our study reveal that GPA is a good predictor to identify students who become non-active. A good GPA is an important point for students to survive studying at the Universitas Terbuka. For this reason, it is necessary to develop learning innovations at UT, one of which is by providing various learning services that match individual learning styles, abilities, and tastes that are tailored to the learning objectives of each course (Twigg, 2001). The results of this study are expected to provide benefits for making effective interventions.

Table 4. Univariate and multivariate analysis of student characteristics and non-active student

Variable	Univariate analysis		Multivariate analysis	
	HR (95% CI)	p-value	Adj. HR (95% CI)	p-value
Age (years old)		0.360		-
< 35	1.00		-	
35-45	1.19 (0.81-1.78)		-	
>45	1.21 (0.49-2.97)		-	
Gender		0.636		-
Female	1.00		-	
Male	1.08 (0.79-1.48)		-	
Employment		0.313		-
Employed	1.00		-	
Unemployed	1.18 (0.85-1.66)		-	

Previous education level		0.380			-
Diploma	1.00			-	
High School	2.04 (1.13-3.68)			-	
Bachelor	5.84 (2.04-16.68)			-	
Grade Point Average		<0.001			<0.001
>3.00 (0)	1.00			-	
2.00-3.00 (1)	6.02 (~)			6.02 (~)	
<2.00 (2)	2.39 (1.51-3.80)			2.39 1.51-3.80)	

4   CONCLUSION

The percentage of non-active students in the Biology Department is relatively high, with the incidence rate of non-active students being 8.7 per 100 people per semester. In one semester of observation, 75% of students become non-active. It means that the first semester is the best time to identify the student who is at risk become non-active. There is no statistically significant difference in age, gender, employment status, and previous education level of students. Grade Point Average (GPA) is the strongest predictor of the non-active student. Students with GPAs less than 2.00 had 2.4 times higher risk of being non-active students than those who have GPAs more than 3.00.

Efforts that need to be considered to reduce non-active students, especially in the first semester, are to improve the interaction between tutors and students through the provision of learning services that are preferred in the initial semester. The provision of these services needs to be supported by policies that can increase student involvement in these learning services, as well as maintain the quality of those services. In addition, optimizing learning activities must pay attention to students who have lower GPAs. The institution also needs to improve the socialization of the distance learning system so that students can prepare the best strategies for learning at the distance. Our research recommends strengthening student GPA monitoring throughout the first semester, and it will improve the prediction accuracy of non-active students. It also can be the key to success in reducing the number of non-active students in distance learning. Further research is suggested, e.g. by analyzing other variables to find other predictors that can be used to identify non-active students (student dropout) in distance learning.

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E-LEARNING PROGRAM IS IT A NEW HYBRID FROM OF EDUCATION?

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Abstract

Since e-learning was introduced as part of the higher education landscape, many universities have adopted e-learning in their learning designs. However, developing e-learning requires internet technology skills, learning design, and high mastery of substance, so e-learning development becomes complicated and expensive for some universities. Because of this, many universities have started researching and experimenting with hybrid Universitas Terbuka (UT), has been designed to provide distance higher education (PTJJ). UT has organized hybrid education. Hybrid education in this study combines face-to-face education, distance education with media outside the network, and education with online media. So far, most of the hybrid education described in the literature uses the flipped classroom model. Other e-learning models are also often applied in the curriculum. Distance education is in dire need of management support. Several studies report the importance of adequate institutional support in implementing hybrid education policies and their benefits from a curricular perspective. Institutional support and effective employee engagement will improve organizational performance. This study explores the opportunities that arise from the use of e-learning in the learning process. This paper presents the policy implementation of a hybrid education model and a framework that describes the e-learning hybridization initiative with conventional education as a two-factor continuum, namely: (1) institutional support for the use of e-learning and (2) aligning curriculum content between e-learning and hybridization programs. In addition, hybrid education suggests indicators to measure the impact of these initiatives at the education and university level.

Keywords: Hybrid Education; Organization performance; Public service organizations; Employee engagement

1 INTRODUCTION

Hybrid education may be a method that uses technology to form a range of learning environments for students. lecturers victimization hybrid instruction by choice incorporate technology tools to boost student learning and answer completely different learning preferences.(Shetu et al., 2021) In hybrid rooms, personal activities are usually combined with technology-mediated activities to permit much active learning in personal settings and more aware orientation as students study outside the classroom. E-learning often results in a discount in face-to-face time, as classroom activities are replaced by time spent outside the standard classroom (Porter, Graham, Spring, & Welch, 2014). For example, one variety of hybrid pedagogy is to 'transform' teaching so that student's expertise the most lecture part of a way as school assignment then uses class time for a lot of active learning

activities. A typical hybrid education is one hour per week face-to-face with self-paced study hours (amount varies supported tutorial performance) consisting of technology-enhanced activities during which students will participate outside of sophistication.

Hybrid learning environments are almost like ancient lecture rooms. In this, they each involve the presence of lecturers and students, both educational ideas are based on learning objectives and outcomes, and each embodies activities styled for student learning for several instructors who design student-centered e-learning supported student learning objectives. Although learning objectives are aligned with assignments and assessments, there are many similarities between the principles designed for hybrid instruction, and therefore the principles want to produce courses. Ancient(Coates & Mahat, 2014). Modalities for human activity with students and exchanging info could include an amendment to accommodate new technologies; however, serving students learn can stay a fundamental part of the core of hybrid education.

Since the appearance of e-learning, several establishments have joined the wave of e-learning, which has resulted in massive volume of learning. However, manufacturing e-learning has been verified to be an advanced and big-ticket activity for educational activity institutions (Pérez-Sanagustín, Hilliger, Alario-Hoyos, Kloos, & Rayyan, 2017) Scenery. Therefore, the elite university chiefly leads the e-learning development process, whereas different institutions see the initial price of e-learning as an obstacle and therefore the ought to notice an alternate commit to make the most of e-learning(Ng'Ambi & Bozalek, 2015)

To utilize E-Learning, the planet of education has begun to explore and experiment with hybrid learning initiatives that aim to integrate regionally made and third-party E-Learning into the info (Njenga & Fourie, 2010). during this context, the hybrid construct is known broadly, together with learning initiatives, strategies, or models desegregation E-Learning or E-Learning-related technologies into ancient curricula.

Most current studies on hybrid education initiatives have centered on e-learning learning experiences, analyzing the benefits of learning compared to other traditional approaches (Arpaci, 2019). However, the scope of innovation has distended traditional lecture rooms on the far side, thanks to the varied hybrid initiatives offered by universities growing by investment in E-Learning (Castro, 2019)

Many authors have begun to review the impact of hybrid models supported E-Learning, explaining that hybrid models are enforced (Bruggeman et al., 2021), or examining student learning outcomes

between initiatives hybrid associated ancient approaches (Weng, Liu, & Chuang, 2019). However, it is very little connection from an institutional perspective till recent years, wherever indicators of the success of hybrid initiatives have evolved from student satisfaction to student support, cost, and energy (Weber-Main et al., 2019). However, some indicators inform the institutional benefits and threats of desegregation E-Learning into the educational info (Shetu et al., 2021)

Thus, there is a requirement to gather and analyze additional information regarding the rising opportunities to implement E-Learning-based initiatives in hybrid education. This paper presents a Hybrid Education (E-Learning) framework, which helps perceive however existing E-Learning is reused and incorporated into the educational process. This paper additionally discusses indicators that may be thought about to live the impact of incorporating hybrid education into the curriculum from an academic and institutional perspective. In particular, the contribution of this paper is threefold:

1. Presenting a literature review on E-Learning-based hybrid initiatives within which existing E-Learning is with success incorporated into the info of various institutions.

2. Organizing these initiatives in keeping with the E-Learning framework to facilitate their comparison; and

3. Provide researchers and decision-makers a collection of indicators for understanding the results of hybrid initiatives.

Finally, we tend to illustrate the E-Learning framework however is applied through a series of guiding inquiries to anticipate what kinds of hybrid initiatives can be enforced by reusing existing E-Learning.

1.1   Benefits of E-learning as a hybrid education teaching and learning method

One of the only valuable elements of the hybrid education technique is its alignment with totally different educational models that supply learning activities specifically designed for various students. In differentiated instruction that is predicated on the principles of e-learning for learning. Lecturers contemplate students' learning preferences, past experiences with the topic matter, and current interests to ultimately interact with students with their knowledge. The appliance of e-learning principles to learning environments has exaggerated student engagement (J. Chen et al., 2016) persistence (Alfaro, Rivera, & Luna-Urquizo, 2019), in hybrid classrooms, varied activities, each within the college and in the school.

Alternatively, online will provide learning techniques that best suit their learning preferences and facilitate them to keep having interaction throughout the educational process.

Hybrid education is a further method that lecturers will make sure that students engage with learning content by incorporating online learning communities, synchronous and asynchronous discussions, and varied online collaboration ways that encourage students to interact with the materials, their instructors, and their peers in an exceedingly kind of ways(Tarus, Niu, & Yousif, 2017). To enhance active learning within the room through e-learning models, hybrid education offers opportunities to extend student engagement and extra support and online resources to enhance the educational experience. For example, besides providing online lecture recordings, lecturers extreme also| give websites, pictures, additional short videos, and readings for college kids to explore course content further. These online resources, once properly organized, will stimulate students' curiosity and inspire them to explore the fabric severally (Shetu et al., 2021).

In addition, the hybrid learning surroundings permit students to line their own pace. Students could have many selections regarding once they can study, a more comprehensive type of study materials to use, and a more comprehensive vary of learning experiences they will opt to participate in (Hasibuan & Nugroho, 2017). In addition, by putting course elements corresponding to recorded lectures online, students may review some course content multiple times if they do not comprehend it the primary time. It is essential to assist students to assimilate this more freelance learning environment than expect them to thrive while not direction, organization, and help from lecturers (W. Chen, Niu, Zhao, & Li, 2014).). Though some lecturers have expressed concern that the employment of technology within the room could be a sign of faculty member replacement, several believe that hybrid lecturers and their interaction with and mentoring students in hybrid lecture rooms are essential elements for student retention and success (El Mabrouk, Gaou, & Rtili, 2017).

Van De Vord (2010) claims that "the sheer quantity of data, in text, audio, images, and graphics, on the market online, combined with a scarcity of oversight and regulation, [in addition to] low information accomplishment skills" may be compared to "the world' shark-infested waters. "For students. Though students in today's faculty lecture rooms are getting |more and a lot obsessed with the net as a tool for learning, they will not have the talents to navigate the data, resources, or tools on the web with success. The forceful increase within the information on the

market online conjointly the varied technologies available to assist students to learn has also created the transition of information, media, and digital accomplishment from services offered solely by college and university libraries to the responsibility of each lecturer (Xu & Zammit, 2020). Hybrid education can be a helpful environment for students to learn more about assessing the credibility of online information, familiarize themselves with online resources and research tools, and learn and use new technologies in a facilitated environment (Mittelstrass, 2010).

1.2 Best Practices of Hybrid Education Design

The migration path from e-learning to group action online learning environments, tools, and resources often begin with the idea that classroom styles, assessment procedures, and alternative methodology that usually add ancient lecture rooms can stay the same. However, in most cases, this is often not the most straightforward method for hybrid students. Group action attainment and technology practices into traditional classroom learning designs to boost learning result in substantial changes. In particular, the transition to mixed classrooms often needs a shift from Lecturer-centered ways and techniques to student-centered methods and techniques(Burrola-Mendez, Goldberg, Gartz, & Pearlman, 2019), and magnified student autonomy independence at intervals in the classroom. (Hino & Kahn, 2016). The university helps students learn outside the classroom. It represents one of the best practices of hybrid academic style: orientating activities and teaching within the classroom and freelance learning and assignments outside the varsity. A common mistake in planning a hybrid course is that it creates activities and classroom experiences outside the school that's connected to, however not expressly connected to, students in the numerous classroom (Green & Green, 2018).

The contender practice in hybrid course design involves acutely aware use of technology. A study by Gironzetti, Lacorte, & Muñoz-Basols (2020) suggests that a clever balance between education and technology is required once universities decide; however, hybrid education ought to be designed, delivered, and supported; however, this might be easier aforesaid than done. Indeed, it is clear that "the inclusion of technology in education additional complicates teaching"(Boelens, De Wever, & Voet, 2017) even if it enhances student learning. Adding new technologies can be a challenge for both faculty and students if the technology is not chosen intentionally or if training in new technology is not integrated into the learning process.

Knowledge Technology Content and Education ideas are provided as a framework to assist lecturers to perceive however best to set up technology integration within the classroom. This model breaks the assorted relationships between learner knowledge. Content and technology to help educators higher assess their strengths and weaknesses (see Figure 1). This model will promote the mixing of teaching and technology in pedagogy environments because it aims to extend lecturers' participation in technology choices that affect student learning. because of "technology and education are typically seen as areas ruled by totally different teams of people" – i.e., technologists versus lecturers: The model also emphasizes the necessity for lecturers to be trained in schoolroom technology, so technology is often utilized in the classroom. one in all the most objectives of the analysis are to "destroy the false duality between education and technology."
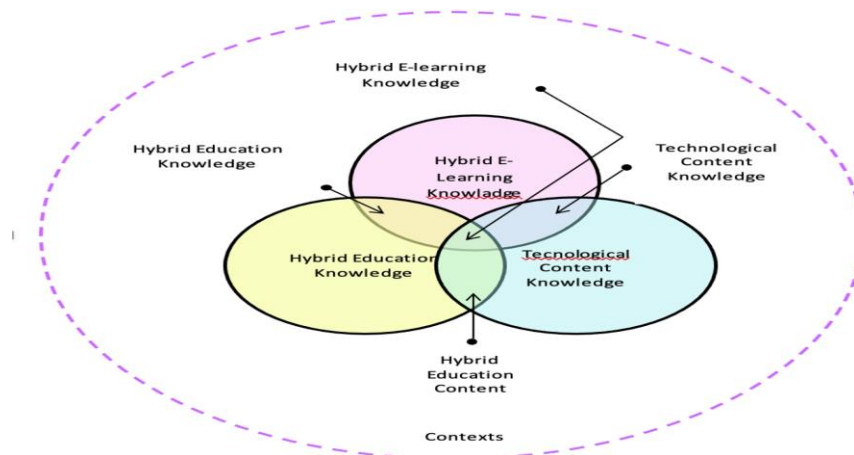
1.3 The Hybrid E-Learning Framework

The organizer and consistently analyzes the implementation of E-Learning-based hybrid initiatives as a time of two factors: (1) required institutional support (x-axis) and (2) alignment of hybrid initiatives with curricular content (y-axis) (Fig. 2). The framework assumes that E-Learning used as part of a hybrid initiative is readily available (either created by the same institution or by a third party).

We tend to outline institutional support because of the infrastructure, services, and human resources required to support the employment of E-Learning for learners taking part in a very hybrid initiative(Porter, Graham, Bodily, & Sandberg, 2016) We tend not to embrace any prices or investments in created E-Learning as a result of it are sometimes separated in terms of decision-making in establishments. Low institutional support implies that the agency invests minimal effort

in providing infrastructure, services, and human resources to launch hybrid initiatives(Weber-Main et al., 2019). High institutional support means that the institution invests excellent effort to supply infrastructure, human resources, and connected services to assist students in hybrid initiatives. For example, providing free and open study areas for residential and non-residential students to figure on E-Learning needs much less institutional support than the standard room model, which can need most teaching effort and the infrastructure typical of face-to-face teaching (Tuweb) practice.

The alignment of program content shows the closeness between the establishment's present learning syllabus and the existing E-Learning syllabus. A high level of alignment implies that E-Learning is aligned with info content and is employed solely as a complement in hybrid initiatives. However, the high level of alignment implies that E-Learning is at the center of the hybrid initiative. That is, the content of E-Learning is wholly aligned with the curricular content of existing courses. Initiatives at the intermediate level take sides indirectly victimization E-Learning, for example, as a reference textbook, because of the content is not aligned with the present learning content. However, E-Learning will still support certain aspects of the training syllabus. In some cases, and if establishment policy permits, the institution might acknowledge E-Learning within the style of credits, or as a part of the ultimate grade of a course in the curriculum, among alternative ways of recognizing learning (Arpaci, 2019; Nissenson & Shih, 2016).

The framework characterizes hybrid initiatives with varying degrees of institutional support and curriculum orientations through these two factors. In Figure 1, we present the four reference models as circles placed at the four corners of the frame.

1. The learning-as-a-service model (low on the 'X' and 'Y' axes) is typical of a hybrid initiative in which students use e-learning voluntarily and as a supplement to the curriculum, however, without alignment directly with the course content in the curriculum. Use e-learning to expand students' knowledge. In this model, participation in e-learning assists students with content that is traditionally not covered in any curriculum but helps with updating concepts.

2. E-learning as a substitute model (high on the 'X' axis and low on the 'Y' axis) is typical of a hybrid initiative where e-learning replaces (or is used to replace the traditional model) Expand curriculum), aligning e-learning content with learning methods.

However, it does not provide educational or institutional support for the physical infrastructure or local teaching services or support.

3. Learning as a driving model (high on the "X" and "Y" axes) is typical of hybrid initiatives where traditional learning is organized around EL learning in the curriculum, which has a high level of support from lecturers and Institutions required. The e-learning content is fully coordinated with the course content of the hybrid curriculum.

4. Learning as a value creation model (high on the 'X' axis and low on the 'Y' axis) is typical of a hybrid initiative in which the institution offers all the necessary support to help students learn to be successful. However, the e-learning content does   not follow   the   learning   content of the curriculum. E-learning is seen as essential, but it can help to acquire additional knowledge or develop cross-curricular skills.
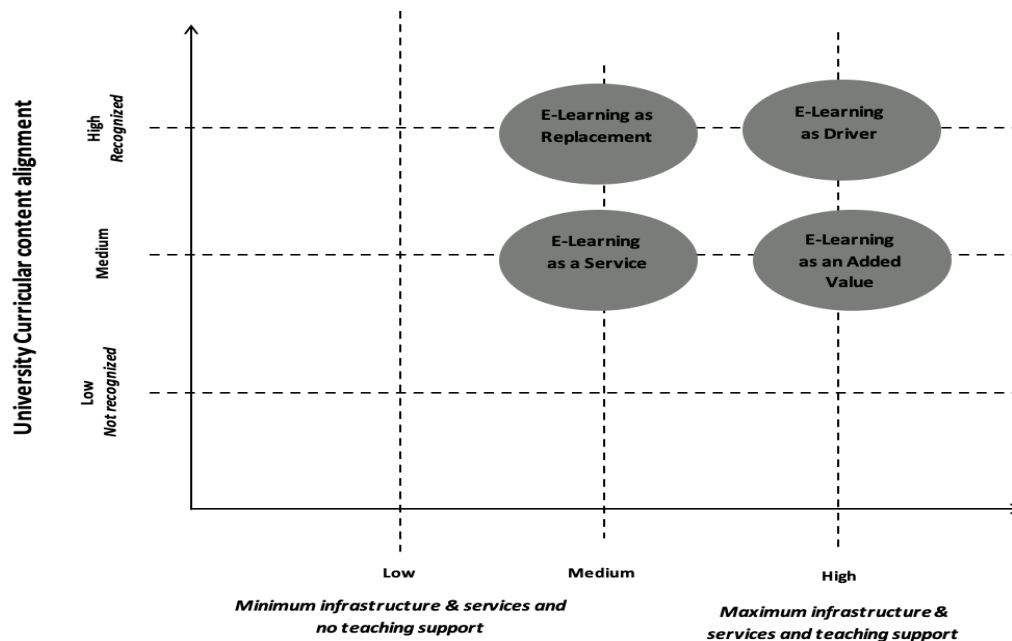
Figure :1 University Support

2   METHODOLOGY

2.1   Participants

Lecturers and students informed this study of an open university also took information from three universities that used e-learning as a comparison, namely Makassar State University, East Indonesia University, and Yogyakarta State University.

2.2 Data Sources

Data informing this study consisted of 120 classroom observations conducted over six months, 11 focus groups with participating students, and personal interviews with 100 participating lecturers/tutors. The online class observation lasted for six months, monitored from Universitas Terbuka Learning Assistance Center (PBB). For universities that become comparisons, in-depth interviews with lecturers and students are carried out. Analyzing two successful hybrid initiatives.

In each case, we tend to describe the indications accustomed to analyzing the impact of the initiatives and how these indicators facilitate decision-makers to replicate aspects that require thought of for future experiences. Specifically, we describe each of those two cases by respondent four guiding queries that may reference alternative establishments using the model:

Q1: University Goals. What are the most goals that the establishment desires to realize by implementing this hybrid initiative?

Q2: University support and indicators. What institutional support will the agency supply to implement this hybrid initiative, and what are the relevant, essential indicators?

Q3: University info Curricular content alignment and indicators. How are these hybrid initiatives aligned with the course curriculum, and what are the critical relevant indicators?

Q4: University Lessons learned. What lessons have been learned in terms or conditions that must be met for this hybrid initiative to figure at the institutional level?

3   FINDINGS AND DISCUSSION

3.1   Indicator related with Hybrid Education

We have identified a set of indicators in the literature that can describe hybrid education-based initiatives in terms of learning experiences, benefits to the teaching process, and need for institutional support (Table 1). While the importance of each of these sets of indicators may vary depending on contextual factors and constraints, their combination can affect the profitability of any hybrid initiative. Decision-makers need information from different indicators to determine how they affect the combination of indicators.

Offers e-learning with traditional teaching methods. In Table 2, we try to classify the different indicators presented in the literature and align them with the four reference models of the e-learning framework. This table suggests indicators that can be used to measure each dimension of e-learning and clarifies which indicators are the most important in the four framework reference models.

However, each institution must discuss which indicators are relevant according to the goals and expectations to be achieved with the model.

For example, Tuweb's reduced course time is a significant incentive to use e-learning as a boost when there is a link between Tuweb and existing e-learning components; For this reason, the Tuweb learning time indicator in Table 2 is marked "**," which means that it may be more relevant for higher education decision-makers if they decide to reuse the e-learning as a guide. Indeed, in the classroom (Livingston, Summers, 2019), reducing Tuweb's lesson time to deliver content may allow lecturer efforts to encourage active learning. In addition, aspects such as the acquisition of learning, the level of articulation with Tuweb and the online components, and the pedagogical support of the lecturer in the implementation of orientation models of flipped classroom initiatives for e-learning can be taken into account(Bruggeman et al., 2021). In comparison, traditional teaching examples are not always geared towards existing e-learning; as in the case of using e-learning as a service, Tuweb time may be less critical as an indicator of the benefits of education (Shetu et al., 2021). A service model can envision a more critical use of online content by learners. For this reason, the interaction model indicators in Table 2 for the eLearning as a service model are marked with a "**," while frequency is not considered an important indicator. They can also be critical indicators such as student learning achievement (typically assessed as the final test score) or a mechanism provided on the platform to help students who do not receive direct lecturer advice.

Indicators of learning experience and pedagogical benefits will enable higher education decision-makers to anticipate the outcomes of hybrid initiatives in terms of curriculum alignment. The alignment of the e-learning content can determine this dimension with the course syllabus by the number of credits that students receive through their participation in e-learning and the increasing perception of students of the quality of teaching and learning. Perception of faculty. Regarding the need for institutional support, the hybrid educational framework does not take into account institutional strategies and structural markers(Porter et al., 2016), assuming that existing e-learning is reused in institutions that have established e-learning assuming that existing e-learning is reused in institutions that have established lines guidelines for e-learning and infrastructure production, considering that the critical support needs are relevant in determining the cost of the different hybrid models. For example, learner support mechanisms in the form of mentoring may be

more necessary to support learners to learn with e-learning as a service model, while other educational materials with e-learning approaches such as engines may be more relevant. Measuring student learning outcomes will be essential in e-learning as a surrogate or driver, as e-learning is at the heart of the methodological approach.

Table 1: Indicators that are relevant for all E-Learning bases initiatives

Benefits for Students	Benefits for the lecturer	University support requirement
Region	Student Perceptions about teaching	Infrastructure needs
Student Satisfaction Level	Faculty self-perception	Infrastructure needs
Retention (level of completion)	Face-to-face time (Tuweb)	Learning mechanism
Study advantage	faculty development	Technical support
The use of e-learning content by students (interaction patterns)	Faculty technology literacy skills	Education support
Online experience	Articulation between Tuweb and Tuton	Faculty incentives
Online knowledge	Credit acknowledgment	

Table 2: Indicators whose relevance varies depending on the hybrid education-based model

Hybrid Education Dimension	Indicators	E-Learning as a Services	E-Learning as a replacement	Relevance	
				E-Learning as Added Value	E-Learning as Driver
Alignment curriculum content	Learning Benefits	**	*	*	**
	Patterns of interaction between students and lecturers	**	*	**	*
	Tuweb time (face to face)	**	*	*	**
	Tuweb and Tuton articulations	**	*	**	**
	Credit acknowledgment	**	**	*	*
	Study advantage	*	*	**	**
University support	Student support	*	*	**	**
	mechanism	**	*	**	*
	Technical support	*	**	*	*
	learning support	*	*	*	**
	Faculty incentives	*	**	*	*

3.2 Analyzing hybrid education

3.2.1 Analyzing E-Learning as service

In 2021, 17,072 new students will be admitted to Universitas Terbuka (UT) every year. They come with different levels of knowledge. For most of these students, subject knowledge is often more minor

than required for a bachelor's degree. Over the past few years, UT has offered interactive learning modules for new students to address this issue. If students are admitted to an open university, they must attend eight sessions of e-learning, while students in the master's and doctoral programs have 12 sessions and must attend classroom teaching using the Tuweb method four times. In each session of material that provides open discussion for students, which students answer through interactive modules and other references, students can review their responses if the instructor scores below standard. For assignments, students are allowed to load according to a predetermined schedule. Students must take a final exam to assess their progress in the content of their respective course materials.

(Q1) University Goals. This strategy is one way to increase student readiness in participating in e-learning. There are several limitations in e-learning that need to be overcome, namely: (1) the low level of participation. Some students from areas outside Java and Bali have difficulty participating in e-learning, with the main reason being limited access to e-learning; and (2) lack of personalization. UT students have different backgrounds and understandings of teaching materials, so they require different learning treatments. Not all students need to cover the same topic. To overcome this limitation, UT provides space to discuss with tutors through LMS. The E-learning model does not follow the same design model as the conventional learning model. E-learning content and learning strategies are provided in a standardized manner. Universitas Terbuka encourages new students to take lessons through tutorials via the web (Tuweb) and online tutorials (Tuton) to study subjects effectively. Tuweb and Tuton for S1 students are optional, while for S2 and S3 students, they must participate in activities. The purpose of this e-learning initiative as a service is to achieve two goals, namely: (1) to provide study assistance to students in understanding course content before exams; and (2) as a form of UT's academic accountability to students.

(Q2) University support and indicators. Very supportive in the form of investment in the procurement of hardware, software, human resources, training, maintenance, and development of e-learning platforms. One indicator is the need for infrastructure. In this case, the institution offers the Open edX platform through ICE and Moodle for regular UT students. ; Both edX and Moodle platforms require technical support from full and part-time technicians to maintain the platform. UT also offers programs to new students to facilitate registration on the e-learning platform as part of the course introduction process, and UT (provides all services offered by the university to new students

who pay tuition fees). Educational support in the form of tutorials, assistance to students. The tutorials and orientation for new students are coordinated by the faculty, the Learning Assistance Center, and 39 regional UTs and overseas student services.

(Q3) University Curricular content alignment and indicators. Alignment and indicators of the content of university programs. During the pandemic, online learning has become a very effective and efficient medium. Therefore, under this Alignment and Indicators of University Program Content initiative, only learning outcomes and interaction models are used as indicators of the direction of program content. They use e-learning content. 80% (N = 80%) of the students participated in the e-learning activity, considering the institutional analysis. Up to 80% of this sample are active in online learning and have a higher participation rate than the others. This analysis showed that students interacted with the course more before the exam (80% of course interactions per day) than during the make-up course (an average of 60% of interactions per day). Second, the student's learning outcomes were analyzed to see if their use of online learning was affected. The analysis showed that students who were active in online learning before the exam performed better, but no significant effect was seen on students who were required to take the final exam.

(Q4) University Lessons learned. To manage the initiative, the following institutional requirements are required: (1) have an e-learning platform capable of collecting information on students; and (2) include registration steps in the induction process to ensure that all learners can register for online learning. In addition, institutions have learned that more should be done to increase adoption rates: (1) more support is needed for commercialization; (2) More efforts should be made to harmonize curricula and make these courses compulsory. This minimal tutoring initiative is classified as "learning as a service" (Fig. 3). First, focus on the curriculum as online learning caters to all significant subjects where new learners need other support, like tutors or institutions.
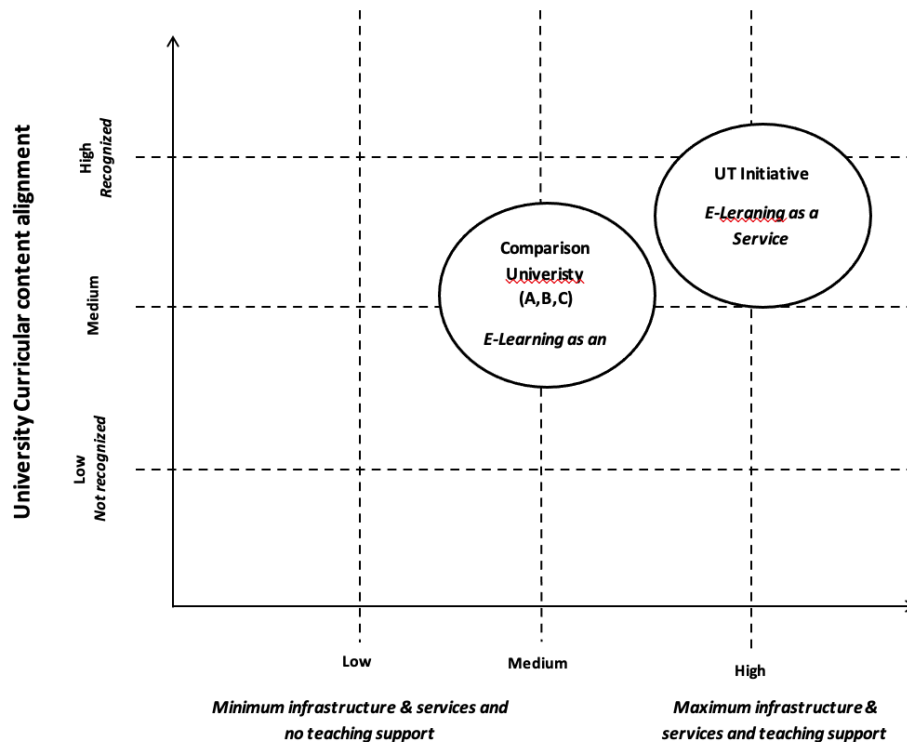
3.2.2 Analyzing E-Learing as an added value

Currently, the university implements an e-learning system. At Universitas Terbuka, e-learning is the primary means of interaction between Lecturers and students, with e-learning consisting of a presence system (Tuweb) and an online learning system (Tuton). This program is developed in 8 sessions for undergraduate programs and 12 sessions for master and doctoral programs. Meanwhile, other comparison colleges use a variety of typical digital applications. The hybrid they mean is combining Zoom, WhatsApp's, Google classroom.

(Q1) University Goals. Several vital aspects lead to a low success rate in e-learning. The first problem is that the students' skills using the e-learning system are lower than required, which does not allow them to follow it. This is partly due to the high dropout rate in the first semester or a drop after the first few weeks. Therefore, students taking courses based on e-learning need to strengthen their basic digital skills to meet the challenges of e-learning.

 The second problem identified by the teacher is that students use little, or no references provided as a remedial form. Books and modules are generally not very interactive, while students need time to understand much theory, especially since it is learning. In this context, the third problem is that class time is not limited, but the internet difficulties in some areas prevent students from completing

assignments, discussions, or exams. Therefore, the primary purpose of using e-learning is to improve the process of teaching and learning face-to-face courses without promoting the content.

(Q2) University support and indicators. Lecturers must provide their students with comprehensive support. Hybrid education is a solution for universities during the pandemic. The e-learning system offers full support for students. Thanks to the combination of the Tuweb and Tuton systems, e-learning is highly interactive. Students must be familiar with e-learning. E-Learning cannot be implemented in real-time because it must be in a good and reasonable network condition. In similar universities, e-learning is still limited to managing learning materials and various features; This is different from open universities that use e-learning as a learning medium.

Q3) University Curricular content alignment and indicators. Today, e-learning is increasingly recognized to solve education and training problems. E-learning is an innovative approach to deploying well-designed, student-centered interactive learning environments that facilitate learning for all time, using the properties and resources of various digital technologies, if the learning materials allow for open and flexible learning and learning environment. The three main components of online learning work together to promote the importance of learning and reciprocity, namely (a) pedagogical models or ideas; (b) education and learning strategies; and (c) educational tools or online learning technologies such as the Internet and network-based technologies. This certainly implies the need for learning experiences designed and developed to facilitate students' practical and efficient acquisition of knowledge and skills. In the blended learning strategy model, a Lecturer must creatively combine various existing approaches, methods, and means to optimize learning effectiveness, efficiency, and attractiveness. There is no best approach, method, or means of communication; the best one adapts to the existing conditions and needs. Experience in compiling or combining different things is a critical factor that distinguishes good or great Lecturers/educators/Lecturers/lecturers/Widyaiswara from Lecturers who are not great or good.

(Q4) University Lessons learned. The university wants to implement e-learning, namely (1) learning design; (2) multimedia components; (3) internet equipment; (4) storage of computers and equipment; (5) service and connection providers; (6) standard resource/program management, software, and resource planning; and (7) connectivity services and applications.

Learning in educational technology is interpreted as an effort to manage the environment intentionally so that someone trains positively under certain conditions. A good learning program

must meet the criteria of attractiveness, usefulness (effectiveness), and usefulness (efficiency). Based on this description, it can be concluded that the learning process is essentially a process of change that occurs in a person through the experience. Changes that occur in learning include changes that are knowledge (cognitive), skills (psychomotor), as well as those related to (affective) values and attitudes obtained from interactions between students and learning experiences and resources. While learning is a process of facilitating learning through learning experiences designed and developed according to the needs and characteristics of students. The learning designs are very diverse.

Learning design is often connoted simply as a lesson plan or as a collection of teaching units that are considered a curriculum. Instructional design is a prominent subfield of educational technology. Learning design begins with recognizing implementation problems first, never if learning can solve all problems. If learning is the most critical solution, the design process can begin. The learning design approach always considers the learner's perspective rather than the content perspective.

The learning strategy used in e-learning is combined. *Blended learning* is a learning process that uses various approaches. The approach taken can use various media and technologies. With blended learning, the learning process can combine various physical and virtual (virtual) resources. The blended learning strategy can be applied under agreed conditions. Blended learning should be seen as a pedagogical approach that applies various learning approaches rather than being seen from the size of the face-to-face and online delivery system.

E-learning must combine wisely, relevant, and appropriate between the potential of face-to-face with the potential of information and communication technology that is proliferating today to enable (1) the most educational shift in the learning paradigm. -focusing on a new student-centered learning paradigm; (2) increased interaction or interactivity between students and Lecturers, students and students, students/Lecturers with content, students/Lecturers with other learning resources; and (3) the occurrence of convergence between various methods, media, learning resources, and other relevant learning environments.

Learning strategies in e-learning, especially in the use of blended learning strategies of various learning approaches and multimedia options, where educators and students can combine creatively. These approaches include (1) a physical synchronous approach, namely direct learning, where educators and students carry out the learning process at the same time and place. Some examples are

lectures and lectures, field trips, workshops, hands-on practices, and others; (2) the virtual synchronous approach, meaning that learning occurs directly, educators and students carry out the learning process at the same time (real-time) but take place in different places from each other. Some examples are learning through chat, virtual classroom, videoconferencing, and audio conferencing; (3) independent asynchronous approach, meaning that the learning process does not coincide and place with each other. Students have the autonomy to choose and determine what to learn, how to learn it, where to learn it and when and how to demonstrate learning success (assessment).

4   CONCLUSION

This paper presents an e-learning framework, which aims to explain the efforts of various higher education institutions across Indonesia to reuse e-learning and integrate it as part of the traditional curriculum. Providing a systematic way to define the space for online learning. Blended learning is based at least on existing e-learning from an organizational perspective. The hybrid education framework establishes two key dimensions to describe this space: alignment of curriculum content and institutional support. Based on these dimensions, four models based on hybrid border reference education are proposed: (1) E-learning as a service, (2) E-learning as a substitute, (3) E-learning as a driver, and (4) E-learning as an added value.

On the one hand, these models are a natural extension of how higher education institutions view traditional housing activities and are established: universities and departments decide what educational activities are needed to support programs. They create and institutional support. Some of these activities are closely aligned with the course content in the curriculum, and some may incorporate a learning experience, which requires some degree of institutional support.

To show how the e-learning framework works, we have classified several hybrid initiatives presented in the literature. Interestingly, some initiatives cannot be categorized into the four boundary reference models, demonstrating the utility of defining the framework as an interaction of two axes on which the model can move vertically and horizontally. In addition, we also present two successful case studies from two different institutions and rank them according to the framework. These initiatives are measured in terms of indicators to understand their impact. In addition, compared to other frameworks, the E-learning framework offers a classification of initiatives that differ from the learning objectives they pursue, facilitating the analysis of institutional implications.

ACKNOWLEDGEMENTS

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TUTOR'S PERCEPTION OF THE QUALITY OF ONLINE TUTORIAL COURSES MATERIALS CASE STUDY: INFORMATION SYSTEMS STUDY PROGRAM, UNIVERSITAS TERBUKA

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Abstract

This article aims to find out the perceptions of tutors regarding the course material for an online tutorial, that has been provided by the Information System study program at Universitas Terbuka. As a new study program, it is necessary to evaluate the quality of those course materials presented on an online tutorial, in order to provide precise and updated materials. The online tutorial materials consist of several items: namely the Rancangan Aktifitas Tutorial (RAT), Satuan Aktifitas Tutorial (SAT), essential concepts, topics of a discussion forum, the question of practices, and assignments. This article is written using a quantitative descriptive approach. Respondents are tutors, who have teaching experience and a background of expertise in information systems and technology, for about 300 respondents. Data was collected in the periods of 2021/22.2 and 2022/23.1. Respondents have filled out the survey instrument that consists of all aspects related to the presentation of essential concepts, topics of a discussion forum, and assignments. The results of the analysis show that for the periods of 2021/22.2, 95.63% of tutors agreed and strongly agreed that all of the aspects of online course material are good enough. As for the 2022/23.1 period, 96.94% of tutors agreed and strongly agreed that all of the aspects of online course material is good enough. There was an increase of about 1.31%. Several notes from tutors are to be followed up by the study program so that the implementation of online tutorials, especially for the Information System Study Program can run better in the coming semester.

Keywords: online tutorial, tutor's perception, course material

1 INTRODUCTION

Universitas Terbuka (UT) is one of the state universities that implement distance higher education. To serve student spread all over the world, UT provides several types of tutorials, namely face-to-face tutorials managed by regional offices, online tutorial, and webinar tutorials. Face-to-face tutorials are held at the location closest to students. The tutor for this activity is a local university lecturer or practitioner who has a background of expertise in information systems and technology, around the student's location. Online tutorial are managed by the Central office, and asynchronous learning. In addition, there are also webinar tutorials that utilize virtual meeting technology so that tutorial learning is carried out synchronously. The webinar tutorial is organized by the regional office.

Online tutorials are internet-based tutorials so students and tutors can carry out these activities from their respective locations (Eleftheriou, 2013,. Hamid 2020, Zu, 2014). Online tutorials at the Universitas Terbuka were developed using the Moodle software and can be accessed via the http://www.ut.ac.id/online-learning. Wihadanto (2016) stated that online tutorials are a learning

system that requires instructor (tutor/lectures or practitioner), learner (student) and need a learning strategy that follows the chosen and used platform (i.e. Moodle).

According to Holmberg (in Wardani, 2000), there are three functions of the tutorial as follows.

1. Helping students to develop their ability to think,

2. Helping students interact academically with tutors and with fellow students. By interacting, students learn to solve various learning problems through additional explanations, information, discussions, and other activities.

3. Helping students to apply their skills acquired through assignments and discussions that tutors have given feedback.

In an online tutorial, the tutor has an essential role as a facilitator. Puspitasari (2013) explained that in the implementation of an online tutorial at UT, tutors

1. must have competence in their fields,

2. must have a high commitment because tutors have the task of preparing material to be delivered online (initiation material),

3. have to prepare material to be discussed in discussion forums, giving motivation to students who take part in the discussion to stay active in communicating in each session, both with tutors and with other students who follow online tutorial, and

4. Must evaluate all of the tutorial activities.

While for students to follow the tutorial must do the following steps:

1. Register online tutorials for courses that they followed.

2. Activate the online tutorial account through the e-learning.ut.ac.id page.

3. Fill out the form of willingness to follow the online tutorial

The UT online tutorial is held for 8 weeks, including of initiation materials, discussion forums and assignments. Initiation material and discussion forum are available every week, and assignments are available in week 3rd, 5th and 7th. Students participate in tutorial by discussing initiation material and conducting discussion every week and working on the assignment that are available. The tutor is in charge of managing the class, responding to and assessing student discussions and assignments.

At each meeting, tutor we are required to:

1. Provide initiation material. Initiation material aims to trigger and spur student in understanding material which contain guidance for students to compile concept map, material summaries or material in-depth

2. Create and managed discussion forum. The discussion aims to stimulate student to express their thoughts related to the material provided or invitation to discuss a problem (case study) related to the initiation material. This activity also give a challenge to student to have critical thinking of a problem.

3. Provide enrichment material that is relevant to the material being discussed. The enrichment material aims to provide additional scientific insight regarding initiation material source from Open Educational Resources (OER)

4. Giving tutorial assignment. Tutorial assignment are given at the 3rd, 5th , and 7th meeting to measure the level student's understanding of the tutorial material.

5. Tutor also have to facilitate various tutorial activity, such as providing information and leading discussions, exercise, remind student to study the material for the next meeting, provide responses to student in discussion forum, and provide feedback on student assignments on the Tutorial Assignment menu.

Puspitasari, 2013 and Wahyuningsih, 2014 said that the level accessibility of students in online tutorial is still low, and UT continues to develop and improve online tutorial services. The online tutorial score contribution id 30% toward the final grade to encourage student to be more motivated to participate in the online tutorial.

Furthermore, in the guidelines of Discipline and Ethics of Universitas Terbuka in following Online Tutorials, there are general provisions in this online tutorial activity that students should know: (a) Actively follow Online Tutorial an active role in discussions, and submit the Assignments on schedule. (b). Online tutorial's final score comes from participation (20%), discussion (30%), and 50% from the assignments.

Online tutorials at UT are one of the services that are in great demand by students. Material of online tutorial is prepared by the study program, consists of several items, namely the Rancangan Aktivitas Tutorial (RAT), Satuan Aktivitas Tutorial (SAT), initiation material per week, forum discussion per week, and assignment. UT also design practice question practice question per week, so the student

can use these practice question to evaluate their understanding. So far, UT has prepared learning material that the student can study subject easily, with the guidance of tutors in online tutorials.

The material of courses is prepared by the study program. As a new study program, Information System study program is trying to meet the target of making material courses. The quality of the material courses is the key factor for determining student satisfaction (Ali, 2011 and Setyowati, 2020). To find out the responses from tutors and to improve the quality of the material of courses, the Information System study program conducted a survey in 2022. This survey aims to know the quality of the material courses. Questions on the questionnaire included scheduling online tutorial, suitability of courses with tutors, quality of initiations material, discussion forum material, and assignment materials. In this questionnaire, researchers also asked for the tutor's input on the process of implementation of online tutorial, especially in the Information System study program.

This study result can provide input and improvement for the material courses of the online tutorial in the following year.

2   METHODOLOGY

This paper analyses and evaluates the quality of material courses of the online tutorial at System Information study program. The data samples used in this paper were tutors of System Information study program at 2021/22.2 and 2022/23.1. Data were analyzed using descriptive analysis.

Perception assessment research using the descriptive analysis method was carried out by (Permadi, 2018) which showed that 50% of the respondents had negative perceptions of learning comprehension. In this case, the respondents were a student at senior high school, while the respondents in our study were tutor who provides learning in online tutorial learning, with the object of our research being material in online tutorial learning.

Descriptive analysis in education has been discussed by (Loeb et al, 2017) who explained through descriptive analysis can identify and describe variations and trends from the sample study. Based on that discussion, we apply this method to online tutorial questionnaire data that has been filled in by the tutor. The subject in questionnaire amounted to 14 subject for each semester, each subject as four assessments i.e. : 1) strongly not agree, 2) not agree , 3) agree and 4) strongly agree. After obtaining the percentage of each assessment subject, the trend of values for each subject will be obtained through there tendencies analysis.

3 FINDINGS AND DISCUSSION

In the 2021/22.2 period, the number of tutors who answered the questionnaire was 165 persons. From the result of the questionnaire that has been obtained, we see that in general, tutor states that the scheduling accuracy (agree and strongly agree) = 96.36%. They stated that the suitability of the ability subject was 94.55%. This means that the tutors feels in accordance with the class this semester. The suitability of the time setting is 96.97%, which means the tutors fell that the implementation of the online tutorial is in accordance with the course load. The quality of initiation material, discussion material, and assignment questions in online tutorial also get a high mark from tutors. This means that material of online tutorial at System Information study program is considered very good. The average answer of the tutor answering agree and strongly agree is 95.63%. More detailed information described in Table 1.

Table 1. The result of 2021/22.2

No	Subject	Subject	Strongly not agree	Not agree	Agree	Strongly agree
1	Scheduling accuracy	**B.1**	2.42%	1.21%	33.94%	62.42%
2	The determination of the mastery course is in accordance with the tutor's expectations	**B.2**	2.42%	3.03%	38.79%	55.76%
3	Setting the time for implementing online tutorials in accordance with the course load	**B.3**	2.42%	0.61%	42.42%	54.55%
4	The initiation material is easy to understand	**B.4**	2.42%	1.21%	42.42%	53.94%
5	The initiation material is qualified	**B.5**	1.82%	0.61%	52.12%	45.45%
6	The use of language in the initiation materials (1 to 8) is sufficient	**B.6**	2.42%	0.00%	46.67%	50.91%
7	Initiation material courses are up to date	**B.7**	2.42%	2.42%	52.73%	42.42%
8	Discussion forum material (1 to 8) is easy to understand	**B.8**	2.42%	0.61%	43.64%	53.33%
9	Discussion forum material (1 to 8) is qualified	**B.9**	2.42%	3.64%	44.24%	49.70%
10	The use of language in discussion forum material (1 to 8) is sufficient	**B.10**	1.82%	1.21%	47.88%	49.09%
11	Discussion forum material (1 to 8) is up to date	**B.11**	3.03%	4.24%	46.67%	46.06%
12	The assignment is qualified	**B.12**	1.82%	4.24%	41.82%	52.12%
13	The assignment is up to date	**B.13**	1.82%	6.06%	49.09%	43.03%
14	The Study Program provides good services to tutors	**B.14**	2.42%	0.00%	33.33%	64.24%
		Max	3.03%	6.06%	52.73%	64.24%
		Min	1.82%	0.00%	33.33%	42.42%

No	Subject	Subject	Strongly not agree	Not agree	Agree	Strongly agree
			Strongly not agree	Not agree	Agree	Strongly agree
		Mean	2.29%	2.08%	43.98%	51.65%

The graph of the result of the 2021/22.2 period questionnaire per subject is shown in Figure 1.
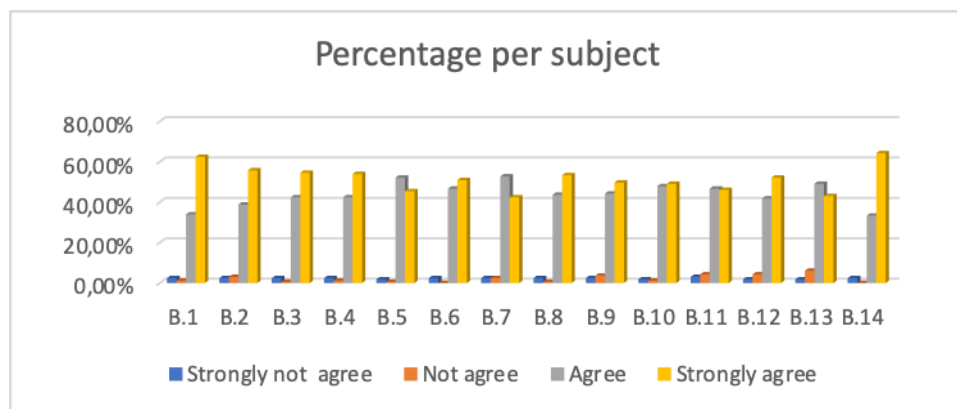
Figure 1. Percentage per subject of the 2021/22.2 period

The graph of the average result of the 2021/22.2 period questionnaire is shown in Figure 2.
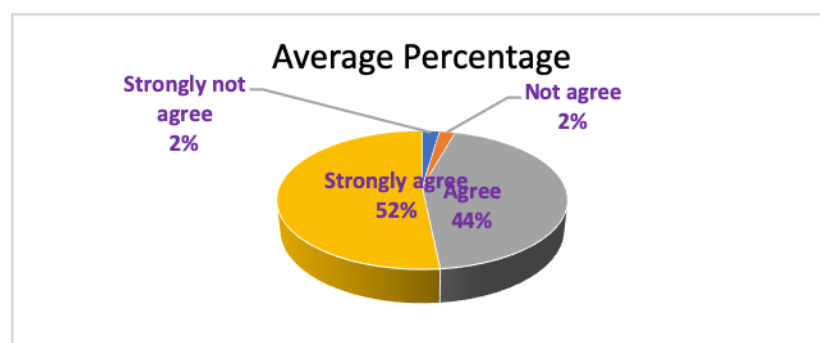
Figure 2. The Average Percentage of the 2021/22.2 Period

In the 2022/23.1 period, the number of tutors who answered the questionnaire was 231 person. From the result of the questionnaire that has been obtained, we see that in general, tutors answered that the online tutorial materials were very good. Tutors stated that the scheduling accuracy (agree and strongly agree) = 99%. The tutor stated that the suitability of the ability subject was 98%. This means that the tutors feel in accordance with the class in this semester. The suitability of the time setting is 99%, which means the tutors feel that the implementation of online tutorial is in accordance with the course load. The quality of initiation material, discussion question forum, and assignment questions in online tutorials also get a high mark from tutors. This means that the material courses of the Information System study program were considered very good. More detailed information is in Table 2.

Table 2. The result of 2022/23.1

No	Subject	Subject	Strongly not agree	Not agree	Agree	Strongly agree
1	Scheduling accuracy	C.1	0%	1%	39%	60%
2	The determination of the mastery course is in accordance with the tutor's expectations	C.2	0%	2%	41%	57%
3	Setting the time for implementing online tutorial in accordance with the course load	C.3	0%	1%	46%	52%
4	The initiation material is easy to understand	C.4	0%	1%	47%	52%
5	The initiation material is qualified	C.5	0%	0%	54%	45%
6	The use of language in the initiation materials (1 to 8) is sufficient	C.6	0%	2%	50%	48%
7	initiation material course is up to date	C.7	0%	4%	60%	35%
8	Discussion forum material (1 to 8) is easy to understand	C.8	0%	2%	43%	55%
9	Discussion forum material (1 to 8) is qualified	C.9	0%	2%	51%	47%
10	The use of language in discussion forum material (1 to 8) is sufficient	C.10	0%	1%	52%	47%
11	Discussion forum material (1 to 8) is up to date	C.11	0%	3%	61%	36%
12	The assignment is qualified	C.12	0%	3%	50%	46%
13	The assignment is up to date	C.13	0%	3%	57%	40%
14	The Study Program provides good services to tutors	C.14	0%	0%	35%	65%
		Max	0.00%	4.33%	60.61%	65.37%
		Min	0.00%	0.00%	34.63%	35.50%
			Strongly not agree	**Not agree**	**Agree**	**Strongly agree**

No	Subject	Subject	Strongly not agree	Not agree	Agree	Strongly agree
		Mean	0.00%	2.03%	49.75 %	48.19%

The graph of the result of the 2022/23.1 period questionnaire per subject is shown in Figure 3.
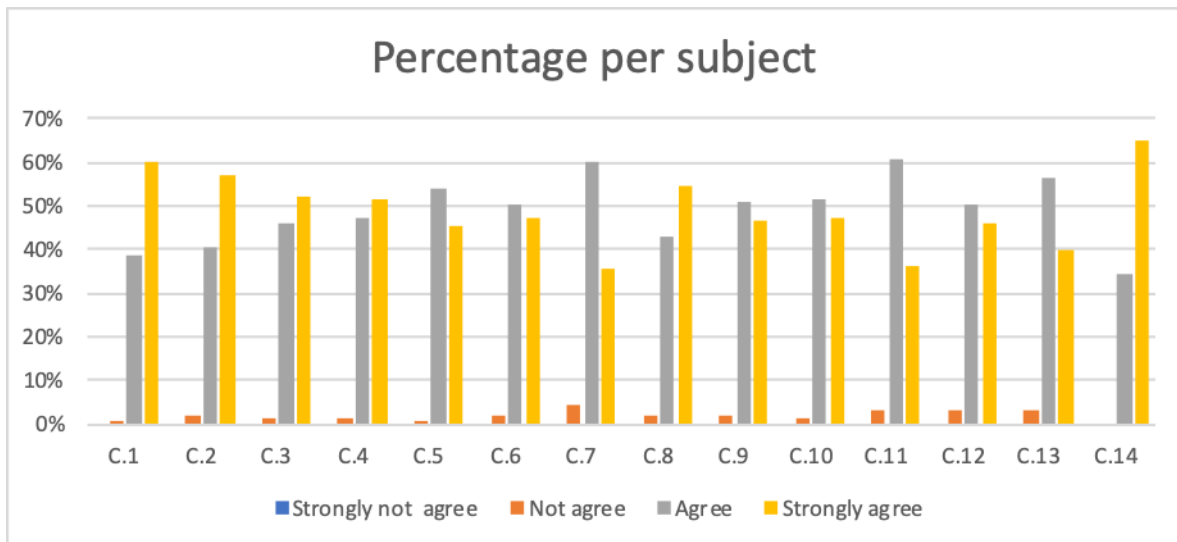
Figure 3. Percentage per subject of the 2021/22.2 period

The graph of the average results of the 2022/23.1 period questionnaire is shown in Figure 4
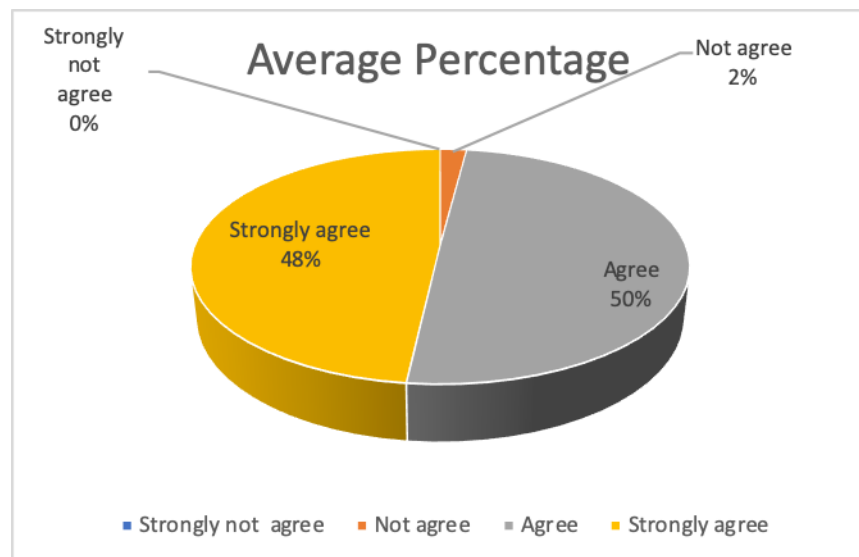
Figure 4.. The Average percentage of the 2021/22.2 period

4   CONCLUSION

From the result of this study, it can be concluded that the online tutorial for the Information System study program is in accordance with the tutor's expectations. Some notes from the tutor are that even if the result is good, the study program must still update the material of online tutorials. Updating this material certainly also improves the quality of online tutorial implementation, especially in the Information System study program.

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CONTROLLING THE QUALITY OF FOOD PROCESSING TECHNOLOGY LAB WORKS PERFORMED DURING THE COVID-19

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Abstract

During the COVID-19 pandemic, food processing technology lab works performed by the students of Universitas Terbuka adhered to government and university-sanctioned policies. To accommodate the pandemic situation, lab work is performed online so students can fulfil the competency targets. Being a novel system, the quality of online-based lab work should be continually evaluated and improved. In this study, we focus on the performance of the online-based food technology lab work in the Universitas Terbuka. By inspecting the archived data in the Food Processing Sub-department in the Universitas Terbuka, we found that their lab works have been appropriately planned. Resources to assist the online-based lab works are online textbooks, lab work designs and units, online guidelines, video tutorials, forum group discussions with the instructors, and online lab work supervision. Software provided by the Universitas Terbuka to manage the online lab work takes care of the registration, learning, lab work, and scoring processes. The whole resources and software are managed by staff distributed at 39 regions across Indonesia. Despite all the effort exerted for the online-based lab work, we observe that the failure rate is as high as 11.16% nationally during the 2020-2021 academic year. The cause of the >10% failure rate for our online-based lab work system has not been diagnosed.

Keywords: web system lab work, the quality of online-based lab work, resources to assist the online-based lab works.

1   INTRODUCTION

Food processing technology practicum is a practical course at Food Technology Study Program, Science and Technology Faculty, Universitas Terbuka. This practicum activity was performed in the laboratory before the occurring of covid-19 pandemic. The laboratory used for this practicum activity is in partnership universities. The occurrence of covid-19 pandemic caused several laboratories of the partnership university closed or applying health protocol limitation in the semester of 2020.1. That condition means a lot of students couldn't finish their Food processing technology practicum activity.

Other than the closing of the laboratory and the application of health protocol limitation, in that semester there is also another regulation letter from General Director of Higher Education, Ministry of Education and Culture of Indonesia Number 302/E.E2/KR/2020 applicable since 31st March 2022 first statement announce that the longest study period for students which should end in the even semester of 2019/2020, can be extended by 1 semester, and the arrangements are submitted to the Higher Education Leaders according to local conditions and situations.

The Food Technology Study Program creates solution to overcome limitations and fulfill the conditions of the Ministry of Education and Culture of Republic of Indonesia regulation in semester 2020.1 by making an online practicum activity for food processing technology course. Consideration of the implementation of online practicum is the opinion of Dy et al., (2001) which states that E-learning, online learning, online collaborative learning, virtual learning, web-based learning and technology-mediated learning are terms used instead of distance learning. Distance learning shows that this learning model can replace or complement traditional ways of teaching and learning.

This practicum is provided to all students enrolled in the Food Processing Technology practicum course in all Regional Offices (RO) in Indonesia. The distribution of students includes 39 RO. Considering that this is a new experience in the field of practical implementation in the Food Technology Study Program, it is necessary do quality control assessment in the implementation of Food Processing Technology practicum during the Covid 19 pandemic.

The purpose of this research is to find out:

The procedures of implementing an online practicum using website in the Food Processing Technology practicum course, Food Technology Study Program, Faculty of Science and Technology, Universitas Terbuka.

Quality control at each process of the implementation of practicum in Food Processing Technology course, Food Technology Study Program, Faculty of Science and Technology, Universitas Terbuka.

Students' practicum score performance in Food Processing Technology practicum course, Food Technology Study Program, Faculty of Science and Technology, Universitas Terbuka.

2   METHODOLOGY

In this research, observations were made on documents collected in the Food Technology Study Program, Faculty of Science and Technology, Universitas Terbuka. The process of observation is as follows.

a. Observation at the process of practicum activity implementation.

b. Observation at the quality control of practicum activity implementation.

c. Observation at the score performance of students who participated in the practicum activity.

Observations related to the implementation of the practicum are carried out on files collected in the Food Technology Study Program, Faculty of Science and Technology, Universitas Terbuka for the registration period 2020.1-2021.2.

Observation of achievement scores is carried out on the data files of registered practicum participants for the registration period 2020.1-2021.2 obtained from the Universitas Terbuka Examination Center.

The observation time was carried out in March-July 2023. An observation sheet was used to record all observations. Data analysis was carried out descriptively.

3 FINDINGS AND DISCUSSION

The results of research observations in this research showed that the process of practicum implementation had been carried out through the following stages.

3.1 The implementation process of the Food Processing Technology course practicum

3.1.1 Practicum preparation stage

Practicum preparation is carried out by determining food processing methods that can represent the competencies that must be achieved by students participating in the practicum. There are 4 selected food processing methods, namely food processing at high temperatures, food processing at low temperatures, food processing by fermentation, and food processing methods with the addition of chemicals (acids).

Making practicum guides for students and human resources that support the practicum activity. The resources who support this online practicum process via website consist of practicum instructors, host, and inspector. Instructors were recruited from outside the Food Technology Study Program, Faculty of Science and Technology, Universitas Terbuka.

Making academic instruments supporting the practicum process consists of Practicum Program Plans. In the Practicum Program Plan there are Practicum Program Units, Determination of Pretest, Post Test, Practicum Events to be implemented, Competency achievements expected of practicum participating students, Criteria for Competency Performance Assessment of practicum participating students, and learning media used or required in the practicum process. In this practicum the learning media used is a video that has been uploaded on YouTube, students are given the link, so students

can access according to their needs. The preparation of this academic instrument is made by the Food Technology Study Program.

Making operational instruments consists of preparing applications to access practicum files, uploading student practicum scores, uploading report and entering student scores. This online practicum operational support is assisted by the Terbuka University Study Assistance Unit.

Online practicum support services via website are implemented by the Distance Learning Assistance Unit which was determined by the Vice Chancellor for Information Systems and Student Affairs at Universitas Terbuka. Support services consist of making practicum classes, instructor data entry, and data administration maintained by officers at the Distance Learning Assistance Unit. Each practicum class includes a maximum of 15 students and 1 instructor.

3.1.2 Practicum Implementation Stage

Perceptions understanding coordination is carried out by the Head of the Food Technology Study Program and the Person in Charge of the Practicum of the Faculty of Science and Technology Study Program, Universitas Terbuka with online practicum service supporters via website and the coordinator of Study Assistant and Teaching Material Services throughout the Universitas Terbuka Regional Offices whose students become practicum participants. This activity is also carried out for instructors and students participating in practicum. Perceptions understanding coordination in the implementation of practicum activity aimed to prepare the instructor to teach virtually. This is in accordance with the opinion of Keshavarz et al., (2022) which states that the professional development of online classroom management is necessary to prepare teachers to teach in a digital environment.

Information about schedule, material, and practicum video link delivered to the students, instructors, Study Assistance Unit officers through email and WhatsApp at least 2 weeks before practicum activity started. Thus, students are expected to be able to prepare a good and stable internet connection, study practicum material, prepare materials, and tools needed for practicum.
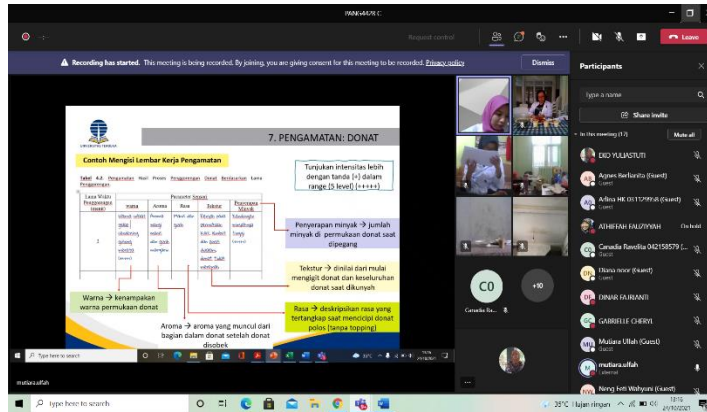
Figure 1. Food Processing Technology Practicum Introduction

Figure 2. Implementation of Food Processing Technology Practicum

The practicum is carried out according to the schedule that has been announced. The instructor will give a pretest in the first session and followed by practicum activity according to the predetermined Practicum Program Unit. After the fourth session, students will be given a posttest. During the practicum, the instructor observes the student practicum through the camera via website to give students practicum score. Students will also be given an individual assignment. To complete the individual assignment, students have to record and send the report to the instructor via email. Individual assignments are one of the components in student assessment.

3.2   Quality control in every process of food processing technology practicum course activity

3.2.1   Quality control in achieving the expected student competency

Students participating in online practicum are distribute across various regions in Indonesia. Instructors in this practicum are recruited from various regions in Indonesia. In order to control the achievement of the student's competency in the practicum, an instrument for controlling the

achievement of the competence of students participating in the practicum is needed as a quality controller for the practicum. The practicum achievement control process starts from the provisions of the instructor's educational background requirements, the practicum program design, the practicum implementation program unit. Food Technology study program, Faculty of Science and technology, Terbuka University develops a practicum program design to be used as a standard for practicum implementation and competency achievements for students participating in Food Processing Technology practicum. In the Practicum Events Unit, there are main activities that must be carried out by the instructor and provisions ranging from measuring student competency before participating in the practicum and after attending the practicum, practicum activity, material explanation that must be carried out during practicum by the instructor, practicum activity that must be followed by students, and video links that students must access. These practicum materials can be accessed by instructors on the lms.ut.ac.id application. With this Practicum Program Design as a standard, it is hoped that the implementation of the practicum will produce the same competencies from the students participating in the practicum.

3.2.2 *Quality control in implementation of online practicum via website*

In the implementation of online practicum via website, quality control is carried out by the Food Technology Study Program with officers from lecturers supporting the Food Processing Technology course and the Universitas Terbuka Study Assistance Service unit. This activity is called "Practicum Monitoring". Monitoring instruments are used in this activity. Monitoring instrument use for evaluating the implementation of practicum activity. Practicum activity evaluation held by Study Program and Study Assistance Service unit. Evaluation results will be used to improve practicum activity in the next semester.

3.2.3 *Quality control in the process of Assessing Student's Achievement Competency*

Competency achievements of students participating in the Food Processing Technology practicum course include practical score and report score. In the implementation of the practicum the value of student skills in participating in the practicum is assessed by the instructor in each class with the assessment criteria determined by the Food Technology Study Program, Faculty of Science and Technology. Student report score is determined based on the evaluation of the report which is prepared individually from each practicum participant student. Student reports are uploaded on the practical.ut.ac.id application. The instructor assigned to do assessment is different from the practicum

instructor in the student class. Student practicum reports assessment uses criteria that have been determined by the Food Technology Study Program, Faculty of Science and Technology. The result of the score evaluation will be documented in praktik.ut.ac.id application.

Practicum scores and student practicum report scores are then processed into components of the final practicum score at the Terbuka University Testing Center. Determination of grade based on combining value components is determined by the Food Technology Study Program with approval from the Vice Chancellor for Academic Affairs at the Terbuka University. Based on this regulation, the practicum value for the Food Technology course is consistent with predetermined standards. Competency achievements quality of students participating in the Food Processing Technology practicum course based on predetermined grades are expected to have the ability to be controlled from each class in each semester.

3.3 Student Achievement score in Food Processing Technology Practicum Course

Table 1. Student's score in Food Processing Technology Practicum Activity

Registration Period	Grade A (%)	Grade A- (%)	Grade B (%)	Grade B- (%)	Grade C (%)	Grade C- (%)	Grade D (%)	Grade E (%)
2020.1	100	0	0	0	0	0	0	0
2020.2	100	0	0	0	0	0	0	0
2021.1	78.38	1.35	2.70	0	0	0	0	17.57
2021.2	92.86	0	0	0	2.38	0	0	4.76

Table 1 shows the achievement scores (in the form of grades) from students participating in the Food Processing Technology practicum course in semester 2020.1 to 2021.2. In semesters 2020.1 and 2020.2 all students participating in practicums received grade A, this means that all the practical competencies were achieved. In semester 2021.1, only 78.38% of students who received grade A, meaning that not all students participating in the practicum could achieve all the competencies that were practiced, there were even students who could not achieve the specified competencies (17.57% received grade E). This also happened in semester 2021.2 (4.76% got grade E). The decrease in the competency achievement of the students participating in the Food Processing Technology practicum course is suspected to be in the condition of the practicum participants who are less conducive to participating in the practicum.

The stages carried out in this study have fulfilled the main steps in quality control, namely setting standards in the implementation of practicum (determination of practicum competency achievements for students), assessing the suitability of implementation with predetermined standards through implementation monitoring, and taking corrective actions for practicum implementation. This control is in accordance with the opinion of Muhandri et al. (2021) which states that the three main steps in quality control are (1) setting standards, (2) assessing conformity (measure and comparing with standards), and (3) taking corrective actions when necessary

4 CONCLUSION

The conclusion of this study is that at each stage of implementation, performance standards and good quality control have been determined. Research still needs to be done to find out the causes of student achievement that has not been optimal.

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APPLICATION OF GOOGLE PLAYSTORE FOR DIGITALIZATION OF UNIVERSITAS TERBUKA SERVICE IN SMARTPHONE TO MANAGERIAL ACCOUNTABILITY OF UNIVERSITAS TERBUKA STUDENTS

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Abstract

Universitas Terbuka (UT) is a university that implements the optimization of digitalization transformation in meeting the information needs of students and the public as a form of service managerial accountability, one of which is by utilizing the Google Play digital application on smartphones. This study aims to provide information about universities in an accountable manner through the digital google play application "Layanan UT Medan" on smartphones, to manage the information needs of Universitas Terbuka students as the main users of public services, as well as to improve managerial accountability of information for users of the Google Play application "Layanan UT Medan" especially for Universitas Terbuka students. The research population is student respondents who are registered at Universitas Terbuka Medan, research samples are users of the Layanan UT Medan google play application who are also students registered at Universitas Terbuka Medan. The results showed that the Google PlayStore application "Layanan UT Medan" was created to provide UT information in an accountable manner, able to help manage the information needs of the students, and to increase managerial accountability of Universitas Terbuka public services.

Keywords : Managerial Accountability, Public Service, Google PlayStore, Layanan UT Medan, Universitas Terbuka

1 INTRODUCTION

1.1 Background

Currently, the digital era has become a reality for all the needs of the world. The digital revolution technology that continues to increase rapidly from year to year is made to facilitate human needs so that every activity becomes more efficient. The peak of the need for digital use occurred during the Covid-19 pandemic, during which time there was limited space for each activity. This makes one of the main factors in the shift of offline activities to online, where people are suddenly "forced" to adapt to using digital itself for various fields, be it the economy, health, education and others.

One of the most beneficial digital revolutions is in the field of education, where previously the majority of education activities were carried out offline, since the pandemic, the needs in the field of education can only be met through digitalization of e-learning. This continues after the pandemic subsided in 2022, educational activities still utilize digital technology because they have felt the ease of fulfilling the increase in educational activities themselves, both for educators and students.

In Indonesia, the policy of using digital technology during the pandemic, especially in the world of sustainable education, is still used by various educational institutions as the main support for the smooth running of educational activities. Even The Ministry of Education, Culture, Research and

Technology (Kemendikbudristek) issued regulation number 13 of 2022 concerning Amendments to Regulation of The Minister of Education and Culture Number 22 of 2020 concerning the Strategic Plan of the Ministry of Education and Culture for 2020-2024 said that strengthening the digitalization of education as one of the strategies Kemendikbudristek in accelerating the realization of the vision of Indonesian education. One of them is through the School Digitization program in order to face the era of the industrial revolution 4.0 which encourages the provision of fast, automatic and open services in improving educational services that are in line with today's developments in technology and information.

At the university level, various uses of digital technology to improve education services continue to be developed in various digital platforms to reduce complexity, increase inspiration, increase efficiency and provide a customized approach. Therefore, Universitas Terbuka as one of the institutions that has a mission to increase equitable access to world-quality higher education continues to optimize the digitization of transformation in meeting the information needs of students and the public as a form of managerial accountability for education services, one of which is by utilizing the Google PlayStore application on smartphones. Universitas Terbuka which has 39 service offices of Unit Program Belajar Jarak Jauh Universitas Terbuka (UPBJJ-UT) spread throughout Indonesia and other countries continues to strive to provide service innovations by utilizing various digital platforms as a form of optimizing the digital transformation of education services.

In order to maximize the use of digital technology in educational services, researchers implemented the Google PlayStore for Digitizing Open University Services in Smartphones for Managerial Accountability of Open University Students.

1.2   Problems

The use of digital technology in increasing productivity in the field of service is important in creating effective and efficient services in order to realize the mission of an institution or an educational organization today. Universitas Terbuka itself provides a variety of educational services to meet the academic and administrative needs of students ranging from the registration system for prospective new students, student academic information systems, links to university information profiles to links to implementation and evaluation of learning at the Universitas Terbuka which students need to plan, develop competence and managerial learning to achieve student educational goals.

The number of link addresses from applications introduced by Universitas Terbuka in each sub-activity can make students wrong in entering and looking for data that should be needed. For this

reason, the Universitas Terbuka employees who work at UPBJJ-UT Medan conduct research to create and design applications that are easy to use anywhere in order to get services and academic and administrative educational information needed more effectively and efficiently.

1.3 Purpose

The purpose of this study is to apply the use of Google PlayStore in digitizing the Universitas Terbuka services in Smartphones through the creation of android applications, analyze factors that support educational services and determine the information needs of student education as the development of design data on the application, how to implement and account for the use of applications that will be used. made in the managerial process of information needs of Universitas Terbuka students.

2 METHODOLOGY

The author uses qualitative research with the aim of processing and describing in more depth and detail the application of Google PlayStore for digitizing Universitas Terbuka services in Smartphones towards managerial accountability of Universitas Terbuka students. The research was conducted at the UPBJJ-UT Medan Office, conducted in 2022. The first step of the research was to observe the needs of consumers, in this case students, for the educational information needed. Researchers use Google PlayStore in making android applications because the majority of UT students have used Android smartphones as a means of daily communication. Data collection techniques from this study used observation, documentation, questionnaires and interviews with android application users designed by the IT team who are also members of this study.

The passive participation observation technique was carried out to determine the general information needs (service menus) needed to improve educational services (academic and administrative services at the Universitas Terbuka) in making educational service android applications. The Documentation Method is carried out to obtain information related to the need for educational services and matters relating to the application of digitizing services through the Google PlayStore for smartphones. Interview techniques and filling out questionnaires through Google Forms were carried out to students as research sources who were users of android applications to find managerial accountability achievements in the education of Universitas Terbuka students.

3 FINDINGS AND DISCUSSION

3.1 Quality of Universitas Terbuka Student Education Services

Universitas Terbuka (UT) which is a State University that implements an open and distance learning system, has evolved from time to time as an education provider whose academic processes and

services continue to metamorphose into sophistication to meet the needs of the community. In 2018 UT has been confirmed as a Cyber University because it is a university that intensively and expansively uses technology in terms of learning and student academic services. In the journey, UT has challenges in realizing this digital transformation, including the high heterogeneity of students, both in terms of age, origin and socio-economic background of students in terms of digital readiness. Until now, the 4G & 5G internet provider network has not been spread evenly and reliably throughout Indonesia (Suciati, 2020). Maximizing the use of technology in improving the quality of educational services at the Open University is still being carried out by developing new service applications or upgrading applications that have been created.

Service quality can be interpreted as an effort to fulfill the needs and desires of consumers and the accuracy of delivery in balancing consumer expectations. The quality of education services is part of the quality of services that can be measured using 5 (five) dimensions (Tjiptono, 2014), namely: Tangibles, including physical facilities, equipment, employees and means of communication.

1) Reliability, the ability to provide the promised service immediately, accurately and satisfactorily.

2) Responsiveness, namely the desire to help consumers and provide the best possible service.

3) Assurance, namely the knowledge and courtesy of company employees and the ability to foster consumer confidence in the company.

4) Empathy, which includes the ease of doing relationships, good communication, personal attention and understanding the needs of customers.

Service quality can be realized through fulfilling customer needs and desires as well as the accuracy of its delivery in balancing or exceeding customer expectations, in this case UT students. Service quality reflects the comparison between the level of service delivered by the institution compared to the expectations of students as customers of UT's institutional services.

Universitas Terbuka itself has developed several educational services in various aspects to provide services to customers in this case students, ranging from a website application system for registration of new student registrations, assistance services and learning processes, administrative and academic information systems for students, links to university information profiles, to the link to the implementation and evaluation of learning at UT. The many types of services and application addresses issued by UT to meet the information needed by students on the one hand make it easier for students in the learning process, but on the other hand the public or students who have just joined

UT can be wrong in entering and searching for data that should be used . Therefore, researchers develop simple service applications that can be used on each student's device.

3.2 Implementation of the Development of Digitizing Education Services on Smartphones through the creation of applications through Google PlayStore

When discussing digital technology, we will come across some terms Digitation, Digital Technology, Digitization and Digital Transformation. Prof. Dr. Suciati, M.Sc. (2020) in his book Digital Transformation as a Breakthrough in Educational Technology said that the term "Digitation" refers to converting (encoding) analog information into digits 1 and 0, so that it can be stored, processed by a computer, then distributed using the internet or as files that are easily transferred as digital content. "Digital Technology" includes various forms, such as various mobile devices, social media platforms, analytics, and embedded content. "Digitalization" is a phenomenon of restructuring the domain of social life in relation to digital communication and media infrastructure (which contains digital content). Then "Digital Transformation" is explained as the interaction of digital technology into various lives, which is fundamentally a redesign of business models, ways of working and organizational structures (Demirkan, et al; 2016).

There are 4 (four) dimensions of the Digital Transformation framework which include the Use of Technology, Changes in Value Creation, Structural Changes and Financial Aspects (Hess, et al; 2015). Digital transformation requires changes in all related units, in the use of digital technology to achieve institutional goals. Digital technology includes big concepts such as seamless resources, seamless access to information in various forms and using a variety of devices, as well as fast personalization. According to the McKinsey Global Institute (2018), it is estimated that there will be a shift in workforce skills by 2030, where the proportion of physical and manual skills in basic cognitive abilities will decrease, while the share of technological, social and economic skills will increase. So that the need for digital transformation, including the digitization of educational information services, must continue to be adapted to the needs of today's developments.

Based on the development of digitization, researchers develop educational services by utilizing Google PlayStore to create applications that are easily accessible to students through devices, especially Android smartphones. The Android application "Layanan UT Medan" is an application created with the aim of making it easier for students to access educational information anywhere and anytime through applications available on android smartphones which are mostly used by students.

Through this application, students are expected to be able to make it easier for students to manage the information needed for educational services more accountable.

Before the application "Layanan UT Medan" was created, researchers made observations to identify the main educational information needs needed by students and the general public in the learning process and evaluation to the supporting information that students need. From the results of observations, identified information needs needed include:

a. Information on the New Student Registration Guide and the registration link address at www.admisi-sia.ut.ac.id.

b. Course Registration Information that students can access at the website link www.sia.ut.ac.id.

c. Information on Digital Teaching Materials that can be accessed via Android.

d. Information on learning links at UT, such as Online Tutorials (Tuton) for students taking Fully Online classes accessed at www.elearning.ut.ac.id, Webinar Tutorials for students taking Face-to-face Tutorials (TTM) which are accessed at www.lms.ut.ac.id and for students who do not take Tuton or TTM classes, they are directed to work on course assignments which are accessed at www.tmk.ut.ac.id.

e. General university information such as academic calendar, UT catalog, UT accreditation, Digital Library, Tracking delivery of textbooks Buku Materi Pokok (BMP), and others.

f. Information on codes, abbreviations and terms used at UT in providing information to students.

g. Information about several service contacts such as One Stop Service, Halo UT and several social media that can help provide information directly.

h. Latest important announcements related to the latest academic activities, policies and regulations of the Universitas Terbuka.

From the identification of information needs above, the researcher then carried out the application development process, namely:Design process for the right Layout, Button, Background and Logo that will be displayed on the application. The design selection is adjusted to the characteristics and colors of UT.
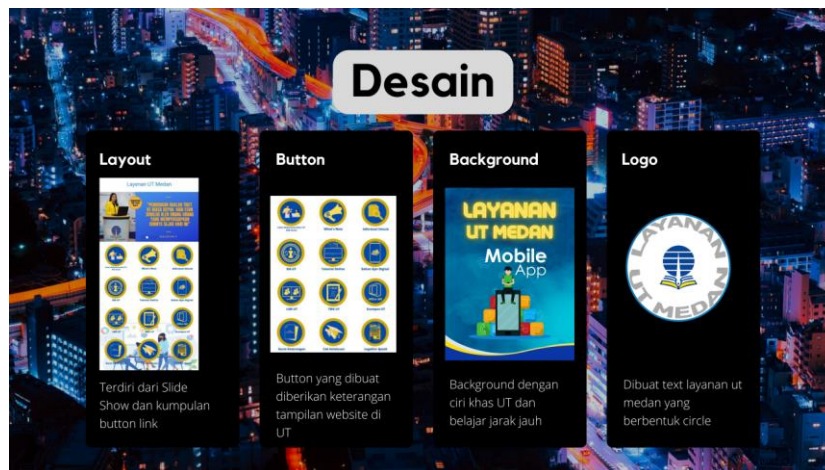
Figure 1. Display Design displayed on the application "Layanan UT Medan"

1) Determine the menus that have been adapted to the identification of information needs for Education Services needed. Various application link addresses that have been published by UT are collected and grouped with a simpler view.

2) Coding process that uses the android version that will be used on the smartphone. The main application used in the coding development process combines menu design with coding using Android Studio, then supporting applications to design layouts, buttons, landing pages and notifications using Canva.

The superior features of the "Layanan UT Medan" application are made to maximize the accountability of educational information by managing services as follows:

1) All links to information on academic services and education administration that have been developed by UT have been incorporated into one application.

2) Users can open the application with a browser that has been simplified with the appearance of an android smartphone directly integrated with the application.

3) The application is more responsive, with sharper visual effects, but is displayed in a simple way to make it easier to understand its use.

4) Application users will receive updated information notifications directly through each user's smartphone.

After the "Layanan UT Medan" application was made, this application was then socialized to consumers of educational services, both to students and the public through social media or directly on the UPBJJ-UT Medan campus.

3.3 Utilization of the "Layanan UT Medan" Application for Managerial Accountability of Universitas Terbuka Students

Accountability is control over public organizations at the organizational level as a basis for providing explanations to parties who have an interest in evaluating and evaluating actions taken by public organizations. Accountability has five dimensions: transparency, accountability, control, responsibility, and responsiveness (Wicaksono, 2015). While The Managerial dimension is an effective managerial activity process, starting from the planning, implementation, administration, reporting, coaching and monitoring processes (Yudhanti, 2018).

Managerial Accountability in this study is a simple correlation between each indicator of accountability and managerial processes, between the use of the "Layanan UT Medan" application and UT Student Managerial Accountability in the learning process. Indicators of interviews and questionnaires addressed to students who use the "Layanan UT Medan" application as research sources use accountability and managerial dimensions. The following is a table of key questions for interviews and research questionnaires:

Table 1: Key Questions for Accountability and Managerial Dimension Indicators

No	Accountability Dimension	Key Question
1	Transparency	Is the application "Layanan UT Medan" able to present and disclose the information that students need in detail (transparent)?
2	Accountability	Is the information content in the "Layanan UT Medan" application able to convey information correctly?
3	Control	Is the application "Layanan UT Medan" able to provide information as needed?
4	Responsibility	Is the information in the "Layanan UT Medan" application able to follow the rules or service provisions that apply to public services?
5	Responsiveness	Is the application "Layanan UT Medan" able to respond to requests for information quickly & as expected?
	Managerial Dimension	

6	Planning	Is the application "Layanan UT Medan" able to help students in preparing lesson plans at UT?
7	Implementation	Is the application "Layanan UT Medan" able to help students in carrying out learning?
8	Administration	Is the application "Layanan UT Medan" able to help students in organizing learning activities?
9	Reporting	Is the application "Layanan UT Medan" able to present the results of student learning evaluations?
10	Coaching	Is the application "Layanan UT Medan" can help students to understand learning at UT?
11	Monitoring	Is the application "Layanan UT Medan" able to assist students in monitoring the progress of academic results through the application "Layanan UT Medan"?

The results of the observation of the distribution of questionnaires/questionnaires were carried out through Google Forms and the results of interviews with UT students who used the "Layanan UT Medan" application as many as 38 (thirty-eight) sources, with the results of the respondent's data as follows:

Table 2: Results of Accountability and Managerial Dimension Indicators

No	Accountability Dimension	Results of Respondents
1	Transparency	A total of 33 resource persons answered the application "Layanan UT Medan" able to present and disclose the information needed in detail, 5 respondents answered that they could not. This shows that as much as 86.9% of the transparency of information presented by the "Layanan UT Medan" application is able to provide educational information needed by resource persons.
2	Accountability	A total of 37 resource persons answered the information content in the "Layanan UT Medan" application and were able to convey information correctly, 1 resource person answered that they could not. This shows that 97.37% Accountability of the information content in the application is able to convey information correctly.
3	Control	A total of 34 resource persons answered the application "Layanan UT Medan" able to provide information in accordance with the expectations required, 4 resource persons answered unable. This

		shows that 89.47% of control over information is able to match the expectations needed by students.
4	Responsibility	A total of 37 resource persons answered the information on the "Layanan UT Medan" application and were able to follow the rules or service provisions that apply to public services, 1 resource person answered that they could not. This shows that 97.37% of the responsibility for the information provided in the "Layanan UT Medan" application is able to follow the applicable rules or service provisions.
5	Responsiveness	A total of 32 resource persons answered the application "Layanan UT Medan" able to respond to requests for information quickly & met expectations, 6 resource persons answered unable. This shows that 84.21% Responsiveness responds to the response to the delivery of information on the application "Layanan UT Medan" able to quickly & meet expectations.
	Managerial Dimension	
6	Planning	A total of 34 resource persons answered that students were able to use the "Layanan UT Medan" application in preparing lesson plans at UT, 4 resource persons answered that they could not. This shows that 89.47% Planning for the use of the "Layanan UT Medan" application is able to assist students in preparing learning plans at UT.
7	Implementation	A total of 34 resource persons answered that students could carry out learning through the "Layanan UT Medan" application, 4 resource persons answered that they could not. This shows that 89.47% of the implementation of learning can be done through the application "Layanan UT Medan".
8	Administration	A total of 37 resource persons answered that the "Layanan UT Medan" application was able to assist students in organizing learning activities, 1 resource person answered that they could not. This shows that 97.37% of the administration of student learning activities can be facilitated by the application.
9	Reporting	A total of 36 resource persons answered the application "Layanan UT Medan" able to present the results of the evaluation of student learning, 2 resource persons answered unable. This shows that 94.74% of

		student learning reports are able to be presented with the "Layanan UT Medan" application.
10	Coaching	A total of 35 resource persons for the "Layanan UT Medan" application were able to assist students in understanding learning at UT, 3 resource persons answered that they could not. This shows that 92.10% of guidance in understanding learning at UT is able to be presented with the "Layanan UT Medan".
11	Monitoring	A total of 36 resource persons answered that students were able to monitor the progress of academic results through the "Layanan UT Medan" application, 2 resource persons answered that they could not. This shows that 94.74% Supervision of academic progress can be done through the "Layanan UT Medan".

From the data above shows that an average of 92.02% of the indicators of the Accountability Dimension and the Managerial Dimension have been met, it can be concluded that the application "Services UT Medan" has fulfilled the Managerial Accountability of educational information services at UT well to students.

4 CONCLUSION

Utilization of Google PlayStore in digitizing Open University services through the creation of an android smartphone application "Layanan UT Medan" is carried out to support the improvement of educational services and meet the information needs of students' education, made based on information needs that have been identified to provide convenience for educational information services to students as consumer users. information. The information menus displayed in the application "Layanan UT Medan" are identified from the main information needs for educational service needs at UT. The choice of design, display of menus and the use of coding in the application development process were chosen based on the characteristics and colors of UT, built using Android Studio and Canva applications.

The results of interviews and questionnaires that have been filled out by students who have used the "Layanan UT Medan" application show that in general the application "Layanan UT Medan" has fulfilled Managerial Accountability as much as 92.02% of the fulfillment of educational information services at UT well for students . Improvements to the "Layanan UT Medan" application continue to be carried out to be able to meet the educational information needs of students as a form of implementing customer service through digitalization.

The conclusion needs to be concise and coherent.

ACKNOWLEDGEMENTS

In the preparation of this study, researchers received assistance and support from various parties. Therefore, the researcher would like to thank:

1) The Leadersn and The Big Family of the Universitas Terbuka, especially the employees of UPBJJ-UT Medan who have provided support and input on this research, so that the application can be formed and this research can run well.

2) Universitas Terbuka students who helped and contributed as resource persons in research.

3) Developers of Google PlayStore, Android Studio, Canva and other Microsoft applications that support the formation of the "Layanan UT Medan" application.

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DEVELOPMENT OF BIOLOGY EDUCATIONAL GAME FOR LEARNING INTEGRATED PEST CONTROL

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Abstract

Games are a technology that is favored by many groups and can be a medium that can convey a message. Education games can be used as an effective, innovative and informative educational medium. Biology has many concepts that can be used as a game application so that the process of sending messages in the material is more interactive. This study aims to develop an android-based game application on the concept of integrated pest control by utilizing biological agents such as pest predators and refugia plants, instead of using pesticides. The development research method consisted of three stages, analysis of game needs, multimedia development, and making game programs. The results of the development of this android-based game application were successfully created and called "Pelindung Dele", this game application can be played properly.

Keywords: Educational Games, Biology, Learning, Integrated Pest Control.

1   INTRODUCTION

The use of technology in the era of society 5.0 is a characteristic that cannot be separated from the behavior of modern society, technology in that era is the basis of all human activity in various fields, even in the field of education, it cannot be separated from the use of technology. In addition, the Covid-19 pandemic that has occurred has encouraged the creation of disruptive innovations in a learning process (Virtič, Dolenc, & Šorgo, 2021). Online learning is a learning mode whose use trend has increased significantly in the current era (Anderson & Dron, 2011). The application of online learning in distance education has its own challenges and problems, so a learning strategy is needed that can make students feel comfortable participating in the learning process (Leontyeva, 2018). The use of game technology as an addition to the diversity of online learning media will certainly provide a special attraction to the distance education process. This of course can encourage the birth of creativity in students in participating in online learning. (Diki, 2015) states that creativity has an indirect relationship with student learning outcomes. The application of game applications as learning media will not be separated from the development process, because game application-based learning media must have special material which is certainly in accordance with the topics in the learning process. Game is an activity that has goals and achievements that involve players in it so as to create

an interaction. Furthermore (Crawford, 2003) in his book states that games are activities that are centered on an achievement in which there are active actors and interactive opponents. To utilize games as learning media, we must understand several classifications in games, namely: 1) game as game, this is a game designed to create fun or fun, 2) game as media, aims to convey messages to its users, 3) game beyond game, known as gamificatio, where gamification is the application of a game design concept or way of thinking to a non-game environment (Martono, 2015). Game as media is a suitable classification in that we want to apply the use of games as learning media. The development of a game for learning must create a process of sending a message of a material concept to students. In general, Biology learning at the Open University (UT) is implemented in an online learning mode, although there are other learning modes. Learning Biology has a lot of material that can be used as a concept for the development of game applications as learning media. Integrated pest control (IPM) is the scope of material in Biology learning. IPM is a method of controlling plant pests (OPT) with a multidisciplinary ecological approach. The simple concept in IPM is how pests on plants can be controlled by using biological agents. The efforts that can be made to increase the diversity of biology learning media in distance education with online learning mode are by developing a biology learning media game application with integrated pest control material. The hope is that with this game application students can have high learning motivation and creativity.

2 METHODOLOGY

This research is a research and development (R&D) study (Samsu, 2017; Sugiyono, 2013, van den Akker, 1999). This research method consists of three stages, starting with the game needs analysis stage, the multimedia game development stage, and the game program development stage. Analysis of game needs is needed to adjust the concept of the game that is developed with the suitability of the material and theory contained in the course so that it can become a support for interactive learning media. Multimedia game development: 1) game concept that contains the purpose of making the game, who is the target to play the game, and the benefits of the game. 2) game design that contains storyboards or scenarios, hardware specifications, views, and materials needed in the game. 3) material collection, this stage is carried out to collect material or supporting objects in game development. Making game programs at this stage is the process of making all game concepts and designs that have been made into an application. The game development stage will always be followed by a game trial process, for trials carried out on UT Biology students.

3   FINDINGS AND DISCUSSION

3.1   "Pelindung Dele" Game Application

3.1.1   Display Game Icon

The appearance of the game icon (Figure 1) has the characteristics of the game and is interesting to look at, this is important because it will make it easier for game application users to find it on the user's smartphone.
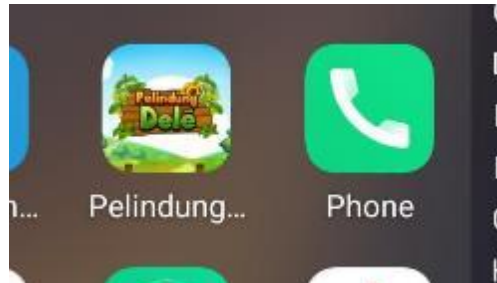
Figure 2. Initial Display

3.1.2   Initial Menu Display

The display below (Figure 2) is the initial display before playing the Pelindung Dele game. In this view the user is directed to be able to click the play icon.

Figure 2. Initial Display

3.1.3   Display Instruction Menu

The display below (Figure 3) shows instructions for playing the Pelindung Dele game. This display provides brief information about how to play to the user.

Figure 3. Instruction Menu

3.1.4 Display Gameplay

Game play in the Pelindung Dele game (Figure 4), where the user has to water the soybean plants and then protect the plants from pests such as whitefly and pod borer. Protecting soybean plants from user pest attacks in the game there are already two biological agents that game players can use to deal with the attacks of these two pests. Apart from that, there is also an option to use chemical pesticides, but if the user uses it, it will reduce the player's health points. At the end of the game, the score obtained by the player will be displayed.

Figure 4. Gameplay

3.1.5 Info Box Display

The info menu (Figure 5) will provide information about what types of pests will attack soybean plants and what types of biological agents can overcome these pest attacks.

Figure 5. Info Menu

3.1.6 Game Display Failed

This display (Figure 6) will show when the player fails which is caused by the loss of life due to pest attacks that we cannot stop.

Figure 6. Game Display Failed

3.1.7 Complete Game Display and Score

This display (Figure 7) indicates the end of the game and displays the total score obtained by the players.

Figure 7. Complete Game Display and Score

3.2 Blackbox Testing

3.2.1 *At this stage testing is carried out using blackbox testing techniques or behavioral testing with the aim of knowing deficiencies in the game's protective game. Testing of the protective game was carried out on four UT Biology students and one expert who provided information and input about this game.*

Table 1. Blackbox Testing Game Pelindung Dele

Feature	Expeted Result	Met Expectation	Proof	Comment
Icon Game	Eye catching	Yes	Picture 1	-
Play Game	User can play the game	Yes	Picture 2	-
Game Instruction	Giving information to play the game	Yes	Picture 3	-
Information Box	User get information about pest and biological pest control	Yes	Picture 5	-
Game Level	Users will find the game more challenging when the level goes up	Yes	-	Could be developed further
3D Object	Users can understand well the appearance of each object in the game	Yes	Picture 4	-
Home Button	Users can return to the main menu	Yes	Picture 7	-
Replay Button	Users can play back the game	Yes	-	-
Object Button (Water)	Users can control and move objects	Yes	-	Features work
Object Button (Pesticides)	Users can control and move objects	Yes	Picture 4	Features work

Object Button (Biological Agents)	Users can control and move objects	Yes	Picture 4	Features work, players need time to adjust how to play
Pop Up (Information)	Users can receive information via pop ups	No	-	Pop Up on refugia plant object not working, need to fix
Score System	Users can see the score at the end of the game	Yes	Picture 7	The score can be seen at the end of the game, but it needs to be increased so that the score can be saved at least 10 players with the highest score can be seen.

4 CONCLUSION

An Android-based game application with the name Pelindung Dele game has been successfully built and can be played. Some of the core features of the game are running well although there are features that need to be improved and developed. The gameplay in this game has succeeded in providing educational information about the concept of integrated pest control to users.

ACKNOWLEDGEMENTS

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21ST CENTURY SKILL-BASED CITIZENSHIP INTELLIGENCE DEVELOPMENT IN DISTANCE EDUCATION: *AN ALTERNATIVE FOR CHARACTER EDUCATION*

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Abstract

Citizenship intelligence is a person's ability to play his role proactively as a citizen and citizen of a complex life system based on the nation's normative identity. Someone with citizenship intelligence will show performance as a citizen who cares about social conditions, is honest in responding to various existing phenomena, is critical of existing conditions, and is harsh in dealing with various life problems he experiences. If this citizenship intelligence thrives in a person, he will become a good citizen. Thus, the key to the formation of good citizens is civic intelligence. To cultivate civic intelligence, a skill that can look far ahead is needed, namely 21st-century skills and a flexible educational process from various points of view, namely distance education. The process of linking distance education to realizing civic intelligence by developing 21st-century skills is a process of character education in analyzing this phenomenon using the literature study method. This article discusses civic intelligence as a normative identity, 21st-century skills in distance learning, distance education as a process of developing civic intelligence, and character education embody civility.

Keywords: Citizenship Intelligence, 21st Century Skills, Distance Education, and Character Education

1 INTRODUCTION

Developing skills-based civic intelligence in the 21st century is an era of knowledge that transcends place and time globally. Where it no longer requires a static place and time but has high-speed mobility so that 21st-century national education also seeks to do things that encourage and at the same time adapt to these conditions, among others: 1) growing the capacity to shape the civilization and character of a respectable nation in the context of educating the nation's life. 2) growing the capacity of students to become superior human beings, have faith and fear of God Almighty, have a noble character, are healthy, knowledgeable, and capable of being independent, imaginative, and significantly involved in a pluralistic society (June, Mahuda, & Kusuma, 2020; Wijaya, Sudjimat, & Kyoto, 2016). In the 21st century, improving education is essential to ensure that children can learn and use media skills, innovation (learning and innovation skills), media, information and technology skills, and the ability to work to maintain one's way of life and professional ability. Regarding such conditions, education with dynamic and innovative learning is needed without being constrained by place and time; distance education is one of the most appropriate and appropriate.

According to Moore & Kearsley in Damayanti, distance education differs from face-to-face education in the way learning is delivered, especially the physical distance between teachers and

students. Students enrolled in distance education should be more independent learners than those enrolled in face-to-face classes. In distance learning, teachers and students communicate using various media, which serve as vehicles for delivering the learning structure. Three parties, including students, teachers, and the learning structure, are involved in the conversation about distance learning (Albiladi & Alshareef, 2019; Darmayanti, 2008).

Given globalization's current state, science and technology development is becoming more sophisticated. Teachers are required to play a more significant and innovative role with personality. Society is not quite ready to face the magnitude of natural changes and the acceleration of the progress of science and technology itself, or what is often referred to as globalization. In connection with the emergence of globalization, the quality of education needs to be improved. Schools, as one of the needs of educational institutions, have creativity in thinking (critical thinking, creative, problem solving, problem-solving), speaking (Communication), and cooperation (collaboration) or what is often referred to as 4C (Septikasari, 2018). The industrial revolution 4.0, or the fourth industrial revolution, is a feature of the 21st century and marks the beginning of the period of globalization. When the Industrial Revolution 4.0 is running, Indonesia is entering it. It is hoped that it will increase job prospects, be more expansive and make human workers more efficient and productive. The 21st century has brought many changes in human life and demands excellent human resources in all jobs and endeavours (Mardhiyah, Chitta, & Zulfikar, 2021).

Education is becoming increasingly important in the 21st century, especially distance education, where students can learn and innovate, use technology and information media, work, and survive using life skills. Dasim Budimansyah confirms that education can help a person become more responsible, intellectual, and creative by increasing his talents and intelligence, especially in civic intelligence (Budimansyah, Suharto, & Nurulpaik, 2019). The young generation with good citizenship is the result. One of the things that can support the integrity of a nation is civic intelligence. In society, state and national life, this generation is referred to as a good and educated citizen (competent and good citizen). In addition, the younger generation will behave politely in public (public civility) because of civic intelligence. The development of specific talents to face the challenges of 21st-century development, students are prepared to become responsible and trustworthy generations in the future. Therefore, it is necessary to have 21st-century abilities, also known as 4C talents(Rohman & Jardin, 2021; Shah et al., 2007; Use & Puspitaningrum, 2022). Based on this background, this article discusses developing 21st-century skill-based civic intelligence in

distance education as alternative character education. In addition, this article also discusses civic intelligence as a normative identity, 21st Century Skills in Distance Learning, and 21st Century Skills-Based Citizenship Intelligence Development in Distance Education (PJJ).

2   METHODOLOGY

The method used in the analysis of this discussion is a literature study. A literature study is a theoretical study, references and other scientific literature related to the culture, values and norms that developed in the social situation under study. (Sugiyono, 2015). Literature Study conducts research by studying and reading literature related to the problems that are the object of research. In the literature study method, the author will discuss the sources that go into it.

The literature study will use all types of literature as references. So, in this case, many sources of information can be studied, including scientific journals, books, mass media information, and the internet. In conducting research using the literature study method, the author must study various references related to the discussion material. This process is critical because it provides colour enrichment analysis and improves the articles' quality. The purpose of using the literature study method is: To find a Problem or Topic, Finding Relevant Information, Reviewing Relevant Theories, seek theoretical foundations, and deepen the author's understanding and knowledge (Muktaf, 2016).

3   FINDINGS AND DISCUSSION

3.1   Citizenship Intelligence as Normative Identity

Citizenship intelligence as a normative identity must be able to face and simultaneously find solutions to the negative impacts of the development of technology and information globally. The progress of globalization today is a necessity that cannot be ignored. Indonesia has followed the process of globalization, thus allowing difficulties in the life of the nation and state to be associated with global concerns. It can damage national pride. All aspects of the country must take lessons from history. Must be informed about various events, including separatist movements, conflicts, ethnic groupings and SARA incidents that endanger the country's stability and bring it to its knees. There is no reason to repeat the loss of life, property and prolonged trauma. The Indonesian nation must develop into an intelligent citizen. Intelligence Citizenship is a set of principles found in the value system of intelligence is one of the self-compassion of citizens, including beliefs and goals that individuals have or express, aspirations that are articulated, attitudes that are shown or shown, feelings and behaviours that are prioritized to be carried out, and concerns. Voiced or observed (Kusnadi, 2021; Masrukhi, 2018).

Distance education needs to play a more significant role in developing the civilized civil intelligence that society needs to survive the changes and demands of the 21st century. Citizenship intelligent people will be able to play an active and successful role in the life of society, the state, and the state. This is possible because people with civil intelligence can develop civic responsibilities, realize their rights and responsibilities as citizens, and engage in public affairs. In order to produce a young generation that is intelligent, qualified, superior, and empowered, the philosophical orientation, goals, and culture of 21st-century Citizenship Education must be in line with or directed at realizing the intelligence of citizens through the corridor of "value-based" character education to realize public civility (Crick, 2007; Osanloo, 2009; Use & Puspitaningrum, 2022). In addition, seven abilities must be fostered to foster civic intelligence: civic knowledge, civic skills, civic disposition, civic confidence, civic commitment, civic competence, and civic culture (Hamidi & Lutfi, 2010; Tirtaraharja, 2005; Winataputra, 2001).
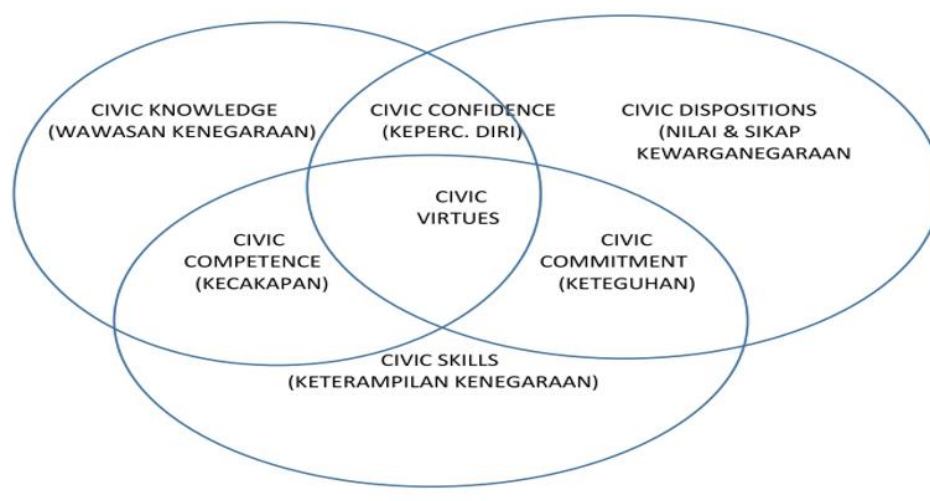
Figure 1. Seven Citizenship Intelligence Skills

According to Winataputra, citizenship policy is at the heart of the personality of citizens (civic virtue). Citizenship knowledge/knowledge, civic disposition, civic skills, commitment, confidence, and skills must all be developed to help grow civic competence. Overall, everyone needs this citizenship policy to be willing and able to engage in knowledgeable and responsible civic engagement(Hoskins & Crick, 2008; Nadzmi Akbar, 2016; Winataputra, 2001).

3.2   21st-Century Skills in Distance Learning

21st-century skills in learning, especially distance learning, must be able to be carried out and developed according to the needs of the learning process so that the proclaimed skills will be achieved and can be applied in life, especially in the era of globalization by adjusting the development of technology and information that is not limited. Many organizations seek to develop the competencies and skills needed in the 21st century. However, it is essential to remember that it is impossible to educate children through only one method in the 21st century. The Harvard and Wagner University Change Leadership Group identified that students must have the necessary competencies and mechanisms to deal with seven problems in life, the workplace, and citizenship in the 21st century. These seven abilities include (1) critical thinking and problem-solving skills, (2) teamwork and collaboration, (3) initiative and entrepreneurial spirit, (3) agility and flexibility, (4) leadership, (5) effective oral and written communication skills, (6) accessing and analyzing information (7) curiosity and creativity. (Al Munawaroh & Dewi, 2021; Zubaidah, 2016).

Every element of life is influenced by technology and information, especially in the era of the 21st century, which is a century that sees the transition from industry to a knowledge-based civilization. The internet makes it easier for people to increase their knowledge and information. In addition, the internet also makes it easier for people to access data from all over the world. Ecology and society, however, will be negatively affected by these advances. The uncontrolled spread of information worldwide is causing a significant digital boom. Therefore, people try to sort and choose the information they need. They can choose reliable sources (Kurniawan, Sriasih, & Nurjaya, 2017; Lestari & Santoso, 2019; Trisnawati & Sari, 2019).

Various aspects of human life have been affected by the industrial revolution, including the world of education. The changes in the industry include the following. Effects of the Industrial Revolution 4.0 on education and learning (The Duke Perspective 2019)

1. Students have expectations based on technology and can project for the future job market. Work readiness, in addition to knowing their field, future generations must also be trained. They are using the latest technology. Students should acquire proficiency through practical learning in terms of how they will use technology in their future work ahead of them.

2. Learn to be more independent. It is time for education to give more people the opportunity to understand each student's performance strengths and weaknesses or individualized teaching. Therefore, nowadays, the web is viral everyone can learn what they want at their leisure. The concept of education must develop. Further, teachers will evaluate student behaviour,

performance, and other factors. In addition, it also provides independent learning opportunities for students. If a student has a learning problem, the teacher can find suitable strategies and approaches to teaching with different styles. However, much training is required so the teacher can understand and apply the learning.

3. The Internet of Things (IoT) dominates. What is the Internet of Things created for both now and in the future for human convenience? In specific locations, modern schools are equipped with tracking devices, wireless door locks, sensors for ambient temperature, security cameras, and other smart gadgets. An essential component of this procedure is convenience if advanced technology could be more accessible for someone to work because the workplace and classrooms are more comfortable or concentrate more on activities(Singh, 2003; Wijaya et al., 2016; Zubaidah, 2019).

Learning, especially in 21st-century learning, there are several changes or transitions from learning before the 21st century to 21st-century learning, which can be described as follows:

Table 2. 21st-Century Learning Changes

No	Aspect	Before the 21st century	After 21st Century
1	Focus	Teacher centred	Student-centred
2	Learning model	Direct	interactive
3	Contents	Knowledge	skills
4	Process	Results based	Process-based
5	skill	Base	Applied
6	Concept	Facts and principles	Problems and solutions
7	Study	Theory	Practice
8	Learning methods	Competition	Collaboration
9	A place to learn	Class	Global Society
10	Task	Based on writing on paper	Web-based

Source: (Widodo & Wardani, 2020)

In addition, it is also necessary to know about 21st-century skills known as the 4 Cs, namely Critical thinking, creativity, collaboration, and Communication skills. All educational institutions often address the need for 21st-century capabilities. These organizations strive to teach their students how to master skills that include critical thinking, collaboration, effective Communication, and creativity,

collectively known as 21st-century skills. This aligns with the Partnership for 21st Century Skills (P21). This US-based organization states that the competencies needed by human resources in the 21st century are critical thinking, creative thinking, Communication, and collaboration skills or collaboration skills. The characteristics of the 21st century with a more suitable learning model can be described as follows:

Table 3. 21st Century Learning Paradigm Shift

1	Information ⟶	Learning is directed at encouraging students to find out from various sources, not being told
2	Computing ⟶	Learning is directed at being able to formulate problems, not just solving problems
3	Automation ⟶	Learning is directed at being able to think analytically, not mechanically
4	Communication ⟶	Learning emphasizes the importance of cooperation and collaboration in solving problems

Source: https://belajarngajar9.blogspot.com/2015/03/pembelajaran-abad-21.html

3.3 21st Century Skill-Based Citizenship Intelligence Development in Distance Education

The development of civic intelligence based on 21st-century skills in distance education can be seen and analyzed in various components that support the learning process in distance education. The distance education system (PJJ) is considered the invention of the 21st-century learning system; it is an education system with a broad reach across location, time, and socioeconomic. Anyone anywhere and anytime has access to education, thanks to the PJJ system. With adequate quality, the PJJ system is often seen as a remedy for various educational problems, especially those related to equality and democratization of education, as well as expanding access to high-quality education to all levels of society in places and times that are not accommodated by face-to-face education. The PJJ system has become part of the formal framework through several government decisions, including Minister of National Education Decree no. 107/U/2001, National Education System Law No. 20/2003, PP 17/2010, and PP 66/2010 (Hardhono, 2012; Ossiannilsson, 2017; Sangrà, Vlachopoulos, & Cabrera, 2012).

Students must possess the skills necessary for 21st-century living to be prepared for difficulties. These abilities are known as the "4 C's", which mean "critical thinking", "collaboration", the ability

to work effectively with others", communication", and "creativity". Learning is a significant problem facing society in the twenty-first century, especially in education. Learning in the twenty-first century must be able to equip students with the social skills needed to adapt to advances in information and communication technology. In order to prepare the younger generation for the advancement of communication and information technology, one critical issue related to the civic intelligence of the younger generation needs to be addressed. According to Masrukhi's research (2018), almost all seven components of civic intelligence except civic knowledge are still low in the civic intelligence profile of schoolchildren. Civil intelligence is the capacity of an individual to take his position (Knowles, 2018; Masrukhi, 2018).

A person can increase his intelligence through the implementation of schooling. Implementation Teachers can deliver instructions in a classroom setting. Teachers have an essential role in placing education through a learning process that seeks to achieve learning objectives, in this case educating students. Practising education as one of its goals is to form civic intelligence in students. Teachers can form students' civic intelligence, part of character education.Character is not something inborn; it cannot be expected to be given by parents as the sole provider of 'good character,' nor can it be 'taught' from textbooks. The character can be formed by someone or something influenced by the amount of interaction time and the content of the interaction. The more time a child spends with someone or something, the more they will absorb and be "shaped" by that person or thing. That "something" could be a TV, video game, phone, iPad, or something else. There are many important factors involved in the development of one's character, including family, community, and school (Choi & Shin, 2017; Zubaidah, 2019).

A complete skill is needed to form citizenship intelligence, namely 21st-century skills, including critical thinking, creative thinking, collaboration or collaboration, and communication skills. The learning process for integrating 21st-century skills-based civic intelligence in distance education can be seen in the following table.

Table 4. 21st Century Skill-Based Citizenship Intelligence Development in Distance Education

No	Distance Education	21st Century Skills	Citizenship Intelligence	Character Values
1	The separation between lecturers/tutors and students.	Collaboration skills and communication skills are required	Behaviour shows a genuine effort in overcoming various learning and task barriers and completing tasks as well as possible.	Hard work, behaviour that shows genuine efforts in overcoming various learning and task barriers, and completing tasks as well as possible
2	An organized process involving educational institutions.	Collaboration skills and communication skills are required	Behaviour shows a genuine effort in overcoming various learning and task barriers and completing tasks as well as possible.	Creative, think and do something to produce new ways or results from something that you already have
3	Interaction is carried out through various learning media (print, audio, video, computer, multimedia, and web-based) to facilitate learning interactions between lecturers/tutors and students	Collaboration skills and communication skills are required	Behaviour shows a severe effort to overcome various learning and task barriers and complete tasks as well as possible.	Creative, think and do something to produce new ways or results from something that you already have
4	The availability of two-way communication facilities allows students to dialogue for learning and other purposes.	Collaboration skills and communication skills are required	Behaviour shows a genuine effort in overcoming various learning and task barriers and completing tasks as well as possible.	Discipline, actions that show orderly behaviour and comply with various provisions and regulations
5	Possibility of providing opportunities to meet face-to-face for learning or social interaction.	Collaboration skills and communication skills are required	Behaviour shows a severe effort to overcome various learning and task barriers and complete tasks as well as possible.	A person's responsibility, attitude and behaviour to carry out his duties and obligations should be carried out on oneself, society, the environment (nature, social, and culture), the state, and God Almighty.
6	The educational process is like a process in the industry, i.e. there is a clear division of roles between those who carry out the management, learning, examination, and production processes of teaching materials.	The need for critical thinking skills, creative thinking, collaboration, and Communication	Behaviour shows a genuine effort in overcoming various learning and task barriers and completing tasks as well as possible.	Democratic, a way of thinking, behaving, and acting that evaluates the rights and obligations of himself and others equally

In the learning process to realize good character values by the nation's ideology, the role of distance education based on 21st-century skills requires a learning strategy that is adapted to the needs and

developments of current technology. One natural way to prepare a generation of character that will bring progress and prosperity to the Indonesian nation is to instil character education values in early childhood. This will help humans return to their natural state, which is always to decorate life with good values ((Budimansyah, Hood, & Nurulpaik, 2018; Cahyaningrum, Sudayanti, & Purwanto, 2017; Mustika, 2017)

4 CONCLUSION

The progress of globalization today is a necessity that cannot be ignored. Indonesia has followed the process of globalization, thus allowing difficulties in the life of the nation and state to be associated with global concerns. It can damage national pride. All aspects of the country must take lessons from history. Must be informed about various events, including separatist movements, conflicts, ethnic groupings and SARA incidents that endanger the country's stability and bring it to its knees. There is no reason to repeat the loss of life, property and prolonged trauma.

The Indonesian nation must develop into an intelligent citizen. Intelligence Citizenship is a set of principles found in the value system of intelligence is one of the self-compassion of citizens, including beliefs and goals that individuals have or express, aspirations that are articulated, attitudes that are shown or shown, feelings and behaviours that are prioritized to be carried out, and concerns— voiced or observed.

21st-century skills in learning, especially distance learning, must be able to be carried out and developed according to the needs of the learning process so that the proclaimed skills will be achieved and can be applied in life, especially in the era of globalization by adjusting the development of technology and information that is not limited.

In the learning process to realize good character values by the nation's ideology, the role of distance education based on 21st-century skills requires a learning strategy that is adapted to the needs and developments of current technology. One natural way to prepare a generation of character that will bring progress and prosperity to the Indonesian nation is to instil character education values in early childhood. This will help humans return to their natural state, always decorating life with good values.

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METAVERSPEDIA TO SPREAD TO AWARENESS OF THREATENED FLORA AND FAUNA

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Abstract

Metaverse is a three-dimensional virtual communication space that is currently being discussed by various groups, both from its very rapid development and its implementation which is starting to be widely applied in various sectors of life. The research method used in writing this paper is literature study by collecting library data from various written sources such as articles, scientific journals, and documents relevant to the topics discussed. The research design used is a narrative review. The reason behind the writer's interest in making this paper is based on the phenomenon of hunting and trade in flora and fauna which is increasingly happening. This makes the number of available flora and fauna increasingly threatened with extinction. The results showed that this did not make the general public uneasy, even many of them did not know information about endangered and extinct flora and fauna. Information about the extinction of flora and fauna is now diverse and easy to find, ranging from books in the form of encyclopedias to applications on mobile phones. Unfortunately, according to survey data conducted by UNESCO, it is stated that the reading interest of the Indonesian people is very concerning. In fact, the encyclopedia is a complete, clear and detailed source of information. However, the price of the encyclopedia is not cheap, so it is considered less economical and static. Therefore, the idea was created to create Metaverspedia, a three-dimensional virtual space that provides information on endangered and endangered flora and fauna with the aim of helping the community, both educators, students and the general public, in obtaining information and increasing knowledge about flora and fauna. interactive and endangered species. The advantage of Metaverspedia is that besides being interactive, easy to reach and also fun with a design that spoils the visuals of the users .

Keywords: Metaverse, encyclopedia, information media about endangered flora and fauna.

1 INTRODUCTION

The development of technology today is very fast. With the emergence of new technology, namely Metaverse, a virtual space in three-dimensional form that makes it easier for users to interact and communicate like the real world. Now we can also use metaverse in education. With the metaverse we can obtain information and learn without being limited by space and time.

Metaverse has three main elements that are very suitable to support the quality of learning in the era of digital technology development. With metaverse technology we can get virtual and artificial reality (VR), web 3.0 technology, and blockchain technology. According to data reported on the IUCN website in 2021, there are 170 flora and 189 fauna with critically endangered status (Critically Endangered).

Flora is all types of plants and plants that exist on earth and Fauna is all types of animals that live on earth. (Geography, 2016). There is a lot of information about the extinction of flora and fauna that is formed in print media in the form of encyclopedias to online reading applications on mobile phones. Unfortunately, the reading interest of the Indonesian people is very concerning. Students in big cities have less interest in reading because of the influence of increasingly sophisticated technology, while students in villages or 3T areas do not have supporting reading facilities, even though they may have high interests. (3,128 Journal of Elementary School Teacher Education. 7th Edition 32 Year 2018)

To overcome this, a metaverse space was initiated that educates about endangered and extinct flora and fauna in order to provide a learning space with a pleasant atmosphere and freely accessible for educators, students, and the general public. The space is like an encyclopedia in the metaverse world called metaversepedia. (Journal of Barik, Vol. 4 No. 1, Year 2022, 37-51)

With this space, we hope that the interest of the Indonesian people in finding information about flora and fauna, especially those that are extinct and threatened with extinction, will increase, by knowing the number and types of extinctions of flora and fauna that exist, we hope that people will care more about preserving and caring for flora and fauna. that exist on earth so as not to become extinct.

2 METHODOLOGY

The general idea this research wants to achieve is a kind of space that can be used as an active learning place with ample information and engaging visuals. We come up with the idea of an encyclopaedia-like world, diving into the knowledge of endangered and extinct species, built to introduce the learner to the species' world. It is, the so called, Metaversepedia.

The learner first arrived at a gallery, there displayed pictures after pictures of endangered species and extinct species. The species are categorized by their extinction year and their populations left in the wild. The pictures can be interacted with, showing a 3D visualisation of the species that can be viewed freely, turned around, and switched the view between the body of the species or internal structure of the species. There will be a window prompt to help the learner learn more about the species, and also, jump into the species biome, learning and understanding their behaviour in the wild at their time. This jumping into the biome feature can be used in any manner, fast-forward or slow motion, for specific moment or general life, and controlled by the lecturer known as tour guide.

A literature study was used to look for materials and/or applications that shaped the metaverse. The literature study technique is a review of books, literature, notes, and reports related to the analyzed reports (Nazir, 2013, p 93). This research method is directed at finding the data materials needed in the form of photos, images, and applications that support the writing process. In making this product, learning media from the "Spatial" application is used to produce the form of a 3D object that we want to add to the metaverse-space.

After acquiring the data and the materials needed for the metaverse-space, the data and materials collected is then inputted to the application and presented in the way we wanted. At this development stage, a lot of issues might start to show up. Experiments, tweaking, implementations, might be needed to help develop Metaverspedia. As the development progresses, so is the information needed and material needed. In the long run it is hoped that this technology can reach its fullest potential and form so it can benefit the masses.

3   FINDINGS AND DISCUSSION

3.1   Development

3.1.1   Findings

On the development of Metaverspedia, the team was able to create a gallery-like space using the "Spatial" application. We were also able to create a functioning explanation window. The "Spatial" application has enabled us to create a solid base world close to our ideals of Metaverspedia. Here's an example of a Metaverspedia display that our team created :
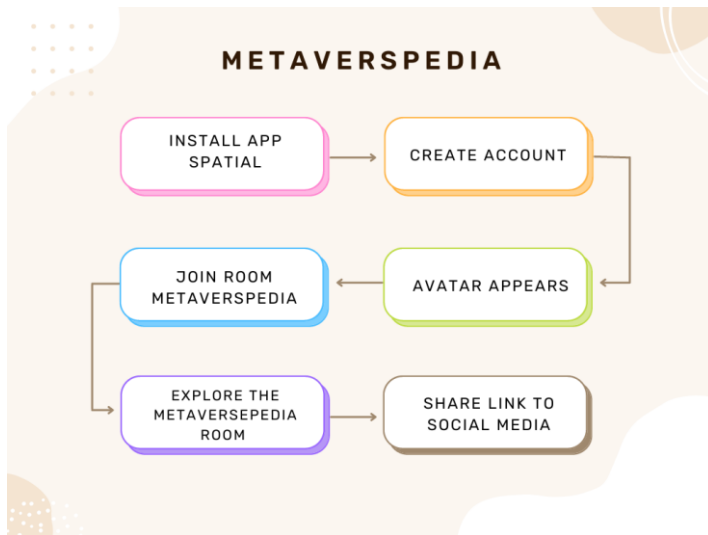
Figure 1. Login flow to the Spatial app
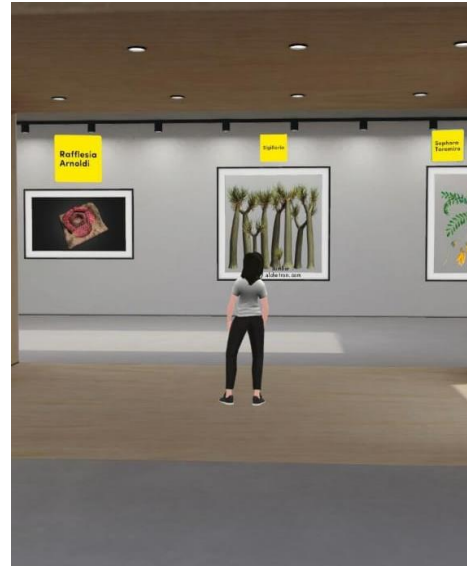
Figure 2. fauna display in metaverspedia

Source: Rifli made by Spatial application, 2022

Figure 3. flora display in metaverspedia
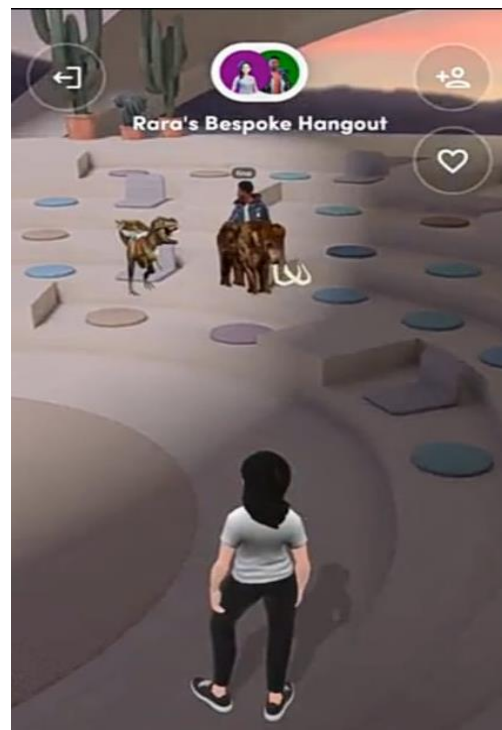
Figure 4.Room meeting in metaverspedia

Source: Rifli made by Spatial application, 2022

3.1.2   Problems

On the development of Metaverspedia, we encountered some development problems. One of them is the lack of time to create the space close to our ideals. This problem leads to our space being underbuilt, though it works normally as a gallery. We also did not gather enough data and material to support our build. We lack the data for extinct and endangered species, and also lack the 3D materials needed for our space. The "Spatial" application, though helpful, isn't enough to support us creating our Metaversepedia world.

4   CONCLUSION

Based on the result of the research we conclude that:

1. Metaversepedia can be a fun and engaging way to learn about the existence of endangered and extinct species.
2. There is a need to continue the research and to develop the applications further to be able to see the extent of the impact Metaverspedia can make in the education world in hope of easing the access of education for all.

ACKNOWLEDGEMENTS

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DEVELOPMENT OF MOOCS EFFECTIVE COMMUNICATION SKILL IN PROFESSIONAL WORKPLACE

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Abstract

Millennial generation students need to be equipped with adequate popular knowledge to communicate professionally in the world of work. The purpose of this research is to produce MOOCs with the title Effective Communication Skill in Professional Workplace which can later be followed by the general public. These MOOCs equip participants to be able to apply their communication skills professionally in the world of work well. Professional communication skills are skills that are needed by someone in the work environment, wherever you are. This ability can be learned and developed to establish coordination, collaboration, and synergy in the world of work with other people to be effective so that the agency's or company's goals can be achieved. The type of MOOCs developed is xMOOC using the ADDIE Model. MOOCs consist of seven materials to support professional communication skills in the world of work, namely (1) Identity recognition and Self Excellence, (2) Emotional Management and Good Listening Skills, (3) General Professional Code of Ethics, (4) Increased Communication Sensitivity Inter-Cultural in the Professional World, (5) Communication Techniques through Effective Media, (6) Lobbying, Negotiation, and Persuasion Techniques, and (7) Professional Presentation Techniques. The development of MOOCs opens up wide opportunities to be used as an open and massive learning platform to develop one's skills.

Keywords: communication skill, MOOCs, professional communication, workplace, interpersonal communication

1 INTRODUCTION

Online learning is increasingly thriving in the educational system. Online learning uses media to impart *knowledge* to students while also assisting them to learn independently (Oksatianti *et al.*, 2020). *Massive Open Online Courses*, or MOOCs, are one type of open *online* learning.

MOOCs (*Massive Open Online Courses*) are a new model of education and learning that leverages the internet to deliver information about resources at universities and other educational institutions where continuous education is conducted. MOOCs are the most recent innovation in online learning and are utilized as an alternative to educational programs. In keeping with this development, MOOCs have changed the field of education in a very short period, creating opportunities for new educational knowledge and business references that students can use for free (Risdianto *et al.*, 2021). In summary, MOOCs can be defined as open *online* courses that are delivered on a vast scale to an unlimited number of students. MOOCs are designed to be accessed *online* by users at any time and from any location, and students can also select the material that interests them. The material offered is typically in the form of videos, which are accompanied by downloaded document files providing material related to the material taken.

This research is relevant to the research of Risdianto *et al.* (2021) on the findings of the teacher's needs response to the *augmented reality*-assisted MOOCs-based blended learning model. It is possible to infer that the quality of the response questionnaire to the needs of the *augmented reality*-assisted MOOCs-based blended learning model is very good. Furthermore, it is consistent with Suyetno's (2020) research on the development of *Massive Open Online Courses* (MOOCs) on welding materials. The developed development has been shown to support practical tasks. The findings of the questionnaires issued to students suggest that the MOOC design has a high level of feasibility, with a percentage of 83.22%.

Universitas Terbuka (UT) began offering 14 MOOCs in 2014, and these may be found at https://moocs.ut.ac.id/. The development of MOOCs with a variety of content, including academic and community-needed popular skills, is necessary for UT to further solidify its position as a leader and innovator in remote education in Indonesia. *Effective Communication Skill in Professional Workplace* is the name of one of the MOOCs that will be developed through development research.

 The MOOCs developed in this research are xMOOC. The xMOOC pedagogy is more regimented, with materials provided ahead of time by the MOOC developer. The learning materials generated in the LMS comprise eight sessions that will culminate in a competency test for a graduation certificate if you pass and a certificate of accomplishment if you do not pass. The learning process in xMOOC is structured to follow the flow of the delivered content, including video material, and comprises evaluations that are scored automatically by a computer. Learners in an xMOOC will be passive because the teacher has planned everything with a learning process that is also usually scheduled within a certain deadline (Belawati, 2019).

Professional communication skills are required in the workplace so that one can work well with people in a variety of scenarios and situations. According to Brady (2010), communication is one of the components of job readiness. A person is expected to speak effectively and professionally in the workplace. As a result, understanding the value of communication and creating positive relationships with people is essential. Communication is an essential aspect of human life. We create mutual understanding, friendships, affection, and careers through communication. Understanding and strengthening our communication skills can improve our quality of life, our relationships with others, and even our business and career chances.

Communication skills, according to Rowley (in Sa'diyah, 2015), are the ability to send messages that promote the achievement of goals while retaining social acceptance. Communication skills play a vital role in the communication process, in terms of communicating information, solving problems, and offering feedback. Payne (in Sa'diyah, 2015) defines communication skills indicators as communication motivation, communication knowledge, and communication skills.

In this digital era, communication skills are one of the important provisions in the world of work. The era of disruption that has occurred has brought changes to the work model in various lines so that adaptive and professional communication *skills* are needed so that organizational goals are achieved. Communication is a circular and dynamic process so a simultaneous learning process is required (Nurbani, 2019).

The development of MOOCs is important because MOOCs will allow participants to utilize communication skills professionally in the workplace. Professional communication skills are necessary for anybody in the workplace, no matter where they work. This ability can be learned and developed to establish coordination, collaboration, and synergy in the workplace with other individuals to be productive and fulfill the goals of the agency or company. By participating in the MOOCs *Effective Communication Skill in Professional Workplace*, participants will be able to apply professional communication skills in the world of work well.

2   METHODOLOGY

The research method employed is *research and development* to produce certain goods and test their effectiveness (Sugiyono, 2017). The research output is *Massive Open Online Courses* (MOOCs) titled *Effective Communication Skill in Professional Workplace*, which is expected to teach professional communication skills in the workplace to the general public or job seekers. The ADDIE model, one of the systematic learning design models, was employed in this study as the development model. This model is programmatically structured with systematic sequences of activities in an attempt to solve learning problems related to learning resources that are appropriate for the learner's characteristics and needs. This model consists of five steps, starting from the *analysis* stage which is the process of identifying problems through needs analysis based on experts through interview techniques. Then comes the *design* stage, which is the stage of creating MOOCs material design based on the outcomes of the needs analysis. Then go on to the *development* stage, which is the stage of creating MOOCs material based on the design at the design stage, namely making PPT, videos,

discussion questions, formative tests, and summative questions. Then, proceed to the *implementation* stage by taking tangible actions to apply the created learning media to several students. Finally, the *evaluation* stage is carried out to evaluate the MOOCs that have been developed with expert validation (Tegeh & Kirna, 2010).

3 FINDINGS AND DISCUSSION

The result of this research is *Massive Open Online Courses* (MOOCs) entitled *Effective Communication Skill in Professional Workplace*. The presence of MOOCs *Effective Communication Skills in the Professional Workplace* is a breakthrough or innovation aimed at improving popular skills in the industrial era 4.0, especially in the field of professional communication in the world of work. The development of MOOCs is based on the needs of a person in the work environment according to experts in order to improve communication skills professionally to the general public. The steps in developing *MOOCs* are adapted from the ADDIE development model. The model consists of five stages, namely *analysis, design, development, implementation*, and *evaluation*. Here is the explanation.

3.1 Analysis Stage

According to expert interviews, a large portion of the general public lacks the necessary professional communication skills, especially regarding work ethics issues. Naturally, this requires training in order to enhance professional communications skills in the workplace.

> *"Many people lack qualified professional communication skills. Since the public still does not have a good understanding of the world of work ethics, therefore it becomes an obstacle to collaborating in the world of work. Nevertheless, effective communication is essential in every situation. So, it requires expert communication training or therapy. Because numerous factors must be taken into account when coordinating with others in the workplace. Because not all workers receive professional training and experience, this competence is still just basic."*

This is in line with previous research which found that one of the problems impeding the implementation of interprofessional collaboration was inadequate between professions communication (Setiadi, 2017). Communication is the most critical part of professional collaboration. Without effective communication, organizational services will become disoriented and

dependent on *stereotypes* (Cross-Sudworth, 2017). To fulfill organizational goals effectively and efficiently, effective communication is required in the workplace.

The expert also stated that communication is an inseparable part of the professional world. Just like doing a work presentation, of course, it requires good communication so that the ideas or ideas that we convey can be understood by others. This is certainly a potential if the communication is delivered properly, then work activities (professional) will also run well.

> *"Everyone's daily life requires communication. both informal and formal. similar to supporting businesses and careers. To help our work or business success, we frequently engage in professional communication, such as when giving a work presentation. Speaking of effective communication, there are a number of things that affect it. One is our capacity to modify how we communicate with others. In essence, communication abilities will also be a factor in our work. In the world of work, a lot of things, mainly concepts or thoughts, need to be expressed."*

Communication is a necessity for humans. Survival will be maintained through communication (Mashudi et al., 2020). Ariawati (2015) said that in an organizational climate, communication patterns between group members determine the direction, goals, and success of the organization to achieve its goals. Individuals are required to be able to express opinions effectively and easily understood. Okoro, Cwasington, and Thomas (2017) said that when individuals have good communication skills, it will have an impact on increasing self-confidence to face the world of work. On the other hand, individuals will also be able to exert influence on other members of the organization, regardless of their position and position in an organization.

Professional communication abilities are crucial for improving performance and career advancement, according to experts. Collaboration and coordination can occur in all facets of work with full quality when there is good communication between all parties. The ability to communicate professionally is a requirement for job seekers.

> *"I think that professional communication skills are crucial. If we already have good communication skills, we can accomplish a lot. Additionally, in the world of work, these abilities are necessary for the organization's sustainability. These abilities are also required for preparation to work."*

One of the keys to success in life is having good communication skills, which are crucial for a graduate's success while joining the world of work. According to various research, communication skill is a critical ability for success in the world of work (Conrad & Newberry, 2011). According to several sources, effective communication skills are crucial for a personal career and significant contribution to organizational success (Du-Babcock, 2006).

Without being bound to a college, practical skills in professional communication can be taught directly. Anyone at any moment can learn how to develop this skill, which will enable effective coordination, collaboration, and synergy to be built in the workplace and the achievement of the agency's or company's objectives. MOOCs are seen as acceptable as learning tools because of their open and massive nature.

> *"It is critical to teach this skill, particularly through MOOCs... a trending tool for learning outside of the classroom, so it's not only about learning theory. MOOCs are also appropriate for these professional communication skills because they are flexible and large enough to be used by everyone, making them practical. Perhaps practical things can be utilized in professional communication so that they become requirements in the workplace. This professional communication ability is extremely ideal to be taught through MOOCs, which can be accessed by anybody and at any time. Because not everyone can learn at the same time."*

MOOCs can provide flexibility, the convenience of access, and rapid completion at a low cost to everyone interested in learning (Yuan & Powell, 2013). MOOCs are massive, *online*, and open learning *platforms* that are a type of *distance learning* on a larger and more vast scale (Pomerol, Epelboin, & Thoury, 2015). The need for academic material and the potential of MOOCs that can be accessed openly and massively by anyone encourages the emergence of ideas for developing *massive open online* courses that are useful for honing one's abilities or skills so that one can have the ability, experience, knowledge, and networking in the era of digital learning.

In addition, expert interviews also provide input and suggestions regarding material content that needs to be given to the general public, especially *jobseekers* to increase professional communication skills. The following content or things that must be in MOOCs *Communication Skill in Professional Workplace.*

"In my opinion... what is required is, of course, suitable materials. The material may take the form of practical things in the workplace, such as comprehending ethics, negotiating, or giving presentations. The material provided must also be visually appealing; it can be in the form of a PPT... Because engaging learning makes it easier to comprehend. Of course, it is vital to incorporate communication suggestions that are needed in the workplace so that people can develop professional abilities in the material. Of course, in addition to the information, it would be preferable if it included learning video media, practice questions, and discussions. The material presented by my suggestions can also be given the context of the problems in the world of work so that solutions can be found. Then another enrichment material or Open Education Resource (OER) is needed to complete it."

3.2 Design & Development Stage

The results of the analysis stage are used for the next stage, which is *design* and *development*. At this stage, the design of material content and image design is carried out by the community's popular skills. This research focuses on the development and content of MOOCs utilizing a *Learning Management System* (LMS). The learning structure is specifically designed using a *self-paced instruction* model, which allows participants to regulate their learning time based on their ability. This research topic will develop the popular skills needed by the community, such as professional communication skills in the workplace. The following steps will be taken to carry out this research.

1. Making material in the form of a PPT that includes the following material. According to the references, the material will be modified to the concepts and theories.
   A. Identity recognition and Self Excellence
   B. Ability to Manage Emotions and Listen Well
   C. General Profession Code of Ethics
   D. Increased Sensitivity of Intercultural Communication in the Professional World
   E. Communicating Techniques through Effective Media
   F. Lobbying, Negotiation and Persuasion, Techniques
   G. Professional Presentation Techniques

2. Making materials in the form of posters so that participants can easily grasp the essence of each topic in a visually appealing format.

3. Making videos using graphic animation techniques to make the presentation look contemporary and appealing.

4. Making questions for each session (Practice and Formative Tests)

5. Making session introductions, material descriptions, and each session summaries

6. Reviews by experts of the MOOCs material that has been made

7. Revise the *review* results

8. Uploading material on the MOOCs UT *Learning Management System* (LMS)
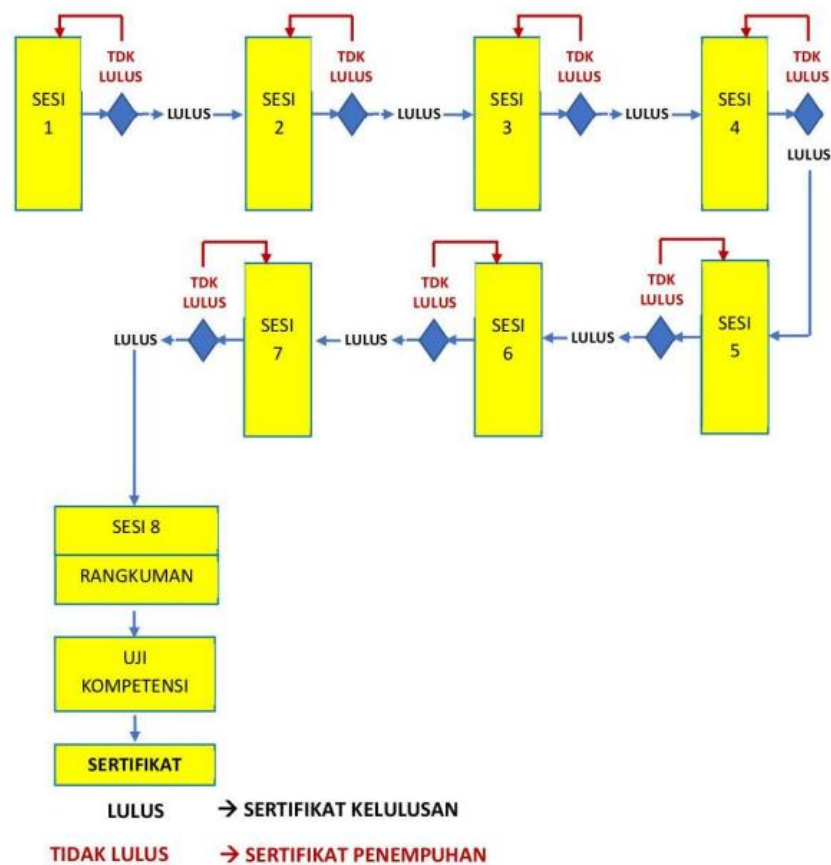
Figure 1. Cycle 1—8 LMS MOOCs Model Self-Paced Instruction

3.3   Implementation & Evaluation Stage

The next is the *implementation* and *evaluation* stage. After being developed, MOOCs are implemented by experts involving media, materials, and language experts to assess and find out the feasibility and shortcomings of the MOOCs being developed so that they can be revised. The feasibility of the MOOCs that have been developed needs to be tested practically. This is done to

assess its quality and feasibility. The feasibility test involved material experts, linguists, and media experts as the respondents. After that, the media evaluation stage was carried out by making improvements to the MOOCs based on the assessment of the experts.

Experts' due diligence attempts to evaluate MOOCs' *Effective Communication Skills in Professional Workplace*. This test is administered by professionals in their respective domains, notably material experts, linguists, and media experts. The experts first tried the MOOCs that had been developed and then they studied and observed them. Following that, the experts were requested to complete the following questionnaire. The examination of the feasibility of the material, language, and media on MOOCs was completed. Here's a more in-depth description.

3.3.1   Media Feasibility Test Results

The media validation test assessment consists of two aspects: (1) MOOC's visual and audio display and (2) software implementation and engineering. Table 1 shows the findings of media experts' assessment of the feasibility of media on MOOCs.

Table 1. Feasibility Test Results by Media Experts

No.	Aspect	Question Item Number	Average Percentage of Eligibility (%)	Criteria
1	MOOC's visual and audio display	1 to 10	82,5	Very Good
2	Software implementation and engineering	11 to 15	81,5	Very Good
	Overall Score Average		82,0	Very Good

The explanation of the results of the feasibility test by media experts on the MOOCs carried out is as follows.

1. MOOC's visual and audio display

   MOOC's visual and audio display consists of six indicators, namely *layout* accuracy, design suitability, image clarity, writing suitability, music suitability, and video quality. Based on an average percentage of feasibility for each indicator of 82.5%. This signifies that the visual and audio display of this MOOCs media met the "Very Good" criteria.

2. Software implementation and engineering

Software implementation and engineering aspects consist of two indicators: ease of use of the media and media quality. Based on an average percentage of feasibility for each indicator of 81.5%, this *mobile learning* media's implementation and software engineering meet the "Very Good" criteria.

The results percentage of these two aspects obtained the results of an overall average assessment of the feasibility of this MOOCs media of 82.0% with the interpretation of "Very Good".

3.3.2   Software Implementation and Engineering

The language validation test consists of three aspects: the effectiveness of sentences on MOOCs, sentences on communicative MOOCs, and easy-to-understand language on MOOCs. As needed, the assessment instrument is created in accordance with the applicable linguistic standards in the media. The following are the findings of the feasibility assessment of the language, as shown in Table 2.

Table 2. Feasibility Test Results by Linguists

No.	Aspect	Question Item Number	Average Percentage of Eligibility (%)	Criteria
1	The effectiveness of sentences on MOOCs	1 to 5	82,5	Very Good
2	Sentences on communicative MOOCs	6 to 10	79,0	Good
3	Easy-to-understand language on MOOCs	11 to 15	80,5	Very Good
	Overall Score Average		80,67	Very Good

The description of the results of the assessment of the feasibility of MOOCs conducted by material and language experts is as follows.

1. The effectiveness of sentences on MOOCs

   The average percentage of eligibility for each indicator is 82.5%, indicating that the effectiveness of the sentences on these MOOCs is "Very Good."

2. Sentences on communicative MOOCs

   The average percentage of eligibility for each indicator is 79.0%, which means that the sentences on MOOCs have been communicative by meeting the criteria "Good".

3. The language on MOOCs media is easy-to-understand

   The average percentage of eligibility for each indicator is 80.5%, indicating that the language in this MOOCs media is easy-to-understand with "Very Good" criteria.

The results of the percentage of these three aspects obtained the results of the overall average assessment of the feasibility of the MOOCs language of 80.67% with the interpretation "Very Good" criteria.

3.3.3 Material Feasibility Test Results

The material validation test evaluation includes three aspects: the feasibility of the content on MOOCs media, the feasibility of presenting on MOOCs media, and the use of animated videos on MOOCs media. The following are the findings of the material's feasibility assessment, as shown in Table 3.

Table 3. Feasibility Test Results by Material Experts

No.	Aspect	Question Item Number	Average Percentage of Eligibility (%)	Criteria
1	The feasibility of the content on MOOCs media	1 to 7	80,3	Very Good
2	The feasibility of presenting on MOOCs media	8 to 15	78,6	Good
3	The use of animated videos on MOOCs media	16 to 20	79,8	Good
	Overall Score Average		79,6	Good

The description of the results of the assessment of the feasibility of the MOOCs material carried out by material experts is as follows.

1. The feasibility of the content on MOOCs media

   The content feasibility aspect of MOOCs media consists of two indicators: the material's suitability with basic competencies and the accuracy of the material's content. The average percentage of eligibility for each indicator is 80.3%. This indicates that the content feasibility of this MOOCs media met the "Very Good" criteria.

2. The feasibility of presenting on MOOCs media

   The feasibility aspect of presentation on MOOCs media consists of two indicators, namely material presentation techniques and material presentation support. The average percentage of eligibility for each indicator is 78.6%, which means that the presentation feasibility of these

MOOCs has met the "Good" criteria.

3. The use of animated videos on MOOCs media

The aspect of using animated videos on MOOCs media consists of one indicator, namely the animated video component. The average percentage of eligible students for each indicator is 79.8%, indicating that the use of animated videos in these MOOCs meets the "Good" criteria.

The results of the percentage of these three aspects obtained the results of the overall average assessment of this MOOCs media material of 79.6% with the interpretation "Good".

4 CONCLUSION

Based on the problems and the results of expert needs analysis, it is possible to conclude that professional communication skills are important in the workplace. Therefore, MOOCs *Effective Communication Skill in Professional Workplace* was developed to learn professional communication skills in the workplace well. Professional communication ability is required by someone in the workplace, so it is hoped that the MOOCs developed will provide participants with provisions to effectively establish coordination, collaboration, and synergy in the workplace with other people so that the agency or company's goals can be achieved. MOOCs are used because they have the advantage of being a massive, *online*, and open learning *platform* that is included in one form of *distance learning* on a wider and more massive scale.

This research focuses on the development of MOOCs' *Effective Communication Skills in Professional Workplaces* utilizing the ADDIE Model, which is consist of two stages: development and feasibility test sections. The initial stage in the development of MOOCs is to create engaging content and the appearance of MOOCs. MOOCs include seven materials to support professional communication skills in the workplace: (1) Identity recognition and Self Excellence, (2) Ability to Manage Emotions and Listen Well, (3) General Profession Code of Ethics, (4) Increased Sensitivity of Intercultural Communication in the Professional World, (5) Communicating Techniques through Effective Media, (6) Lobbying, Negotiation, and Persuasion Techniques, also (7) Professional Presentation Techniques. The experts' feasibility test is the second stage. The feasibility of the MOOCs that have been developed needs to be tested practically in order to assess their quality and feasibility. The responses for the feasibility test were material experts, linguists, and media experts. The overall average feasibility assessment for these MOOCs is 82.0%, which is interpreted as "Very Good." The total average rating of the MOOCs language's feasibility is 80.67%, which is interpreted

as "Very Good." The entire MOOC media material had an average grade of 79.6%, which is considered "Good." Based on the results of the media feasibility test, it is possible to draw the conclusion that the MOOCs *Effective Communication Skill in Professional Workplace* that is produced meet the good criteria and is worthy of being used as an open and massive learning *platform* to develop one's communication skills adaptably and professionally in the workplace.

ACKNOWLEDGEMENTS

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THE DEVELOPMENT OF MOOCS BUSINESS COMMUNICATION PRACTICAL

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Abstract

The MOOCs of Business Communication that will be developed is practical training because they discuss the basic concepts of business communication and the design to implement them in business activities that are adapted to the dynamics of changing technology and information in the global era. A business will only be possible if two or more people interact and communicate. Practical ability in business communication is an ability that is needed by someone in carrying out business activities in the form of speaking, listening, writing, and reading. The purpose of participants participating in these MOOCs is so that they can implement all forms of communication processes in business activities for the benefit of the agency. The type of MOOCs developed is xMOOC using the ADDIE Model. MOOCs consist of seven materials to support professional communication skills in the world of work, namely (1) Writing Business Messages, (2) Job Interviews, (3) Business Proposals, (4) Business Presentations, (5) Business Meetings, (6) Writing Reports, (7) Handling Customer Complaints. The development of MOOCs opens up wide opportunities to be used as an open and massive learning platform to develop one's skills to carry out business communication activities effectively.

Keywords: business activities, business communication, MOOCs, professional communication skills

1   INTRODUCTION

The internet's rapid development affects more than only the industrial sector and the economy. The education industry is also being impacted. With the advent of the internet, educational institutions have begun to employ it to aid in the learning and teaching processes. This is what gave rise to the existence of *e-Learning*. In the process, *e-Learning* has evolved from an *Open Course Ware* (OCW) to the most recent *Massive Open Online Courses* (MOOCs) (Alghifari, 2020).

MOOCs are essentially a distance learning process in which everything from registration to course completion is done *online*. MOOCs also do not consider participant distance or background, allowing anybody to register. Those who want to register for MOOCs only require a device that can access MOOCs and an internet connection. Not only that but MOOCs are typically offered at a reduced or even no cost. Various educational institutions, ranging from training institutions to universities, regard MOOCs as an alternative learning technique, particularly for higher education, based on their characteristics. Access to higher education providers remains limited in many nations, particularly in developing countries, despite the growing demand for higher education (Chen, 2013).

Of course, MOOCs can help someone who wants to receive higher education from a respectable university without having to physically attend the university. MOOCs are beneficial not only to those

seeking knowledge but also to lecturers and teachers. Teachers can supervise student learning activities and more conveniently distribute teaching materials to students. As a result, integrating MOOCs into higher education at universities is a major challenge at this time (Olazabalaga, 2016). Because the education system in MOOCs is not significantly different from existing conventional education, the challenge is to make the learning and teaching experience in MOOCs as good as, if not better than, the general learning method.

The academic world's need for digital literacy, as well as the potential for MOOCs that can be accessible by everyone publicly and massively, stimulate the idea of developing *digital literacy massive open online courses*, or DL-MOOCs, which automatically help enhance a skill digitally (Stewart, 2013). Littlejohn, Beetham, and McGill (2012) discovered that participating in *online* learning indirectly enhanced digital literacy skills. MOOCs can improve academic performance when they are integrated into academic programs and curriculum (Lambert & Alony, 2015).

Universitas Terbuka (UT) began offering 14 MOOCs in 2014, which may be accessed at https://moocs.ut.ac.id/. To further solidify UT's position as a pioneer and innovator of distance education in Indonesia, UT must create MOOCs with a variety of content, including both academic and popular skills required by the community. Business Communication Practical is one of the MOOCs that will be created as a result of development research. The MOOCs developed in this study are xMOOC. The xMOOC pedagogy is more structured, with materials prepared ahead of time by the MOOCs developers. The learning materials that have been prepared in the LMS consist of eight sessions which will end with a competency test to get a graduation certificate if you pass and a certificate of accomplishment if the participant does not pass. The learning process in xMOOC is designed to follow the flow of the material that has been given, including material videos, and consists of assessments that are assessed automatically by a computer. In xMOOC, the learner will be passive because everything has been designed by the teacher with the learning process also usually scheduled within a certain time frame (Belawati, 2019).

The company's continuity as a business organization certainly requires communication in carrying out company plans or programs based on their characteristics, types, capacities, and capabilities. Humans rely on communication to meet their social, business, political, and other needs. Communication is extremely important in business activities. According to Wiley (*in* Iriantara, Subarna, and Rochman, 2011), communication is important in business for several things, including

(1) employee training and recruitment, (2) employee relations, (3) sales and promotions, (4) reporting to management, and (5) reporting to shareholders. Therefore, the communication process in recent times has received a lot of attention from businesspeople.

According to Drucker (*in* Iriantara, Subarna, and Rochman, 2011), communication is now the center of managerial attention in a wide range of fields, from government administration to all institutions/agencies/organizations in society. Communication in business is critical for several reasons, including changing employee attitudes and needs, continuing to expand business activities, increasingly complex business activities, the occurrence of data and information explosions, increasingly fierce competition, community demands for improved living standards, and government regulations.

The company is not just a mere collection of capital but is the activity of businessmen and their stakeholders who deliberately plan various programs and business strategies with clear orientation and objectives. The process of running a company in a business context includes many things, such as production, marketing, quality maintenance and management, corporate image, and reputation, all of which need effective and professional communication (Sumartias, 2017).

In general, business communication encompasses all aspects of how to manage, receive, express, and exchange ideas in business, rather than just correspondence, promotion, presentation, and/or advertising. In simple terms, business communication includes *business correspondence, business language, business writing, and business speaking* (Sumartias, 2017). By mastering and understanding the forms of communication, we can increase the effectiveness of communication.

We can witness a variety of activities or programs in an organization, such as people attending *meetings*, using computers to read, write, and/or respond to emails, taking phone calls, presenting programs or proposals, or creating program designs. The form of communication in the business world or business will depend on the situation, interests, and goals. Thus, business communication really must be designed professionally and oriented to the quality of information that benefits the company and its stakeholders, both economically and socially (Sumartias, 2017).

In this digital era, communication skills are one of the important provisions in the business world. The era of disruption that occurred brought changes to the work model in various lines so that adaptive and professional communication *skills* were needed so that organizational goals were

achieved. Communication is a circular and dynamic process that requires a simultaneous learning process. The development of MOOCs is important because, through these MOOCs, participants will be able to apply professional communication skills in business activities well. Practical ability in business communication is an ability that is needed by someone in carrying out business activities. This ability can be learned and developed to establish coordination, collaboration, and synergy in business activities with other people to be effective so that the goals of the agency or company can be achieved. By participating in MOOCs Business Communication Practical, participants will have sufficient stock to be able to communicate effectively in business activities.

2 METHODOLOGY

Research and development are the research methodology used to produce certain products and evaluate their efficacy (Sugiyono, 2017). The product produced in this research is a form of Massive Open Online Courses (MOOCs) titled Business Communication Practical, which is expected to be able to improve all business activities' use of communication for the agency's benefit. The general public, especially those involved in business, is the intended audience for the creation of MOOCs. The ADDIE model, one of the models for systematic learning design, was used as the development model in this research. This model is structured programmatically with systematic sequences of activities to solve learning problems related to learning resources according to the needs and characteristics of learners. This model consists of five steps, namely starting from the *Analysis* stage which is the process of identifying problems through needs analysis based on experts through interview techniques. Then enter the *Design* stage, which is the stage of making MOOCs material designs that will be developed based on the results of the needs analysis. Then proceed to the *Development* stage, which is the stage of making MOOCs material according to the design at the design stage, namely making PPTs, videos, discussion questions, formative tests, and summative questions. Next, enter the *Implementation* stage by taking concrete steps to apply the learning media that have been made to several students. Finally, the *Evaluation* stage is the stage carried out to evaluate the MOOCs that have been developed with validation assessments by experts (Tegeh & Kirna, 2010).

3 FINDINGS AND DISCUSSION

The result of this research is *Massive Open Online Courses* (MOOCs) entitled Business Communication Practical. A recent development or innovation that aims to enhance common skills

in the industrial era 4.0, particularly in the business field, is the existence of MOOCs on Business Communication Practical. To enhance all forms of communication processes in business activities for the benefit of the agency, experts claim that the development of MOOCs is based on the needs of businesspeople. The steps in the development of *MOOCs* are adapted from the ADDIE development model. *Analyses, designs, developments, implementations*, and *evaluations* are the five stages that consist of the model. In this research, the five stages are summarized into three parts, namely analysis, development, and feasibility testing.

3.1 Analysis Section

The analysis phase is carried out by conducting interviews with material experts so that things can be identified that must exist in the MOOCs of Business Communication Practical. In this stage, interviews with business experts are conducted to find out the material requirements that must exist in MOOCs. Interviews were conducted in a semi-structured manner around the respondents' experiences and opinions regarding practical skills in business communication. The following is a needs analysis interview in the context of developing MOOCs Business Communication Practical.

According to expert interviews, a large portion of the general public lacks the necessary business communication skills. Of course, this calls for training for the community's business communication skills, particularly those of businesspeople, to improve.

> *"Many people do not yet have qualified business communication skills. Everything is based on profit only… So, we need some training or counseling related to business communication. Because in business there are many things that need to be considered besides mere profit. The ability is still minimal because not all business people receive business education."*

This is in line with previous research that showed business people's low proficiency with business communication skills, particularly in business presentations. Although presentations are frequently used in business settings (Roosdhani et al., 2019). This may be because most business people have limited education (Wahyudi, 2019). According to other research, MSME actors' communication skills are still lacking, and the majority of them only focus on management problems (Trimarjono, 2018). Based on this explanation, it is crucial that business people comprehend the various aspects of communication as well as how crucial a role it plays in their business.

The expert also mentioned that communication is an inseparable part of business activities. Like marketing, it certainly requires good communication, especially with consumers so that the products they have can be fully accepted. This is certainly a potential if communication is conveyed properly then business activities will also run well.

> *"Business activities cannot run without communication, and communication is inextricably linked to business... For example, in marketing or promotional activities, we require communication to ensure that our promotions run well. So, in essence, his business activities will be determined by his communication skills. Many things must be communicated in business activities, particularly ideas or concepts."*

Every business actor involved in a variety of activities will interact with one another for commercial reasons. Communication is an inseparable part of business activities. Many problems must be solved in business, so good communication is essential. Thus, communication becomes important in the company because all business activities in the company, such as ideas, ideas, opinions, and information, must be properly communicated (Iriantara, 2011).

According to expert information, business communication skills are essential for the effectiveness of business activities. With good business communication skills, business people can determine business strategies that are effective and efficient. Business communication skills are also needed in the world of work.

> *"In my opinion, business communication skills are critical. Many things are possible if we have good communication skills. Of course, these skills are required for the sustainability of any business that has a legal form (organization). These skills are required in the workplace from preparation to work, in addition to business activities."*

Communication skills are one of the keys to success in all aspects of life and are critical for a graduate's success in the workplace. Several studies have found that communication skills are critical for success in the workplace (Conrad & Newberry, 2011). According to various sources, communication skills are very important for career success and make a significant contribution to organizational success in business organizations (Du-Babcock, 2006).

Practical skills in business communication can be taught directly without the need for a college education. This capability can be developed by anyone at any time to establish effective coordination, collaboration, and synergy in business activities and achieve the agency's or company's goals. As a result of their open and massive nature, MOOCs are regarded as suitable learning media.

"I think that learning this skill (business communication) through MOOCs is suitable because not everyone can attend college or take business communication courses. Even in courses, practical things of business communication are rarely applied. Of course, with the MOOCs system that anyone at any time can access, this business communication practice is very suitable to be provided through MOOCs. Because not everyone can learn at the same time."

MOOCs have the ability to provide flexibility, ease of access, and speed of completion at a low cost for anyone interested in learning (Yuan & Powell, 2013). MOOCs are massive, *online*, and open learning platforms that are included in one form of *distance learning* with a broader and more massive scale (Pomerol, Epelboin, & Thoury, 2015). The need for academic material and the potential for MOOCs that can be accessed by anyone openly and massively encourages the emergence of ideas to develop *massive open online courses* that are useful for honing one's abilities or skills so that one can have the ability, experience, knowledge, and networking in the digital learning era.

Furthermore, expert interviews provide input and suggestions regarding material content that should be given to the general public, particularly businesspeople, to improve business communication skills. The following things or content must be included in MOOCs Business Communication Practical.

"The content of MOOCs needed in business communication is of course good business material in the form of learning video media, there are practice questions. The material provided also needs an attractive appearance, it can be in the form of PPT... Because interesting learning will make it easier to understand. The material certainly needs to include tips that are needed in carrying out business activities so that they can develop business communication skills. The material displayed by my suggestions can also be given the context of business problems so that solutions can be found. Then, other enrichment materials or Open Education Resources (OER) are needed to complete them."

3.2 Development Section

The results of the previous section's research and data collection are used in the next section, which is development. The development section consists of two stages: *design* and *development*. The *design* stage is carried out by creating material content and images that are tailored to the community's popular skills. Then, using a *Learning Management System* (LMS) and a *self-paced instruction* model, MOOCs were developed. The learning structure is specifically designed using a *self-paced instruction* model, which allows participants to manage their learning time based on their abilities. This research topic will develop a popular skill that the community needs: effective business communication skills. This research will be conducted in the following steps.

1. Making material in the form of PPT consists of the following materials. The material will be adapted to the concepts and theories according to references.
    A. Business Message Writing
    B. Job interview
    C. Business proposal
    D. Business Presentation
    E. Business Meeting
    F. Report writing
    G. Handling of Customer Complaints
2. Making materials in the form of posters so that participants can easily grasp the essence of each material in a visually appealing format.
3. Making videos using graphic animation techniques makes the display look contemporary and appealing.
4. Making questions (Practice and Formative Tests) for each session.
5. Making session introductions, material descriptions, and each session summaries.
6. Experts review the MOOCs material that has been made.
7. Revise the *review* results
8. Uploading materials on MOOCs UT *Learning Management System* (LMS)
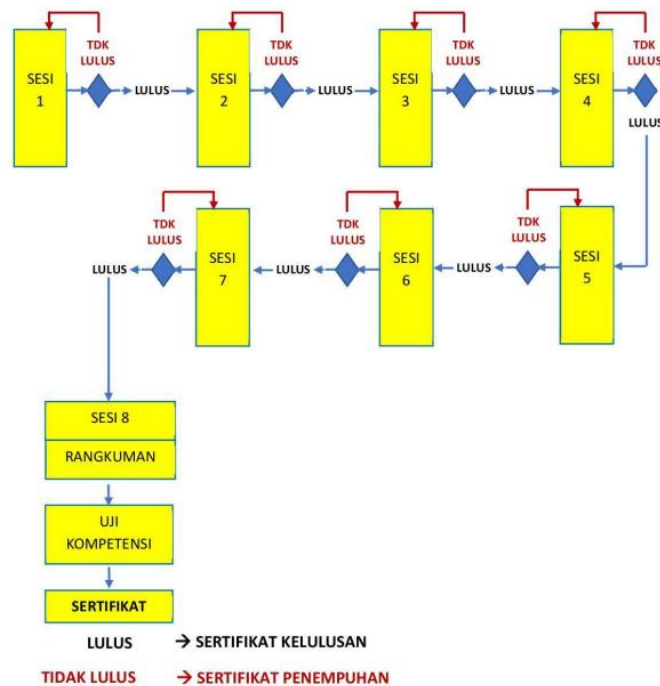
Figure 1. Cycle 1—8 LMS MOOCs Model Self-Paced Instruction

3.3 Feasibility Test Section

Next is the feasibility test section which consists of two stages, namely *Implementation* and *Evaluation*. After being developed, MOOCs are implemented by experts involving media, material, and language experts to assess and find out the feasibility and shortcomings of the MOOCs that are being developed so that they can be revised. After that, the media evaluation stage was carried out by making improvements to MOOCs based on expert judgment. The feasibility of the MOOCs that have been developed needs to be tested practically. This is done to assess the quality and feasibility. The feasibility test involved material experts, linguists, and media experts as respondents.

Expert due diligence aims to assess MOOCs Business Communication Practical. This test is carried out by experts in their respective fields, namely material experts, linguists, and media experts. Experts test newly developed MOOCs before studying and observing them. Following that, the experts were asked to fill out the provided questionnaire. The assessment of the feasibility of the material, language, and media on MOOCs was completed. Here's a more in-depth description.

3.3.1 Media Feasibility Test Results

The media validation test assessment includes two aspects, namely (1) MOOC's visual and audio display and (2) software implementation and engineering. The results of the assessment of media feasibility on MOOCs conducted by media experts can be seen in table 1.

Table 1. Feasibility Test Results by Media Experts

No.	Aspect	Question Item Number	Average Percentage of Eligibility (%)	Criteria
1	MOOC's visual and audio displays	1 to 10	79,5	Good
2	Software performance and engineering	11 to 15	81,0	Very Good
	Overall Average Score		80,25	Very Good

The explanation of the results of the feasibility test by media experts on the MOOCs carried out is as follows:

3. MOOC's visual and audio displays

The visual and audio display aspects of MOOCs consist of six indicators, namely *layout* accuracy, design suitability, image clarity, writing suitability, music suitability, and video quality. Based on the average percentage of the feasibility of each indicator was obtained by 79.5%. This means that the visual and audio display on this MOOCs media has met the "Good" criteria."

4. Software performance and engineering

Two indicators, namely the media's usability and quality, make up the implementation and software engineering aspects. Based the average percentage of eligibility for each indicator obtained by 81.0% which means the implementation and software engineering on this *mobile learning* media has met the "Very Good" criteria

The results of the percentage of these two aspects obtained the results of the overall average feasibility assessment of this MOOCs media of 80.25% with the interpretation of "Very Good".

3.1.2 Language Feasibility Test Results

The language validation test consists of three aspects: the effectiveness of sentences on MOOCs, sentences on communicative MOOCs, and easy-to-understand language on MOOCs. As needed, the assessment instrument is created by the applicable linguistic standards in the media. The following are the findings of the feasibility assessment of the language, as shown in table 2.

Table 2. Feasibility Test Results by Linguists

No.	Aspect	Question Item Number	Average Percentage of Eligibility (%)	Criteria
1	The effectiveness of sentences on MOOCs	1 to 5	80,5	Very Good
2	Sentences on communicative MOOCs	6 to 10	78,0	Good
3	Easy-to-understand language on MOOCs	11 to 15	82,5	Very Good
	Overall Score Average		80,3	Very Good

The description of the MOOCs eligibility assessment results carried out by material and language experts is as follows.

4. The effectiveness of sentences on MOOCs

   The average percentage of eligibility for each indicator is 80.5%, indicating that the effectiveness of the sentences on these MOOCs is "Very Good".

5. Sentences on communicative MOOCs

   The average percentage of eligibility for each indicator is 78.0%, which means that the sentences on MOOCs have been communicative by meeting the criteria "Good".

5. Easy-to-understand language on MOOCs

   The average percentage of eligibility for each indicator is 82.5%, indicating that the language in this MOOCs media is easy-to-understand with "Very Good" criteria.

   The results of the percentage of these three aspects obtained the results of the overall average assessment of the feasibility of the MOOCs language of 80.67% with the interpretation "Very Good" criteria.

3.1.3   Material Feasibility Test Results

The evaluation of the material validation test includes three components: the feasibility of the content on MOOCs media, the feasibility of presenting on MOOCs media, and the use of animated videos on MOOCs media. The findings of the material's feasibility assessment are shown in table 3.

Table 3. Feasibility Test Results by Material Experts

No.	Aspect	Question Item Number	Average Percentage of Eligibility (%)	Criteria
1	The feasibility of the content on MOOCs media	1 to 7	79,1	Good
2	The feasibility of presenting on MOOCs media	8 to 15	78,6	Good
3	The use of animated videos on MOOCs media	16 to 20	79,7	Good
	Overall Score Average		79,2	Good

The description of the results of the assessment of the feasibility of the MOOCs material carried out by material experts is as follows.

1. The feasibility of the content on MOOCs media

   The content feasibility aspect of MOOCs media consists of two indicators: the material's suitability with basic competencies and the accuracy of the material's content. The average percentage of people who are eligible for each indicator is 79.1%. This indicates that the content feasibility of this MOOCs media met the "Good" criteria.

2. The feasibility of presenting on MOOCs media

   The feasibility aspect of MOOCs media presentation consists of two indicators: the technique of presenting the material and supporting the presentation of the material. The average percentage of eligibility for each indicator is 78.6%, indicating that the presentation feasibility of these MOOCs meets the "Good" criteria.

3. The use of animated videos on MOOCs media

   The use of animated videos on MOOCs media is represented by a single indicator, namely the animated video component. The average percentage of eligible students for each indicator is 79.7%, indicating that the use of animated videos in these MOOCs meets the "Good" criteria.

   The percentage of the three aspects obtained results in an overall average score of 79.2% with the interpretation of "Good" for this MOOCs media material.

4   CONCLUSION

Based on the problems and the findings of the expert needs analysis, it is possible to conclude that the value of professional communication skills in business activities is good. As a result, the MOOCs of Business Communication Practical developed will study all forms of communication processes in business activities for the benefit of agencies. Practical ability in business communication is an ability required by someone when carrying out business activities, and it is hoped that the MOOCs developed will provide adequate provisions for being able to communicate effectively in business activities. MOOCs are used because they have the advantage of being a massive, *online*, and open learning *platform* that is part of one form of *distance learning* on a larger and more massive scale.

This research focuses on the development of MOOCs for Business Communication Practical using the ADDIE Model, which consists of two stages: development and feasibility test section. The first stage in the development of MOOCs is the creation of engaging content and the appearance of MOOCs. MOOCs include seven materials to help you improve your professional communication skills in the workplace: (1) Business Message Writing, (2) Job Interview, (3) Business Proposal, (4) Business Presentation, (5) Business Meeting, (6) Report Writing, and (7) Customer Complaint Handling. The experts' feasibility test is the second stage. The feasibility of the developed MOOCs must be tested practically in order to assess their quality and feasibility. The feasibility test involved material experts, linguists, and media experts as respondents. The results of the overall average feasibility assessment of these MOOCs are 80.25% with the interpretation of "Very Good". The overall average assessment of MOOC eligibility is 80.3%, with the interpretation of "Very Good." The overall average of MOOCs media material is 79.2%, with the interpretation "Good." Based on the results of the media feasibility test, it is possible to conclude that the produced MOOCs of Business Communication Practical meet the criteria well and deserve to be used as an open and massive learning *platform* to develop one's skills to carry out business communication activities.

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THE DEVELOPMENT OF TOURISM PROMOTION MOOCS ON SOCIAL MEDIA

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Abstract

Some places in Indonesia are tourist destinations that have the potential to be excellent for domestic and foreign tourists. However, the natural potential needs to be properly socialized to tourists. An effort is needed in the form of training on popular topics to hone community skills in promoting tourist destinations to the community through MOOCs. This research aims to produce MOOCs entitled *Tourism Promotion in social media*, which the general public can later follow. These MOOCs provide participants with the skills to apply the ability to use social media as a medium for professionally promoting tourist destinations. This ability can be learned and developed to optimize social media for tourism promotion so that the number of tourists in the place can increase. The type of MOOCs developed is xMOOC using the ADDIE Model. MOOCs consist of seven materials, namely (1) Tourism Promotion Potential, (2) Introduction of social media as a Tourism Promotion Media, (3) Writing Social Media Tourism Promotion Messages, (4) Social Media Photography Techniques, (5) Tourism Promotion Image Selection on Social Media, (6) Tourism promotion content posting strategy, and (7) Social Media Management for Tourism Promotion. The development of MOOCs opens up wide opportunities to be used as an open and massive learning platform to develop one's skills in managing a tourist spot.

Keywords: destination branding, MOOCs, social media, tourism promotion.

1   INTRODUCTION

It has become a trend in the academic world at universities to develop an open course that anyone can follow massively online. Universities have begun to open themselves as wide as possible for the general public to have learning experiences and participate in higher education through massive open online courses or MOOCs. MOOCs are massive, online, and open learning platforms that are included in one form of distance learning or distance learning with a wider and more massive scale (Pomerol, Epelboin, & Thoury, 2015). The need for academic material and the potential of MOOCs that can be accessed by anyone openly and massively encourages the idea of developing a massive open online course that is useful for honing one's abilities or skills so that one can have the ability, experience, knowledge, and networking in the digital learning era.

The global community's interest in MOOCs continues to increase. The latest statistical data from Class Central shows that MOOC participants globally reach over 101 million people, which is increasing from previous years. They follow one or more MOOCs from around 900 educational institutions that provide MOOCs through various platforms (Belawati, 2019). In addition, the implementation model for MOOCs continues to evolve. At first, MOOCs were massive and non-profit, but now they have grown to a less massive and commercial value (Shah in Belawati, 2019).

Likewise, MOOCs, originally more of an informal online learning process, have now begun to be recognized as a pathway for formal education toward awarding degrees. Furthermore, many universities worldwide recognize the 'credits' students earn from participating in other colleges' MOOCs (Belawati, 2019).

The development of MOOCs for academic purposes is expected to increase the digital literacy of the millennial generation so that they can learn successfully in the era of digital learning in universities and complement several MOOCs that already exist in the world and Indonesia. MOOCs are the right platform to increase knowledge and experience because, during the learning process, MOOCs automatically help improve a skill digitally (Stewart, 2013). The results of the study by Littlejohn, Beetham, and McGill (2012) also show that participating in online learning has developed digital literacy skills indirectly. Furthermore, when MOOCs are integrated with academic programs and curricula, they can improve academic performance (Lambert & Alony, 2015).

The development of MOOCs has disrupted the organization of educational institutions. MOOCs can provide flexibility, ease of access, and speed of completion at a low cost for anyone interested in learning (Yuan & Powell, 2013). MOOCs have significantly disrupted the educational model in higher education. Educational institutions are starting to rethink the courses offered with different ways of learning and unique learning experiences with the presence of MOOCs (Conole, 2016). MOOCs have provided benefits and increased added value in the world of education (Waks, 2016).

The development of Massive Open Online Courses (MOOCs) has become a trend for government and non-government educational institutions to open access to education and disseminate knowledge for all mankind (education for all) so that they can learn for life (lifelong learning) (Johar, Zubainur, & Hayati, 2020). However, some of the existing MOOCs currently contain learning about the content (learning what to learn), and only a few MOOCs focus on popular knowledge or skills to hone skills to support life in the era of the industrial revolution 4.0.

In 2014, Universitas Terbuka (UT) also started offering 14 MOOCs which can be accessed at https://moocs.ut.ac.id/. To further strengthen UT's position as a pioneer and innovator of distance education in Indonesia, UT needs to develop MOOCs with various materials, both academic and popular skills needed by the community. One of the MOOCs that will be developed through development research is entitled Tourism Promotion in Social Media. The MOOCs developed in this

study are xMOOC. The xMOOC pedagogy is more structured, with the MOOC developer preparing materials in advance. The learning materials that have been prepared in the LMS consist of eight sessions which will end with a competency test to get a certificate of graduation if you pass and a certificate of accomplishment if the participant does not pass. The learning process in xMOOC is designed to follow the material flow, including video material. It consists of assessments that are assessed automatically by a computer. In xMOOC, the learner will be passive because the teacher has designed everything, with the learning process also usually scheduled within a certain deadline. (Belawati, 2019).

Several places in Indonesia are tourist destinations that have the potential to be excellent for domestic and foreign tourists. Beautiful panoramas with amazing natural scenery open up potential as one of Indonesia's main destinations, and its projections can benefit the government and the surrounding community. The natural potential that exists should be socialized to potential tourists. In this case, a comprehensive effort is needed from all parties, especially the local government, state apparatus, tourism business actors, and the community. All components of society need to be pioneers in using social media as a tourism destination branding effort. Even so, some places with attractive tourism potential have yet to optimize various promotional media, such as social media, to publish as widely as possible about the beauty of tourist destinations in those places (Riady *et al.*, 2021). Therefore, development research activities focus on making tourism promotion MOOCs on social media the main promotional media aimed at increasing the destination branding of a tourist place. In the future, tourist destinations in a place can experience an increase in tourists and make the place one of the favorite destinations for domestic and foreign tourists.

Entering the era of the Industrial Revolution 4.0, there needs to be a new strategy to improve the tourism sector in Indonesia. One of them is the use of digital media which is considered a technological development with systematic thinking in identifying locations, opportunities, and information to revolutionize human life in carrying out their activities. With this momentum, of course, there is the presence of digital media that can be used to increase tourism's contribution. Therefore, introducing tourism with digital media can be an attractive strategy to compete in world tourism. Moreover, promoting tourism in Indonesia using digital media has great potential to increase destination branding in Indonesia (Riady *et al.*, 2021).

One type of digital media that has the potential to increase promotion is social media. It is a platform that allows all its users to access it easily, anywhere and anytime. In the world of promotion, social media has the opportunity to create viral content that can be widely spread in the community in a fast time. Moreover, not only can domestic people see and read social media content, but also foreign people can access and view different content on social media. It is because social media users from all communities in Indonesia and abroad are very large.

The advantages of social media have yet to be used properly by the community to promote tourist attractions in the vicinity. As a tourist destination with extraordinary natural beauty and tourism promotion that is not supported by optimal promotions and publications, the existing state apparatus and the entire community need to use social media optimally. Many local governments and state apparatus in urban villages on other islands can serve as examples of good publicity and promotion of the natural resources around them. Based on these problems, skills training is needed in optimizing social media as a medium for tourism promotion in the form of MOOCs. The development of MOOCs regarding strategies for the use and management of social media will improve skills and knowledge on how to promote tourist destinations so that, in the future, they will contribute to the success of tourism destination branding in Indonesia.

2 METHODOLOGY

The research method used was *research and development* to produce certain products and test the effectiveness of these products (Sugiyono, 2017). The product produced in this study is in the form of Massive Open Online Courses (MOOCs) entitled Tourism Promotion on Social Media which is expected to increase the destination branding of a tourist place aimed at tourism actors or the general public. The development model used in this study is the ADDIE model, one of the systematic learning design models. This model is structured programmatically with systematic sequences of activities to solve learning problems related to learning resources that follow learners' needs and characteristics. This model consisted of five steps, starting from the Analysis stage, which identifies problems through needs analysis based on tourism actors and experts through interview techniques. Second, the Design stage is the stage of making MOOCs material design developed based on the needs analysis results. Third, the Development stage is the stage of making MOOCs material according to the design stage, namely making PPTs, videos, discussion questions, formative tests, and summative questions. Fourth, the Implementation stage is by taking concrete steps to apply the learning media

to several experts. Finally, the Evaluation stage is carried out to evaluate the MOOCs that have been developed with a validation assessment by experts (Tegeh & Kirna, 2010).

3 FINDINGS and discussion

This research results in Massive Open Online Courses (MOOCs) entitled Tourism Promotion in Social Media. The presence of Tourism Promotion MOOCs on Social Media is a breakthrough or innovation that aims to improve popular skills in the industrial era 4.0, especially in tourism promotion. The development of MOOCs is based on the needs of tourism actors, according to experts, to improve the destination branding of a tourist place.

The steps in the development of MOOCs were adapted from the ADDIE development model. The model consisted of five stages: analysis, design, development, implementation, and evaluation. This study's five stages were summarized into three parts: needs analysis, development, and eligibility testing.

The needs analysis stage was carried out by conducting interviews with material experts to identify things that must exist in the Tourism Promotion MOOCs on Social Media. The results of research and data collection that had been obtained were used for the next stage, namely development. The development section consisted of two stages, namely Design and Development. The initial development stage was the design of material content and image design that was tailored to the popular skills needed by the community. Then, MOOCs were developed using a Learning Management System (LMS) and a self-paced instruction model. The next was the eligibility test section, which consisted of two stages: Implementation and Evaluation. After being developed, MOOCs were implemented by experts involving media, material, and language experts to assess and determine the eligibility and shortcomings of the MOOCs being developed so that they can be revised. After that, the media evaluation stage was carried out by making improvements to MOOCs based on the assessment of experts.

3.1 Analysis Stage

In this stage, interviews with tourism experts were conducted to find the material needs that must exist in MOOCs. The interviews were semi-structured around the respondents' experiences and opinions regarding tourism promotion in Indonesia. The following is a needs analysis interview for developing Tourism Promotion MOOCs on Social Media.

Expert Needs Analysis

Based on interviews with experts, tourism promotion in Indonesia still needs to be improved. The tourism promotion strategy has yet to be implemented effectively and is still conventional. Promotions carried out by each region in Indonesia are also unevenly distributed.

> *"For now, tourism promotion is sporadic, which means that sometimes some can be creative, and sometimes some are very conventional. Therefore, the understanding related to tourism promotion is not deep and not comprehensive in every area."*

This is in line with Prasetya's research (2011) because one of the problems in the Indonesian tourism industry is the lack of optimal management of marketing aspects, lack of budget for promotion costs, and supporting facilities in tourism promotion centers. In addition, according to Lastri (in Wihastuti & Oktavia, 2021) in the Gerbosari Kulon Progo tourist village research, stated that the development of sectoral tourism potential is still sporadic and has not been directed in a structured way to support the development of tourist villages as the main strategy to encourage economic progress. The mapping of tourism potential, which is the basis for planning the development of tourist villages, has not been carried out, so the village government does not yet have a basis for determining a measurable and targeted development strategy.

According to expert information, knowledge about tourism promotion is important to increase tourists. Furthermore, with good tourism promotion knowledge, tourism actors can determine effective promotion strategies for their tourist attractions.

> *"Promotion is a must so that many people know that there are tourist attractions that we are promoting. By knowing the promotion, we will also know what strategies are suitable to be used to promote, especially now that technology is increasingly sophisticated. Because all social media opportunities are easy to go viral, it is easy to attract tourists in the future."*

Tourism management is like a business; to survive, training and education for its workforce are very important (Zolfani et al., 2015). The quality of adequate human resources will greatly support the development of tourism. The tourism industry is one of the easiest and cheapest ways to increase income growth or Gross Domestic Product (GDP), generate foreign exchange, and be able to create jobs.

Nowadays, technology has also developed rapidly, especially social media. A person can easily carry out promotions that the general public can know through social media. Of course, this becomes the potential to promote tourism through social media.

> *"Today's social media has many users right, and it is not limited to age anymore. Everyone can access news and even look for vacation destinations or cool staycations. Therefore, social media is effective as a communication strategy in improving the branding of tourist attractions. Plus, the influence of influencers who give reviews of a place, of course, will have a positive impact on the local tourism ecosystem. Social media has become a suitable place for tourism because tourism itself is judged by the experience… the experience… and social media, which is sharing personal experiences, has become the right characteristic."*

Previous research has shown that using social media has many benefits and advantages in promoting Indonesia's tourism potential and is very helpful in spreading tourism information easily and attracting public attention (Kurniawati, 2017). Further research shows that social media can generate tourist interest in tourism products in a destination, and has the potential to continue to grow on Instagram because it has the potential to be forwarded to various parties, developed using persuasive languages, and make pictures about tourism destinations more recognizable by social media users (Fatanti & Suyadnya, 2015)

Knowledge about tourism promotion is very suitable to be taught through MOOCs media. MOOCs are also considered suitable learning media because they are open and massive

> *"MOOCs are currently a trend,… so I think MOOCs are suitable as a learning model for tourism promotion. Of course, many tourist actors need flexible time to study because of their busy work. MOOCs are also easily accessible by anyone so they can be massively taught."*

MOOCs can provide flexibility, ease of access, and speed of completion at a low cost for anyone interested in learning (Yuan & Powell, 2013). MOOCs are massive, online, and open learning platforms that are included in one form of distance learning with a wider and massive scale (Pomerol, Epelboin, & Thoury, 2015). The need for academic material and the potential of MOOCs that can be accessed by anyone openly and massively encourages the idea of developing a useful massive open online course for honing one's abilities or skills. Therefore, one can have the ability, experience, knowledge, and networking in the digital learning era.

In addition, expert interviews also provide input and suggestions regarding material content that needs to be given to the general public, especially tourism actors, to increase their knowledge and skills in tourism promotion. The followings are contents or things that must be included in Tourism Promotion MOOCs on Social Media.

"In my opinion, it is necessary to provide feature learning videos and practice questions to make it interesting, interesting, and easy-to-understand learning PPTs (power points) and material in the form of practical tips on using social media. In essence, the materials provided must develop tourism promotion skills. A discussion forum to solve a problem must be held. Then, you need other enrichment materials or open education resources (OER) to complete it."

3.2 Design & Development Stage

This research was focused on the development and content of MOOCs using a Learning Management System (LMS). The learning structure is designed by applying a self-paced instruction model that allows participants to manage their learning time according to their respective abilities. This research topic developed the popular skills needed by the community, namely the skills to use social media for tourism promotion. This research was carried out with the following steps.

1. Making materials in the form of PPT consists of the following materials. The materials were adapted to the concepts and theories according to the reference.
   H. Tourism Promotion Potential
   I. Introduction of Social Media as Tourism Promotion Media
   J. Writing Social Media Tourism Promotion Messages
   K. Social Media Photography Techniques
   L. Selection of Tourism Promotion Images on Social Media
   M. Tourism promotion content posting strategy
   N. Social Media Management for Tourism Promotion.
2. Making materials in the form of posters so that participants can easily get the gist of each material with an attractive appearance.
3. Making videos with graphic animation techniques so that the display looks contemporary and attractive.
4. Making questions (Practice and Formative Tests) for each session

5. Preparing introductions session, material descriptions, and summaries of each session

6. Review by experts on the MOOCs material that has been made

7. Revising the results of the review

8. Uploading materials on the MOOCs UT *Learning Management System* (LMS)
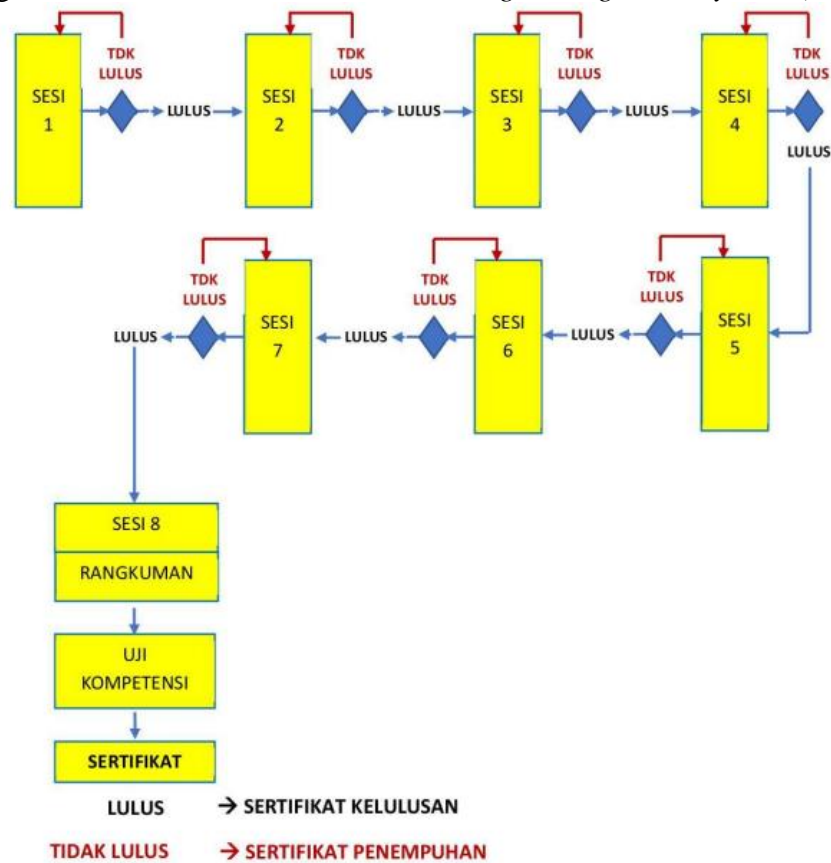
Figure 1. Cycle 1—8 LMS MOOCs Model Self-Paced Instruction

3.3   Implementation & Evaluation Stage

The eligibility of the developed MOOCs needed to be tested practically. It was done to assess the quality and eligibility. The eligibility test involved material experts, linguists, and media experts as respondents. The eligibility test conducted by the experts aimed to assess the MOOCs of Tourism Promotion on Social Media. This test was carried out by experts who had competence in their fields, namely material experts, linguists, and media experts. Experts first tried MOOCs that had been developed and then studied and observed them. After that, the experts were asked to fill out the questionnaire that had been provided. The assessment results were based on the eligibility of the material, language, and media on MOOCs. Here is a more detailed description.

3.3.1 Media Eligibility Test Results

The media validation test assessment includes two aspects, namely (1) visual and audio display of MOOCs and (2) software implementation, and engineering. The results of the assessment of the eligibility of media on MOOCs conducted by media experts can be seen in Table 1.

Table 1. Eligibility Test Results by Media Experts

No.	Aspect	Question Item Number	Average Percentage of Eligibility (%)	Criteria
1	MOOC's visual and audio displays	1—10	80,0	Very Good
2	Software performance and engineering	11—15	83,5	Very Good
	Average Overall Score		81,75	Very Good

Explanations of the results of the eligibility test by media experts on MOOCs carried out as are follows:

1. MOOC's visual and audio displays

   MOOCs' visual and audio display aspects consist of six indicators: layout accuracy, design suitability, image clarity, writing suitability, music suitability, and video quality. Based on the percentage, the average eligibility of each indicator was 80%. It means that the visual and audio display on this MOOCs media has met the "Very Good" criteria.

2. Software performance and engineering

   The performance and software engineering aspects consist of two indicators, namely, the media's ease of use and quality. Based on the average percentage, the eligibility for each indicator was 83.5% which means the performance and software engineering on this mobile learning media have met the "Very Good" criteria. According to the percentage results of these two aspects, the overall average eligibility assessment of the MOOCs media is 81.75% with the interpretation of "Very Good."

3.3.2 Language Eligibility Test Results

The language validation test assessment includes three aspects: the effectiveness of sentences on MOOCs, sentences on communicative MOOCs, and language on MOOCs that are easy to

understand. The assessment instrument was made according to the appropriate language standards in the media as needed. The followings are the language eligibility assessment results, which can be seen in Table 2.

Table 2. Eligibility Test Results by Linguists

No.	Aspect	Question Item Number	Average Percentage of Eligibility (%)	Criteria
1	Sentences effectiveness on MOOCs	1 s.d. 5	80,5	Very Good
2	Sentences communicativeness on	6 s.d. 10	77,5	Good
3	The language understandability on MOOCs media	11 s.d. 15	79,5	Good
	Average Overall Score Average		79,17	Good

The description of the MOOCs eligibility assessment results carried out by material and language experts is as follows.

1. Sentences effectiveness on MOOCs

   The average eligibility percentage for each indicator is 80.5%, which means the effectiveness of the sentences on these MOOCs has met the "Very Good" criteria.

2. Sentences communicativeness on MOOCs

   The average eligibility percentage for each indicator is 77.5%, which means that the sentences on MOOCs are communicative by meeting the "Good" criteria.

3. The language understandability on MOOCs media

   The average eligibility percentage for each indicator is 79.5%, meaning the language in this MOOCs media is easy to understand with the "Good" predicate. According to the percentage of these three aspects, the result of the overall average assessment of the MOOCs' language eligibility is 79.17%, with the "Good" interpretation.

3.3.3   Material Eligibility Test Results

The assessment of the material validation test includes three aspects: the eligibility of the content on MOOCs media, the eligibility of presenting on MOOCs media, and the use of animated videos on

MOOCs media. The following are the results of the eligibility assessment of the material, which can be seen in Table 3.

Table 3. Eligibility Test Results by Material Expert

No.	Aspect	Question Item Number	Average Percentage of Eligibility (%)	Criteria
1	Content eligibility on MOOCs media	1 s.d. 7	81,3	Very Good
2	Presentation eligibility on MOOCs media	8 s.d. 15	79,2	Good
3	Use of animated videos on MOOCs	16 s.d. 20	76,7	Good
	Average Overall Score		79,0	Good

The MOOCs' eligibility assessment results of the material carried out by material experts are as follows.

1. The content eligibility on MOOCs media

   The content eligibility aspect of MOOCs media consists of two indicators, namely, the suitability of the material with essential competencies and the accuracy of the content of the material. The average percentage of eligibility for each indicator is 81.3%. It means that the content eligibility of this MOOCs media has met the "Very Good" criteria.

2. The presentation eligibility on MOOCs media

   The presentation eligibility aspect of MOOCs media consists of two indicators: the technique of presenting the material and supporting the presentation of the material. The average eligibility percentage for each indicator is 79.2%, which means that the presentation eligibility on these MOOCs has met the "Good" criteria.

3. The use of animated videos on MOOCs media

   The aspect of using animated videos on MOOCs media consists of one indicator: the animated video component. The average percentage of eligibility for each indicator is 76.7%, which means that the use of animated videos in these MOOCs has met the "Good" criteria. Based on the percentage of these three aspects, the overall average assessment results of MOOCs media material is 79.0% with the interpretation of "Good."

4 CONCLUSION

Based on the expert needs analysis results, it can be concluded that the importance of skills and knowledge in how to promote tourist destinations. Therefore, *the MOOCs for Tourism Promotion on social media* that had been developed will study strategies for utilizing and optimizing social media in promoting tourist destinations so that in the future, they will contribute to the success of tourism destination branding in Indonesia. MOOCs were used because they have the advantage of being a massive, online, and open learning platform that is included in one form of distance learning or distance learning with a more expansive and massive scale.

This study focuses on developing Tourism Promotion MOOCs in Social Media using the ADDIE Model, which consists of three parts: needs analysis, development stage (design & development), and eligibility test (implementation & evaluation). The first part was the needs analysis stage, which was carried out by interviewing experts to identify things that must exist in learning Tourism Promotion MOOCs in Social Media. The second part is the development of MOOCs by creating exciting content and displaying MOOCs. MOOCs consist of seven materials, namely (1) Tourism Promotion Potential, (2) Introduction of Social Media as a Tourism Promotion Media, (3) Writing Social Media Tourism Promotion Messages, (4) Social Media Photography Techniques, (5) Tourism Promotion Image Selection on Social Media, (6) Tourism promotion content posting strategy, and (7) Social Media Management for Tourism Promotion. The third part is the eligibility test by the experts. The MOOCs' eligibility that has been developed needs to be tested practically to assess their quality and eligibility. The eligibility test involved material experts, linguists, and media experts as respondents. The overall average assessment results of the MOOCs eligibility are 81.75% with the interpretation of "Very Good." The overall average assessment results of the MOOCs' language eligibility are 79.17%, with the interpretation of "Good." The overall average assessment results of MOOCs media material are 79.0% with the interpretation of "Good." Based on the results of the media eligibility test, it can be concluded that the resulting MOOCs for Tourism Promotion on social media meet the good criteria and deserve to be used as an open and massive learning platform to develop one's skills in managing a tourist spot.

ACKNOWLEDGEMENTS

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MANAGING MICRO-CREDENTIAL ONLINE PROGRAM ON GAME DEVELOPERS

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Abstract

Game is believed to be the industry and the life of the future; thus, game is not a mere entertainment. In Indonesia, the game industry is becoming a potential market to be pursued, and it has contributed to the dominant market (43%) of gamers in Southeast Asia in 2021. With its demographic bonus and game market share, Indonesia has a huge opportunity to build a gaming industry chain by accelerating organic growth through (a) talent creation; (b) flooding the market with local games; (c) competing with the international game market to increase the country's recognition and income.

ICE Institute participates in the game talent creation through coordination among 10 universities to form a consortium and offer a micro-credential program for game developers in Indonesia. Most of the game developers' training programs are delivered face-to-face, while ICE Institutes delivered it fully online. The program has attracted more than 5000 students from about 186 higher education institutions in Indonesia. After the selection process, 672 students (about 13%) participated in the 14 weeks program. Students participated in 15 credit hours courses of their selected stream: game artist, game design, game developer, educational game developer, and game project management, for 8 weeks. Afterward, students were teamed to work on developing Minimum Viable Product (MVP) games in various genres: entertainment games, serious games, and educational games. Using the virtual game lab, 54 games were developed at the end of the program. This paper will discuss the experience of ICE Institute in designing, delivering, evaluating, and coordinating the micro-credential program for game developers, and some lessons learned for future improvement of the program.

Keywords: game developer, micro-credential, design and development, Indonesia.

1   INTRODUCTION

Indonesia's higher education is expected to be transformative and agile to adapt to the changes of industry demand. Realizing that Indonesia contributed the dominant market (43%) of gamers in Southeast Asia in 2021, the game industry is becoming a potential market to be pursued in this era. With its demographic bonus and game market share, Indonesia has a huge opportunity to build a gaming industry chain by accelerating organic growth through (a) talent creation; (b) flooding the market with local games; (c) competing with the international game market to increase the country's recognition and income (CNBC Indonesia, 2022).

The game industry is one of the creative industries that is expected by the President of the Republic of Indonesia to develop and play a role in improving the Indonesian economy (CNBC Indonesia, 2022). Indonesia has a large video game market worth US$1 billion (Rp14.3 trillion) and a total of over 170 million game players. Mobile games are the main driving sector for the market and gamers in Indonesia. Currently, 95% of these games come from abroad, so it is economically detrimental to

the country (AGI, 2021). The government encourages the national game industry to dominate the domestic and foreign markets. One of them is through the development of national talent games; the human resource development in the game industry.

Universities are expected to produce educated and skillful game talents to supply the demand of the industry, yet the limited resources of educators, infrastructure, and university readiness in implementing programs are apparent constraints. A micro-credential program on game development as to produce skillful game talents is perceived to be a potential solution to overcome these limitations by optimizing the implementation of collaborative online-based programs involving various universities. ICE Institute has been pioneering to develop a micro-credential program for game developers. The program is based on the collaboration among 10 universities, i.e., University of Indonesia (UI), Gadjah Mada University (UGM), Ten November Institute of Technology (ITS), Pelita Harapan University (UPH), Bina Nusantara University (Binus), Telkom University (Tel-U), Pradita University, Amikom University, Bandung Institute of Technology (ITB), and the Open University (UT). Further, the program has also been supported by four game industries, i.e., Lentera Nusantara, Bumi Langit, Cakra, and Asosiasi Game Industri. The collaboration became the basis for significant contributions of various parties in (1) creating a game curriculum, (2) delivering the online programs and; (3) conduct periodic evaluations and improvements for teaching materials and future implementation.

This paper will discuss the experience of ICE Institute with its partners in designing, delivering, evaluating, and coordinating the micro-credential program for game developers, and some lessons learned for future improvement of the program.

1.1 THE MICRO-CREDENTIAL PROGRAM ON GAME DEVELOPERS

Creative industries are defined as ideas that produce something and provide benefits to improve the standard of living of great people. The creative industry has several advantages, including: (1) the freedom to be creative (within positive limits) can provide benefits for ourselves and others (Rochani, 2017), (Fajri, 2012); (2) increasing creativity, where freedom to be creative (within positive limits) (2) forming a special community that produces intelligent people in providing creative solutions to society (Hauge & Duin, 2013); (3) forming a special community that produces intelligent people in

providing creative solutions for the public. Despite its potential, the creative industry will not be growing when lacking support of reliable human resources (Rusdi & Sukendro, 2018); lacking infrastructure, including information technology, to facilitate discussion and exchange of ideas, creation, or production (Rochani, 2017), (Fajri, 2012); (3) and lacking of support from various parties and a mentoring or supervision system to guide people who are engaged in the creative industry (Masunah, 2017), (Lestariningsih, Maharani, and Lestari, 2019).

As one of the creative industries, the game industry in Indonesia faces concerning issue of the availability of game talent. Thus far, the game technology has not been regarded as an independent discipline to construct a study program within a university. It comes under information technology for its coding and programming stream, it comes under animation and video development, or it comes under mathematics for its computational aspect. The data in PDDikti's database shows none of game technology study program in Indonesia.

Game technology itself is a multidisciplinary area, which requires at least five disciplinary areas to collaborate, i.e., arts, design, developer/programmer, education, and management. Arts in game provides baseline theory, skills, and knowledge on becoming a game artist. Also, design to game designer; developer/programmer to game developer/programmer; education to the educational game developer; and management to game project management. Game development is labor-intensive and requires a multidisciplinary team effort of skilled professionals to integrate multimedia content using certain software. High-quality game products will be produced when there is a solid team working on high levels of communication, organization, and planning to avoid costly delays and failures (Maxim, 2007).

Based on the above-mentioned consideration, the Micro-credential Program for Game Developers (MPGD) was collaboratively designed as a part of the effort in creating game talent for developing the game industry in Indonesia. It was a collaborative work by 10 universities and four game industries, i.e., University of Indonesia (UI), Gadjah Mada University (UGM), Ten November Institute of Technology (ITS), Pelita Harapan University (UPH), Bina Nusantara University (Binus), Telkom University (Tel-U), Pradita University, Amikom University, Bandung Institute of Technology (ITB), the Open University (UT), Lentera Nusantara, Bumi Langit, Cakra, and Asosiasi Game Industri. Experts in the university's consortium defined the structured game curriculum

prepared for the development of game talent in Indonesia as an independent study/student exchange program through the ICE Institute. Meanwhile, the expert from the industry provided a market analysis and competency analysis of the game developer for the graduates (AGI, 2021).

The objective of the (MPGD) program is to create students who will become creative and skillful game talent in the national game industry. Specifically, at the end of the program, students are expected to have competency in creating digital games. The curriculum was designed based on the double diamond design thinking framework from Nessler (2016).
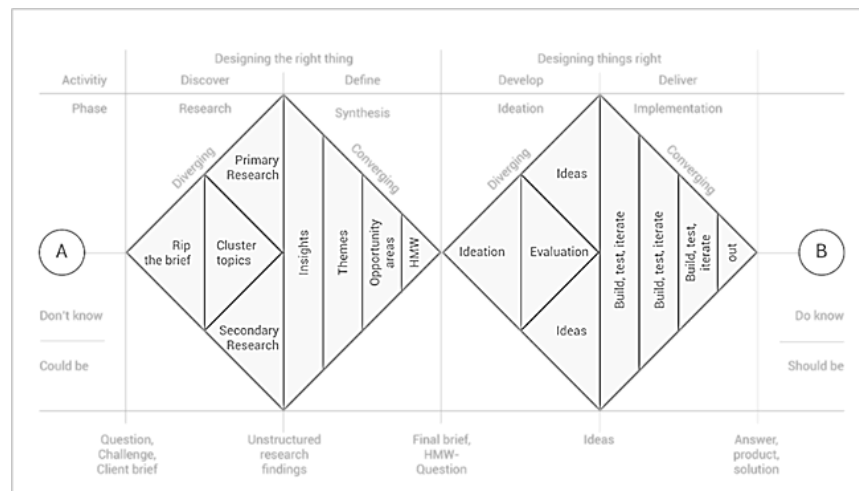
Figure 1. Nessler's Double Diamond Design Framework – Revamped (2016)

Nessler's double diamond design thinking originated from the UK Design Council (https://www.designcouncil.org.uk/). The framework provides a means for designers, creative thinkers, or even project managers to set up, frame, organize, structure, run or manage creative design works and projects. Since game development is considered a creative work, the double diamond design thinking framework fits the purpose to design the curriculum of the MPGD program.

The first diamond of "discover and define" is covered through the 5 streams of learning for 15 credit hours for 8 weeks: game design, game artist, game programmer, educational game developer, and project management. Each student will engage in various seminars and activities to discover and define their own stream area within the big picture of the game development process.

The second diamond of "develop and deliver" is the basis of the Capstone Project of 5 credit hours, where students in groups must develop a game for 6 weeks, and deliver the game to a minimum game industry standard to graduate from the program.

In general, the curriculum of the MPGD program is depicted as follows:
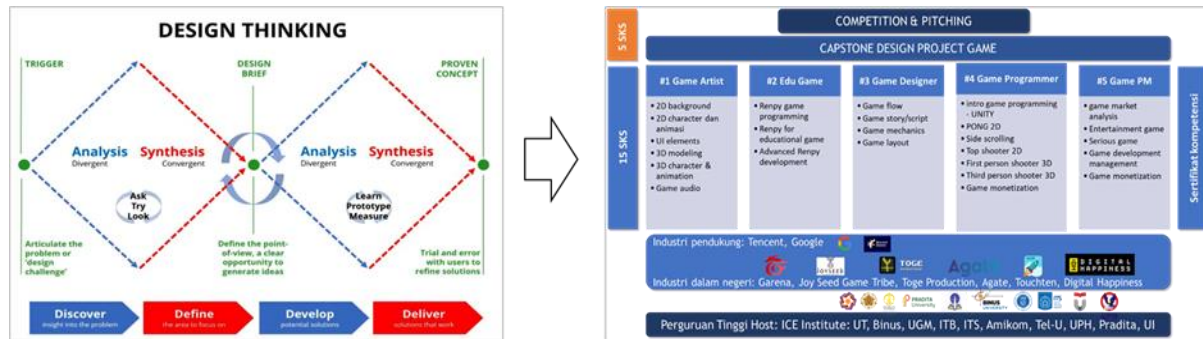
Figure 2. The curriculum of Micro-credential Program for Game Developers

The study load of this MPGD program is 20 credits which are to be completed by students in 14 weeks with intensive assistance from mentors. It consists of 5 main streams of 15 credits each and 1 Capstone Project of 5 credits. The description of each stream is as follows:

Table 1. Curriculum Content

STREAM	CONTENT
Game Designer: This program is aimed at developing the talent of game developers in designing the plot of a game which includes story concepts, level arrangements, and interface design;	1. Game Layout 2. Game Mechanic Design 3. Game Flow Design 4. Game Story Design
Game Artist/Asset: This program is aimed at developing the talents of audio-visual virtual object resource developers in building games;	1. Game UI 2. Game Audio Engineering 3. 3D Game Modelling 4. 3D Game Animation 5. 2D Game Animation 6. 2D Game Object
Game Programmer: This program is aimed at developing the talent of game developers in building fundamental game mechanics based on the application of algorithms and programming logic;	1. Introduction to Unity Game Engine 2. Building Microgamer: Pong 2D 3. Building Microgamer: Side Scrolling Platformer 2D 4. Building Microgamer: Top Down Shooter 2D 5. Building Microgamer: 1st Person Shooter 3D 6. Building Microgamer: 3rd Person Shooter 3D

	7. Building Game Monetization
Educational Game Development: This program is aimed at developing game developer talents in education to accelerate innovation in learning activities in various fields and levels;	1. Advanced Ren'Py for Educational Game 2. Gamification for Teaching Materials 3. Introduction to Ren'Py Game Programming
Game Project Management aims to prepare trainees to be able to analyze the game market project management and determine the direction of game development for Entertainment Games, or Serious Games and manage company business game projects;	1. Production Management 2. Monetization 3. Serious Game 4. Entertainment Game 5. Market & Business Analysis
Capstone Project: This program is intended as a collaborative project that integrates five streams in the curriculum with intensive mentoring to produce prototype outputs.	1. Team Building – tools & case development, design thinking, sharing mentor 2. Game Development #1 3. Game Development #2 4. Game Development #3 5. Final Product 6. Competition

The MPGD program was managed and coordinated by ICE Institute through collaboration with the 10 universities and 4 game industries.
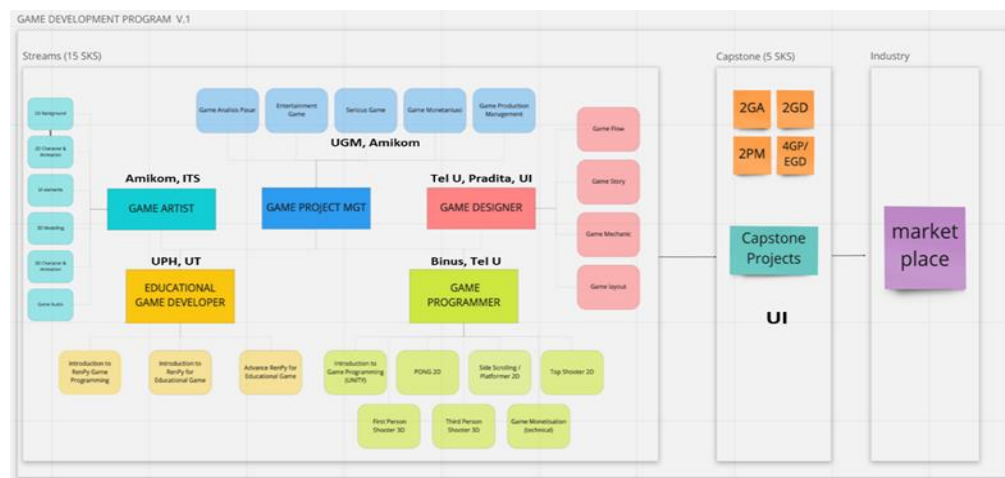
Figure 3. Collaboration among Universities for the MCGD Program

ICE Institute supported the program through the provision of software, hardware, including the virtual studio (cloud-based), and human resources to administer the program. The university provided

courses and lecturers, and some tutors/mentors. Meanwhile, the game industry provided mentors and guest lecturers during the implementation of the program, and judges for the assessment of the Capstone Project.

The 1st batch of the MPGD program received funding from the Directorate General of Higher Education, Research and Technology in the form of scholarships. 672 students were selected administratively from more than 5000 applicants from 186 higher education institutions. The program was carried out from Feb. 14, 2022, up to June 30, 2022, involving 48 lecturers, 44 online tutors, 83 mentors, 43 capstone project advisors, and 8 game developer practitioners from the industry. By the end of the program, there were 596 students received certification as game developers, and 54 games were produced.

The certificate was provided by ICE Institute in collaboration with the providing university for completion of each course, each stream, and final certification for game developers. The certificate was provided when the students met the minimum score requirements for all courses in the stream under the system set by the providing university and completed the capstone project.

1.2 EVALUATION OF THE MICRO-CREDENTIAL PROGRAM FOR GAME DEVELOPERS

At the end of the program, a program evaluation was carried out. There are several facets of the program evaluation, nevertheless, the coverage of this paper focuses on the reflection of the lecturers on the Micro-credential Program for Game Developers. The framework for the lecturers' reflection is depicted in Figure 4.
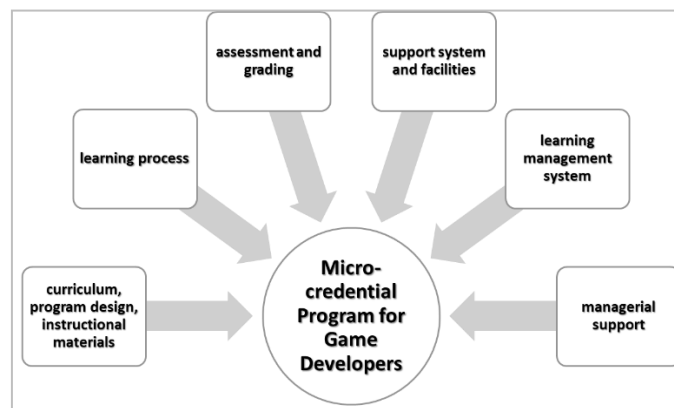
Figure 4. Reflection Framework

The MPGD program evaluation is to tap lecturers' reflections on their experience becoming lecturers of the Micro-credential Program for Game Developers, regarding the curriculum, program design, instructional materials, learning process, assessment and grading, support system and facilities, learning management system, and managerial support from ICE Institute. It is expected that the lecturers' reflection will provide input to the MPGD program as well as the management of the program by ICE Institute for improvement in the future.

2 FINDINGS AND DISCUSSION

43 lecturers from 8 universities participated in the evaluation, representing 21 courses in the program. A questionnaire of 70 Likert scale items (positive reflection vs negative reflection) was employed to tap the lecturers' reflections. Table 2 depicts the reflections of the MPGD program from 8 participating universities.

Table 2. Reflections of n=43 lecturers from 8 universities

University	Curriculum, Program Design, Instructional Materials	Learning Process	Assessment	Support System and Facilities	LMS Open-edX	Management support from ICE-I	
	Mean	Mean	Mean	Mean	Mean	Mean	Mean
Universitas Amikom Yogyakarta	3.82	3.83	3.45	3.33	2.78	3.06	3.45
Universitas Bina Nusantara	4.15	3.71	3.93	3.94	3.22	3.53	3.82
Universitas Gadjah Mada	4.13	3.67	2.82	3.67	3.43	3.00	3.49
Universitas Indonesia	3.50	3.75	3.23	3.67	3.29	3.80	3.56
Universitas Pelita Harapan	4.04	4.12	3.73	3.52	2.30	3.17	3.59
Universitas Pradita	4.26	4.13	3.87	3.92	3.75	4.00	4.08
Universitas Telkom	4.00	3.67	3.62	3.63	3.64	3.46	3.73
Universitas Terbuka	3.25	3.92	3.27	3.50	2.50	3.40	3.39
Mean	3,89	3,85	3,49	3,65	3,11	3,43	

In general, the lecturers' reflection indicates that most lecturers have positive reflections regarding their experience being involved in the MPGD program (Table 2). The highest mean of positive reflection comes from lecturers of Pradita University, while the lowest mean comes from Universitas Terbuka lecturers. While game development is increasingly popular, Universitas Terbuka lecturers' do not have previous experience in teaching or managing game development course or program. Thus far, Universitas Terbuka do not have any program related or supporting game development. Meanwhile, Universitas Pradita has study programs on information technology and visual communication design that are highly similar in nature to game development. Thus, by experience in managing education program for game developers, Universitas Pradita is relatively more experience.

The most positive reflection provided by lecturers in the dimension of Curriculum, Program Design, and Instructional Materials. This can be an indication of ownership among the lecturers, since they were the designers of the curriculum and the program, and they were also the developers of the instructional materials for the program. They felt positive about their own work for the program, which is a very positive indication. Meanwhile, the least positive reflection is provided in the dimension of the learning management system Open EdX. This is relatively fair since the LMS Open EdX is relatively new to the higher education community in Indonesia. Most lecturers are used to having Moodle as their LMS.

In the dimension of the learning process, the most positive reflection comes from lecturers of Universitas Pradita, while the less positive ones come from Universitas Gadjah Mada and Universitas Telkom. Both Universitas Gadjah Mada and Universitas Telkom, relatively have no experience in delivering online learning or distance learning, especially for a game development program. Thus, they must have faced various initial constraints to start delivering the program. As a matter of fact, this Micro-credential Program for Game Developers is unique in terms that it is offered fully online, which has not been implemented anywhere else (Pandey, Singh, & Alabri, 2018).

In the dimension of assessment, Universitas Binus lecturers provide more positive reflection as compared to Universitas Gadjah Mada and other universities. Once again, Universitas Binus has so much experience in managing online learning programs, while Universitas Gadjah Mada is relatively a strong conventional university. For the dimension of support system and facilities, Universitas Binus lecturers provide more positive reflection as compared to Universitas Amikom Yogyakarta.

This also an indication that Universitas Binus has more experience in managing online learning as compared to Universitas Amikom. Further, in terms of management support from ICE-Institute, lecturers from 8 universities reflected positively. Although, less positive reflections were expressed by lecturers from Universitas Amikom. It is assumed that lecturers' experience in managing online learning, especially in a game development program that was offered fully online, has been the factor for positive or less positive reflection.

Table 3 depicts the lecturers' reflections on their experience of managing and delivering the courses within the MPGD program.

Table 3. Reflection of Course Lecturers

Course	Curriculum, Program Design, Instructional Materials	Learning Process	Assessment	Support System and Facilities	LMS Open-edX	Management support from ICE-I	Total Skor
	Mean	Mean	Mean	Mean	Mean	Mean	Mean
Game 2D Character and Animation	3.88	4.67	4.09	3.50	2.50	2.00	3.50
Market and Business Analysis	4.75	4.25	3.91	4.50	2.86	2.60	3.84
Capstone Project	4.13	3.88	3.57	3.96	3.11	3.50	3.77
Gamification for Teaching Materials	3.66	4.03	3.55	3.25	2.51	2.85	3.42
Game Audio/ Audio Engineering	3.13	3.42	3.45	3.00	2.36	2.40	3.01
Game Flow	4.26	4.13	3.87	3.92	3.75	4.00	4.08
Game Layout	3.00	3.50	3.00	3.17	3.36	4.00	3.31
Game Monetization	3.91	3.54	3.43	3.46	3.18	3.00	3.51
Game Production Management	3.38	3.33	3.27	3.17	3.36	3.60	3.42
Advanced RenPy for Educational Game	4.13	3.78	3.96	3.53	3.82	3.60	3.84
Game mechanic	3.88	3.83	3.64	4.17	3.93	4.00	3.90
Game Story	3.63	3.34	3.00	3.42	3.50	3.50	3.42
Game UI/UX	3.82	3.63	3.28	3.34	2.86	3.60	3.50
Developing Entertainment Game	3.75	3.92	2.73	3.17	3.00	3.20	3.31
Game 3D Character & Animation	3.25	3.08	3.00	3.00	3.00	3.00	3.11
Introduction to RenPy Game Programming	4.19	4.23	3.84	3.79	2.09	3.35	3.69
Intro to Unity Game Engine	4.75	3.33	4.64	5.00	4.86	5.00	4.59

Course	Curriculum, Program Design, Instructional Materials	Learning Process	Assessment	Support System and Facilities	LMS Open-edX	Management support from ICE-I	Total Skor
	Mean	Mean	Mean	Mean	Mean	Mean	Mean
Game PONG 2D development	3.88	4.00	3.91	4.33	3.14	3.20	3.86
Top Down Shooter Development	4.50	3.92	4.00	4.33	1.86	3.40	3.82
Serious Game	3.96	3.86	3.45	3.50	3.00	3.40	3.62
Game Side Scrolling/Platformer 2	4.44	4.00	4.18	3.34	2,75	2.80	3.68
Mean	3.94	3.79	3.06	3.66	3.09	3.33	

Table 3 provides information that once again LMS Open EdX received the least positive reflections, since lecturers were not yet familiar with the new LMS employed by ICE Institute for the MPGD program. Meanwhile, the dimension of curriculum, program design, and instructional materials receives the most positive lecturers' reflections, which once again depicts the ownership of the lecturers to the MPGD program. Table 3 also shows that the highest positive reflections on most dimensions come from lecturers delivering the course in the *Introduction to Unity Game Engine* which provides students with the basic knowledge and skills in game development.

The less positive lecturers' reflections can be seen in several dimensions for several courses. The lowest positive reflection comes from lecturers of the *Top Down Shooter Development* course for LMS Open EdX. According to the lecturers, not all instructional materials can be delivered via an online course, and some competencies are better taught through face-to-face conventional teaching. Further, the less positive lecturers' reflections also come from lecturers of *Introduction to RenPy Game Programming* course, *Game Side Scrolling/Platformer 2* course, *Game UI/UX* course, *Developing Entertainment Game* course. Most less positive lecturers' reflections focus on the LMS Open EdX dimension, while others focus on the dimension of management support from the ICE Institute. These are concerning issues that need to be well-responded through the improvement of the MPGD program for the following offerings.

The lecturers also reported some concerns regarding the PMGD program, specifically in terms of the learning process, that participants of the PMGD program are expected to have computer and information technology backgrounds. Since some materials are more related and supported by the mastery of computer and information technology backgrounds. Lecturers also reported their struggles

to activate students in online courses. The online engagement was difficult to initiate and maintain, according to the lecturers. *"Online pedagogy is different from traditional face-to-face teaching and learning; in the online environment, students and teachers are separated. It is a challenge to engage students."* As such, lecturers also reflected that they have to transform their pedagogical approach when they are delivering online courses, and it was very challenging for them.

3 CONCLUSIONS

The Micro-credential Program for Game Developers is a new program in various aspects. The curriculum as "micro-credential" for creative work based on the double diamond framework is relatively new. Further, the MPGD program being delivered in a fully online mode is also new to the program. Furthermore, various dimensions of the MPGD program, including the use of the cloud-based virtual studio, present novelty to the administrators, lecturers, as well as students.

Evaluation of the management of the 1st batch MPGD program has been carried out to tap into lecturers' reflections on six dimensions of the MPGD program regarding curriculum, program design, instructional materials, learning process, assessment, support systems and facilities, and management support from the ICE Institute. The evaluation has indicated mostly positive reflections of lecturers involved in the MPGD program. However, there are some factors of great concern for the improvement of the MPGD program, including the LMS Open EdX, and the transformation of the pedagogical approach for online delivery of the MPGD program. This calls for actions from ICE Institute as the coordinator of the MPGD program, as well as the participating universities to provide empowerment for lecturers in the reported areas for the betterment of the implementation of the MPGD program.

Further and deeper evaluation of the MPGD program will be needed to provide a comprehensive picture of the MPGD program and room for improvement. The MPGD program is a potential program to answer the challenges of developing Indonesia's creative industry in the future.

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POLICY AND DISTANCE HIGHER EDUCATION: RESEARCH TRENDS FROM 1977 TO 2022

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[1, 2]Universitas Terbuka (INDONESIA)

Abstract

Distance higher education has proven to be a solution during a pandemic and has become an educational trend at all levels of education and has become an opportunity as an educational strategy in the future so that policies that regulate the implementation of distance higher education are needed. However, from the many publications, there are still few researchers who discuss research trends that raise policy research trends and distance higher education. This study uses data from the Scopus indexed journal with a total of 339 articles in English which are processed in excel and the VOSViewer 1.6.18 application.

The research results show that publications in the Scopus journal on policy and distance higher education are still few from 1977 to its peak in 2021 as many as 49 publications, then the policy keyword only appears 9 times compared to the keywords higher education and distance or e learning so that this becomes a good opportunity for researchers to examine more deeply about policies around higher and distance education.

Keywords: Policy, Distance, Higher Education, Trend Research

1 INTRODUCTION

Distance higher education is an important solution for education during the Covid-19 pandemic engulfing the world (Gomez, 2022; Imtiaz, Khan, & Hossain, 2022). Discourse higher education that has been started from the early 19th century moves forward frequently with technology advancements and the internet network changing society's paradigm about education (Keegan, 2005, p. 1) In the future, the potential of distance education to be an option must be combined with policies that regulate the implementation of their implementation in a country. Some research on distance education has been done by many researchers from various countries as Darmayanti, Setiani, Oetojo (2007) which discusses e learning in distance education, Then Vaz, Peres, Souse Dan Reis (2020) that discussed about implementation of e learning with full proposal model for small universities.

The role of distance higher education which is quite significant in various countries is regulated through policies such as education laws such as in Indonesia which is regulated in the Higher Education Law number 12 of 2012 which is contained in article 31 concerning Distance Education (PJJ). Policies are also needed in the process of implementing and evaluating a program from the government, including in regulating distance education policies so that policies are closely related to the field of education, including distance education. This close relationship is interesting to study more deeply, especially in the publications that have been published by Scopus indexed journals from

1977 to 2023 which publish articles in English. Although it has been published in large numbers, no one has discussed the development of issues related to policy and distance education, so this paper will explore research trends from around the world in the form of a literature review.

2   METHODOLOGY

This research was conducted using data from articles published by international journals indexed by Scopus, the data was retrieved on November 7, 2022 with 3 keywords used, namely policy, distance and higher education. (TITLE-ABS-KEY ("policy") AND TITLE-ABS-KEY ("Distance") AND TITLE-ABS-KEY ("Higher education"). Scopus publication data on distance higher education policy amounted to 602 documents which were then selected to be 339 articles. The data after being collected were analysed via excel and used the VOSViewer 1.6.18 application and then discussed based on the number of publications each year, the trend of keywords that are often used by researchers, the contributions of researchers, affiliations and countries and the most cited articles. The steps for data collection are described as follows:
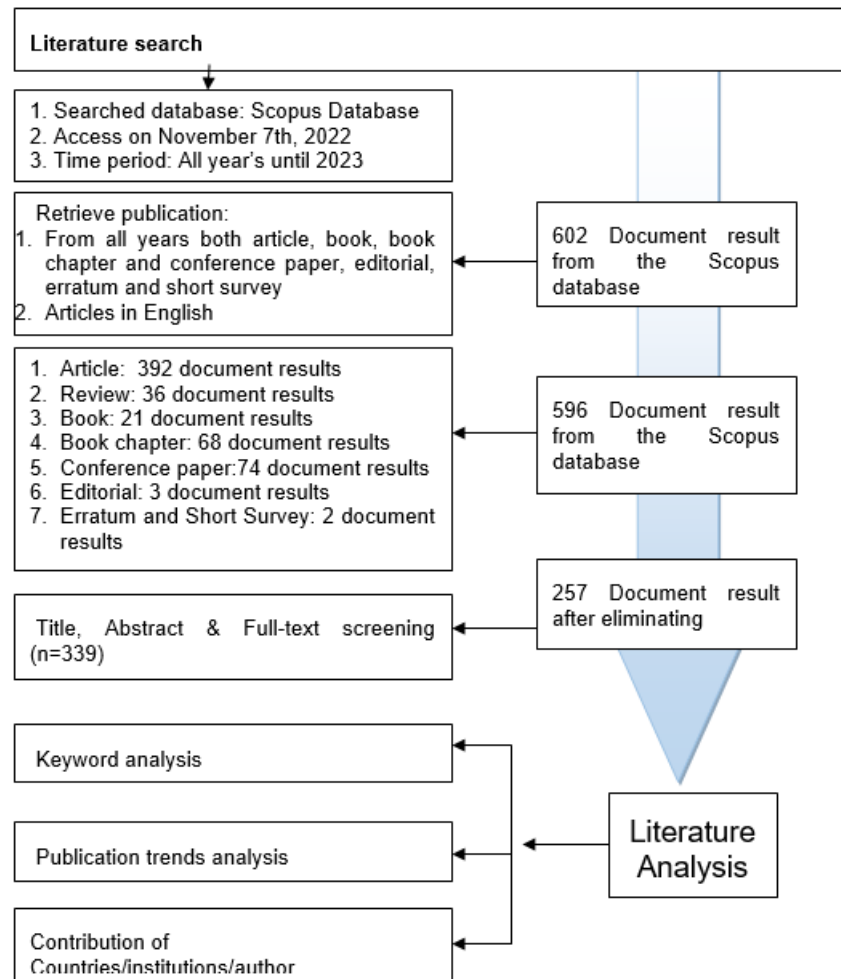
Figure 1. Research Procedure

3 FINDINGS AND DISCUSSION

After the publication data on policy and distance higher education were downloaded, then the researchers carried out an analysis starting from the development of publications, keywords that often appeared, researchers, country of origin and institutions from the publication of 339 English-language articles published in Scopus indexed journals which are presented as follows :

3.1 Research Development Every Year

Publications on policy and distance higher education began in 1977 and continued for several years until now in 2022. However, the number of publications from 1977 to 1988 was still small and continued to increase from 2004 to 2020. The most publications were published in 2021, there are 49 articles published to date.
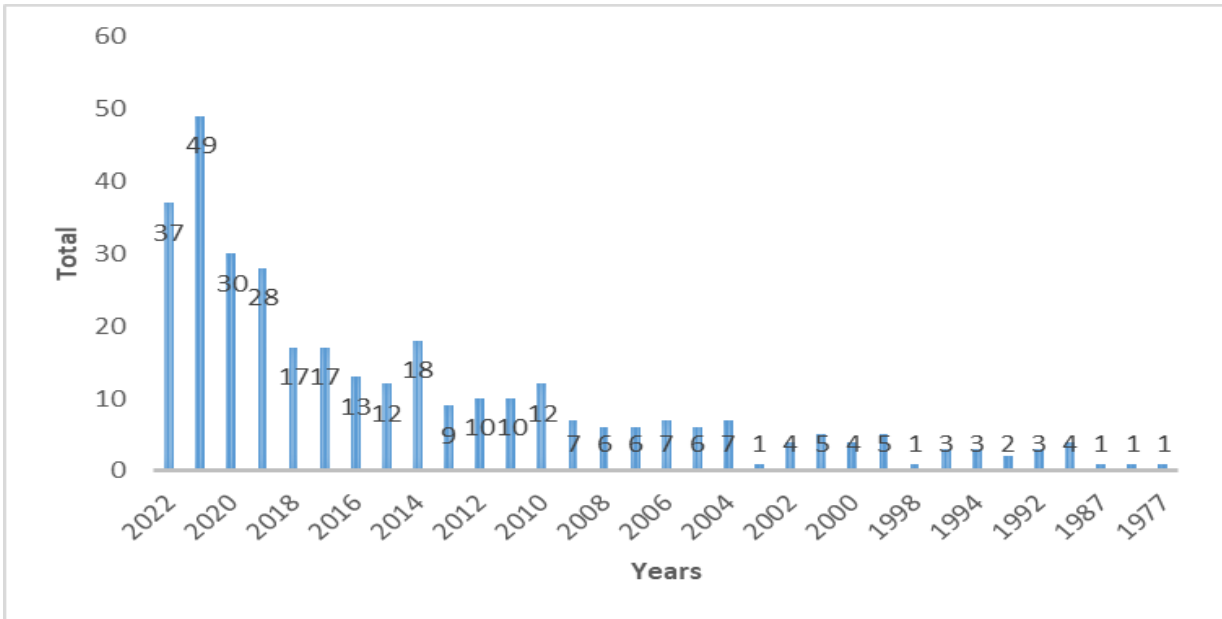
Figure 1. Publication of Policy and Distance Higher Education from 1977-2022

3.2 Frequently Appearing Keywords

Researchers who raise the theme of policy and distance higher education use many keywords in their publications. The data shows that publications on policy and distance higher education are dominated by the keyword Higher education as much as n = 117 with the largest green nude symbol. The keywords that appear to dominate are distance education with n=65, e-learning and distance learning with n=40, education keywords with n=36 and human as many as n=34. However, from the picture below, it turns out that the word policy does not appear to dominate, it is proven that the word policy only appears n = 9 times. This is an opportunity for researchers to examine more policy linkages with distance higher education.

In addition, since the first publication in 1977, keywords that often appear are indicated by blue/navy nodes with keywords such as access and equity, open learning, flexibility, education program, curriculum, community health nursing, and technological innovation. However, issues and keywords are increasingly shifting, such as regarding Covid-19, pandemics, digital transformation and blended learning.
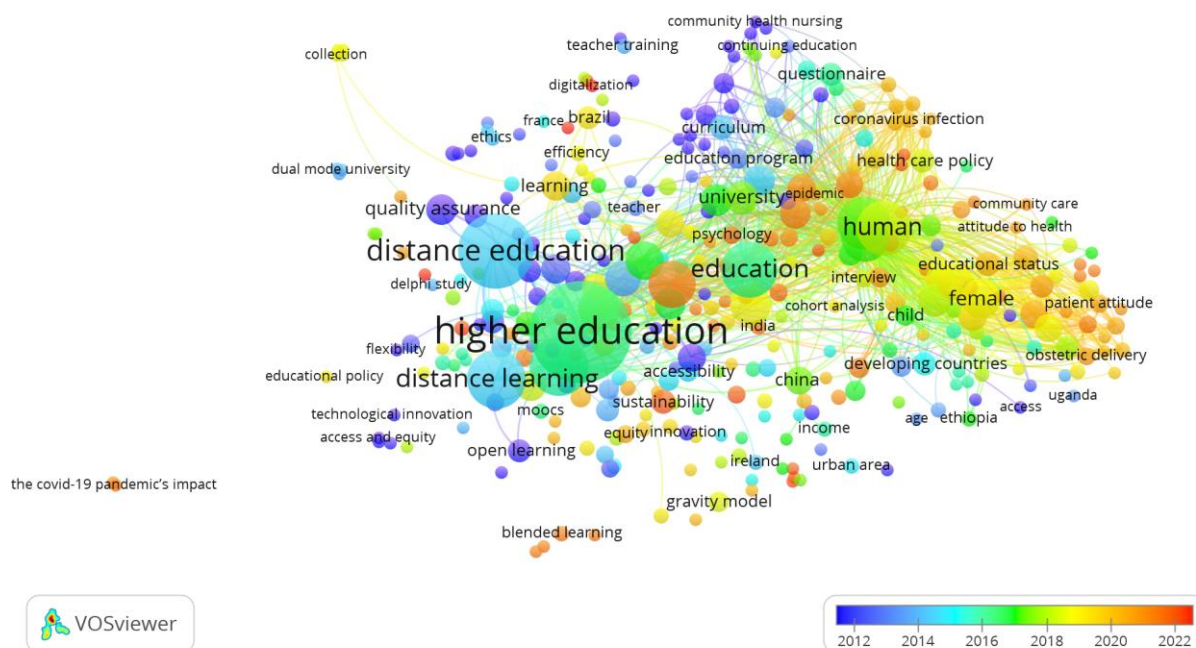
Figure 2. Keywords that often appear

3.3   Country of origin of the author of policy research and distance higher education

Several countries of origin for researchers on policy and distance higher education emerged from developed countries such as from America as many as n = 53, followed by writers from England as many as n = 52, then Australia as many as n = 35, China as many as n = 19, South Africa as many as n=18. Writers from countries such as Indonesia, Malaysia, and Japan still discuss a little about policy and distance higher education. This is a note that the issue of distance education and policy has been studied longer by countries such as America and Britain. This can be seen from the image below
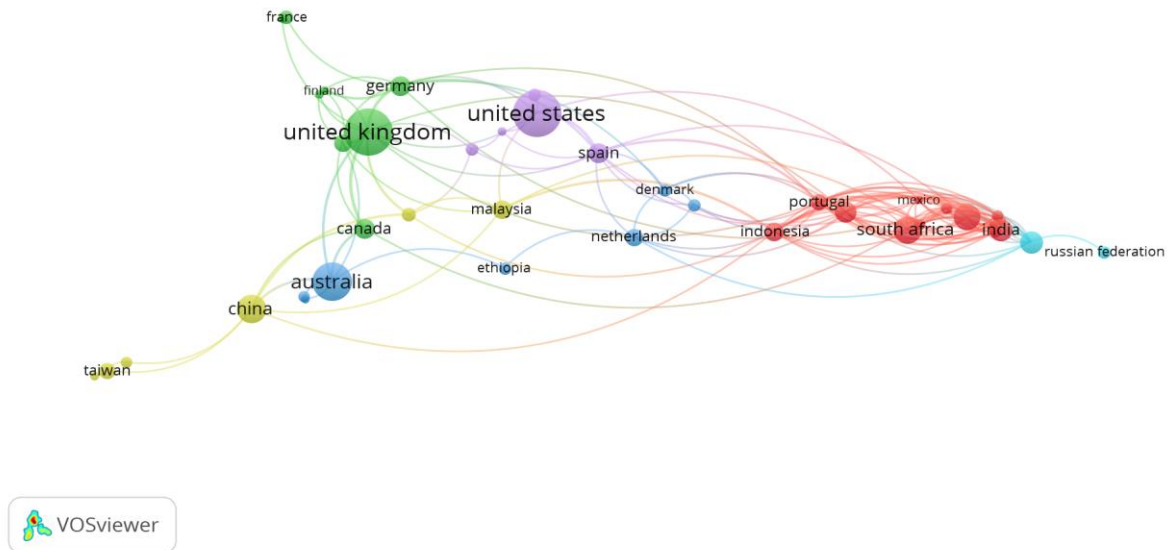
Figure 3. Researcher's Country of Origin

3.4   Authors who publish a lot of articles

The author who publishes a lot on policy and distance education themes is Capano with n=4, followed by Vidovich and Cullinan with n=3, and followed by Marginson and Brown with 2 publications. The authors have collaborated with each other to produce quality research, as shown in the image below:
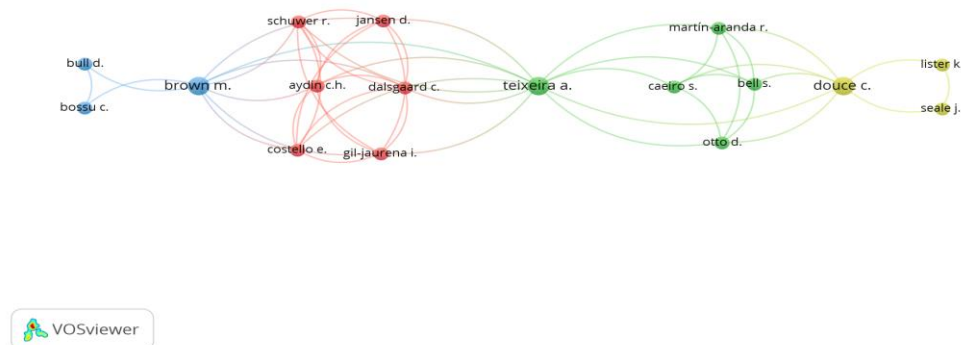
Figure 4. Policy Writers and Distance Higher Education

3.5 Institution of Origin Policy Writer and Distance Higher Education

Authors who publish many articles on policy and distance higher education come from agencies and collaborate with each other the most from the United States, there are still few who collaborate on co-writing from developing countries such as Indonesia and Malaysia. The author's origin institution is:

a. Baruch college, the City University of New York, New York, United States,

b. Business management department, Brigham Young University–Hawaii, United States

c. Department of applied business studies in the Robbins college of business and entrepreneurship, Fort Hays State University, United States

d. Department of English studies, Universitat Jaume I, Spain

e. Dyson school of applied economics and management, Cornell University, Ithaca, United States

f. English department, University of Dayton, Dayton, United States
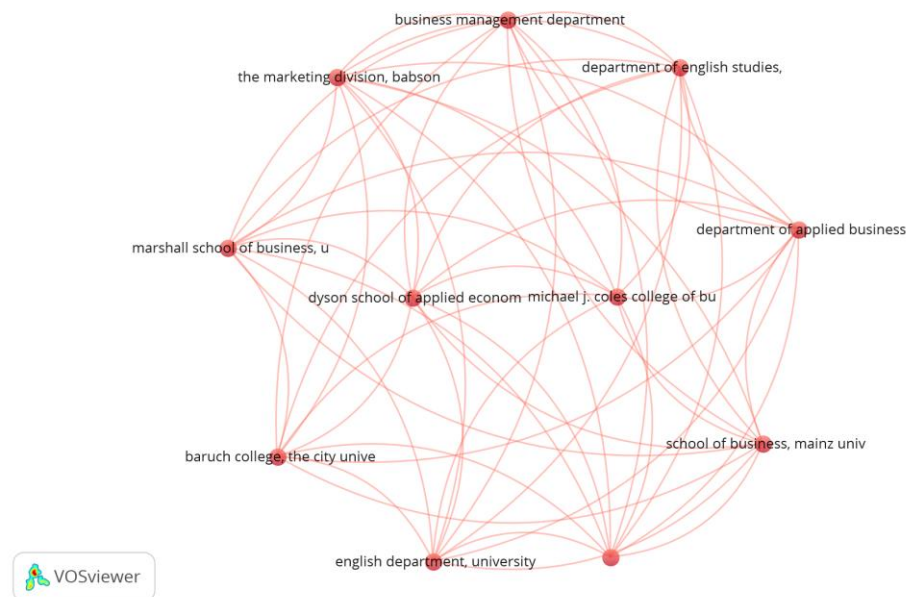
Figure 5, Author's Institution of Origin

4   CONCLUSION

Publication on distance higher education policy is still very likely to be an important theme and issue for researchers in the future, this can be seen from the lack of publications on distance higher education policy. Although the issue of distance higher education policy has been raised for 45 years, the authors and countries that dominate publications are mostly from developed countries such as the United States and the United Kingdom compared to developing countries. The potential issues raised related to distance higher education policies are currently still around pandemics, blended learning and the transformation of higher education. This shows that distance education has the opportunity to become a promising educational strategy and model in the future.

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CREATING AN ONLINE TAHSIN QURAN LEARNING WITH PEER TUTORING METHOD

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Abstract

Tahsin Quran is a lesson to improve the ability of reading Quran to conform to its rules (tajwid). In the current era of technological advances, tahsin Quran learning can be carried out online both in virtual face-to-face learning (synchronous) and independent learning with assignments (asynchronous). In tahsin Quran learning the students need guidance from teachers or people who are more competent than them to be able to assess and give feedback to their Quran readings. For this reason, peer tutoring method is the right method to be applied. This article tries to provide a framework for implementing online tahsin Quran learning using peer tutoring methods. The framework includes the application of synchronous online learning (virtual) and asynchronous online learning by self-assignments. The result of this research can be used as a guideline in tahsin Quran learning so that it can improve students' learning experience and ability.

Keywords: Tahsin, Quran reading, peer tutoring, online learning.

1 INTRODUCTION

Every Muslim is required to be able to read Quran in *tartil*. *Tartil* means to read eloquently according to its rules in reading, or what is called *tajwid* (Fathoni, 2019). Quran is intended for all Muslims in the world even though the Quran uses Arabic. So to be able to understand its meaning, people other than Arabs need to learn how to read the Quran properly and precisely (Naja, 2: 2018) That difference in language also makes the reason for the need to learn how to read Quran because every mistake in pronouncing letters, words or sentences can make changes in meaning, which is a very fatal thing if in Quran. Learning to read Quran under its rules and regulations is called tahsin Quran. Tahsin Quran learning aims to improve the reading of the Quran to be under the rules of *tajwid* to avoid errors in reading (Rusyd: 12-36, 2015).

With the convenience provided by current technology, learning tahsin Quran can be carried out online. Online learning is now widely chosen because it is easy to follow for everyone, especially adults, because it can be taken at the same time (real-time), which is called synchronous learning, or at different times and can be accessed at any time, which is called asynchronous learning. Learning will also take place more efficiently in terms of time and cost (Hrastinski, 2006). Currently, many educational institutions choose to use online learning synchronously or a combination of synchronous and asynchronous (blended learning). This is because synchronous learning can support students to be more active in learning and interactive in communicating both with other students and with

teachers (Offir et al., 2008; Oztok et al., 2013) as easy as face-to-face learning when they do it in the classroom (Yang et al., 2019). In addition to interaction between students, student interaction with learning content as well as student interaction with teachers are also important factors in student satisfaction with online learning (Alqurashi, 2019).

Even though it is carried out online, tahsin Quran learning still requires direct interaction between students and teachers or between students and students. Teachers should give students examples of proper reading and correct their Quran readings directly. In addition, adult students also need the ability to identify reading errors in other students so that the knowledge they have learned can be applied to their students or their families. One approach that can be used to overcome it is to apply the peer tutoring method. Peer tutoring is a method where students or learning participants provide guidance and learning assistance to other students. Students who are chosen as tutors are basically the students who have superior abilities or learning outcomes than other students so they have to mentor them in learning. Based on his research, online peer tutoring can increase students' active participation in both discussing and interacting. (Sansone et al., 2018). This is in accordance with the learning tahsin Quran which requires active participation from its participants, especially in practicing each letter and reading of the Quran. Duran et al. also stated that reading in pairs (peers) has an effect in the development of reading comprehension and the improvement of communication skills in both tutors and participants (Duran et al., 2019). By using this method, participants will not be embarrassed to practice their Quran readings because they are guided by their friends. Active participation is also expected to increase their learning motivation. According to Schuetz et al. in their research, peer tutoring methods can support to create of learning that adjusts to the individual need (Schuetz et al., 2017).

This study aims to provide an online tahsin Quran learning design with a peer tutoring method that can be used by adult students, especially those who want to become Quran teachers. This design includes a combination of synchronous (virtual) online learning with an asynchronous online mentoring process.

2 METHODOLOGY

This research is a development research (R&D) that uses an instructional development model (MPI) as its development model. The model consists of 8 development steps (Suparman: 2014), while this study only uses 7 of them. The development steps carried out are as follows.
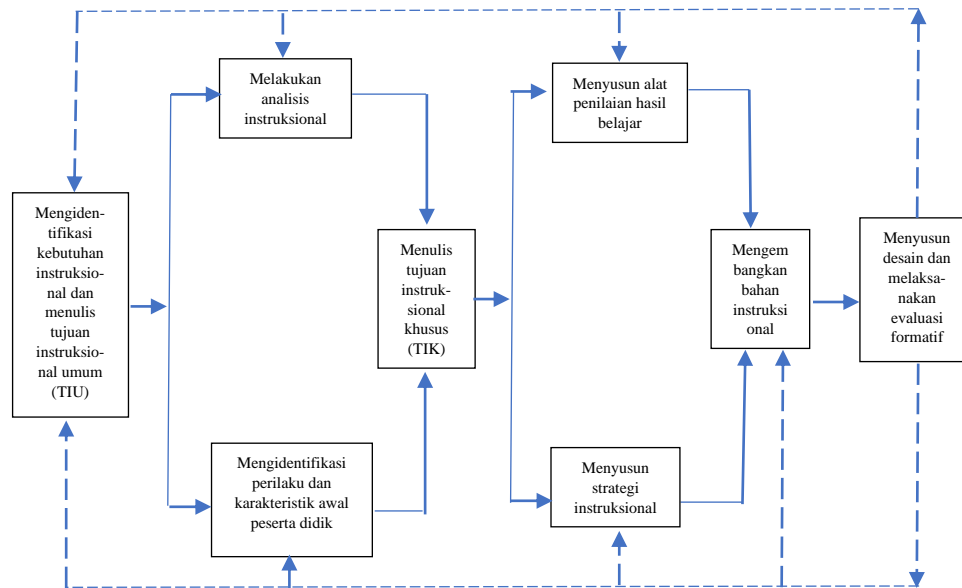
Figure 2. 1. Eight Stages of Development on an Instructional Development Model (MPI).

a. Identifying instructional needs and writing general instructional objectives. The identification of instructional objectives aims to find out the student's competency gap, what the expected competencies look like, and what the student's current abilities are.

b. Conducting instructional analysis. This step results in the elaboration of general competencies into specific competencies that students must master. These competencies are arranged into a structure or chart that forms a competency map.

c. Identifying the initial behaviors and characteristics of learners. This data collection aims to find out the characteristics of students before participating in learning such as educational background, learning motivation, access to learning resources, study habits, access to information technology, domicile of residence, and others.

d. Writing specific instructional goals. Specific instructional objectives or achievement indicators are arranged based on ABCD elements, which are Audience (learners), Behavior (specific behaviors that students will appear after participating in learning), Condition (limits imposed on students), and Degree (student success rate).

e. Developing a learning outcomes assessment tool. Learning outcomes assessment tools are structured based on specific instructional objectives or achievement indicators that have been predetermined at a previous stage.

f. Developing instructional strategies. The components that go into it include instructional objectives, sequences of instructional activities, instructional content or materials in the order corresponding to the order of objectives, methods, media, and tools to be used as well as the required study time.

g. Developing instructional materials. Learning materials are arranged based on needs, so they can be in the form of guidebooks, learning media, or other components.

3 FINDINGS AND DISCUSSION

This study was conducted from April to November 2022 with respondents of 22 Quran teachers in one of the private institutions studying at the need analysis stage. The results obtained from each stage of development are as follows.

3.1 Identifying instructional needs and writing general instructional objectives

Based on the results of interviews and documentation studies, it is known that these teachers are not yet qualified to be able to teach students at the Quran level because their Quran reading practice test scores are not sufficient standards. In addition, it is also known that institutions have not provided additional training to their teachers due to the unavailability of guidelines for carrying out quranic tahsin learning. For this reason, a Quran tahsin learning design that follows the characteristics of teachers nowadays is needed, and it can be Online tahsin Quran so that learning can take place anywhere and guidance can take place at any time. It also can use peer tutoring method so that teachers can practice their ability to assess and evaluate their students' Quran readings later. This tahsin Quran learning will focus on a common mistake found in teachers, which is reading in humming (dengung). Based on the need analysis, the instructional purpose of this online tahsin Quran learning is 'Students can practice reading in humming by 100% correct in reading Quran.'

3.2 Conducting instructional analysis

To be able to achieve the general instructional objectives above, researchers compile several sub competencies that learners must achieve in the form of competency maps.
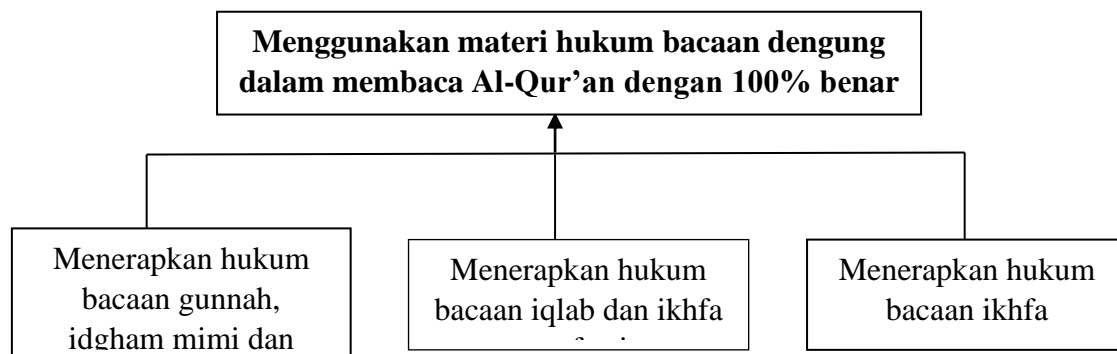
Figure 3. 1. Competency Map of Online Tahsin Quran Learning with Peer Tutoring Method.

3.3 Identifying the initial behaviors and characteristics of learners

Researchers identified the initial characteristics and behavior of the participants through the dissemination of questionnaires. The results of the questionnaire showed that the learners were aged 21-30 years. Most of the participants have a higher education background (graduate and undergraduate students) and have participated in tahsin learning before, but their practice of reading Quran is still lacking and needs improvement. Based on the presentation, learning activities will be designed by adult learning that is more practice-oriented and supports the active participation of each participant through the peer tutoring method. The 4 teachers with the highest test scores will act as tutors in each group accompanying 18 other teachers in learning.

Furthermore, based on the results of the questionnaire, it was also known that 13 participants were familiar with online learning while the other 5 people had never participated at all. Participants who are mostly workers elsewhere or housewives make them choose learning times synchronously in the evening between Monday and Friday. For this reason, online learning will be carried out synchronously once or twice a week in the evening between Monday and Friday, and then the implementation of tutoring or guidance with tutors will be carried out asynchronously using the Whatsapp application within one week.

3.4 Writing specific instructional goals

Three specific goals are compiled based on the results of an instructional analysis of general objectives, which are:

a. Learners will be able to apply the laws of reading *gunnah, idgham mimi* and *idgham bigunnah* if given a reading of Quranic verses with 100% correctness.

b. Learners will be able to apply the laws of reading *iqlab,* and *ikhfa syafawi* if given a reading of Quranic verses with 100% correctness.

c. Learners will be able to apply the laws of reading *ikhfa* if given a reading of Quranic verses with 100% correctness.

Based on these specific objectives, the subject matter of online tahsin Quran learning only consists of:

a. *Gunnah*, *idgham mimi* and *idgham bigunnah*

b. *Iqlab* dan *ikhfa syafawi*

c. *Ikhfa*

3.5 Developing a learning outcomes assessment tool

To measure the ability of students' success in studying tahsin Quran, researchers compile a post-test in the form of an oral test to read the Quran. Because the final goal only refers to the ability to read the humming reading, the scoring point refers to the three points contained in the specific goal.

3.6 Developing instructional strategies

The learning activities are designed by compiling the preliminary, core, and closing activities while determining the allocation of its learning period. Learning activities are adapted to online learning settings and the use of peer tutoring method. This online learning uses a combination of synchronous and asynchronous settings to apply its peer tutoring methods. Synchronous settings are used in the learning explanation by teachers through virtual face-to-face learning using videoconference applications or webinars. While the asynchronous setting is used for the process of mentoring (tutoring) among students with their tutors using the WhatsApp application in the group chat feature.

In this learning guide, the tahsin Quran material designed only focuses on the material of humming readings (bacaan dengung). The next tahsin Quran subjects can be adjusted by following the steps in this guide. For more details, the implementation of online tahsin Quran learning with the peer tutoring method can be described as follows.
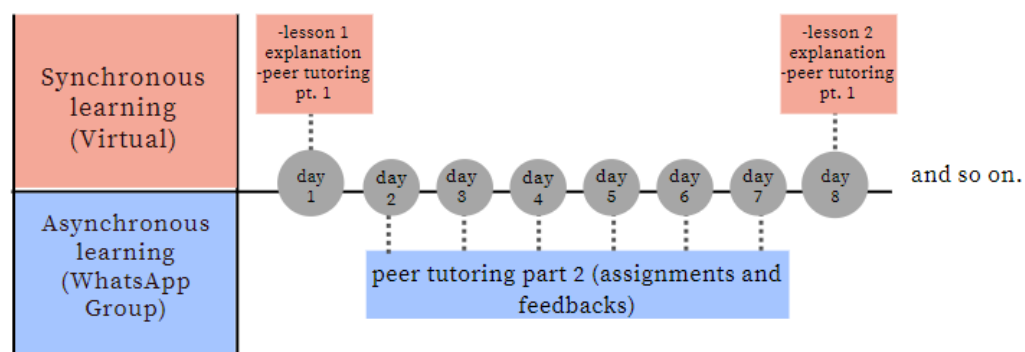
Figure 3. 2. The Learning Flow from Online Tahsin Quran learning with Peer Tutoring Method

Learning on each subject lasts for one week. On the first day, the teacher will explain the subject matter directly through the videoconference application (virtual). Then peer tutors are allowed to guide students in practicing through the break-out room feature. Learning continues in the assignment and mentoring process asynchronously through the WhatsApp group for the next 6 days. Learners are given recordings from previous virtual learnings to relearn independently. Then the next day students are given independent reading assignments on the subject matter that has been given previously through virtual learning. The results of these reading assignments are uploaded in WhatsApp groups to be assessed and given feedback by peer tutors. The assessment and feedback process lasts for 5 days. During these five days, students will receive guidance by their peer tutors to master the subject matter they are studying. Then in the following week (the eighth day), the learning will take place virtually again where the teacher begins a discussion on a new subject. This learning cycle will continue to repeat itself until the last subject. Then participants will undergo a final test in the form of an oral exam to find out their level of learning success.

3.7 Developing instructional materials

To complete the learning process, we develop learning media in the form of e-books for all students and guidebooks for peer tutors as reference material in the implementation of learning.
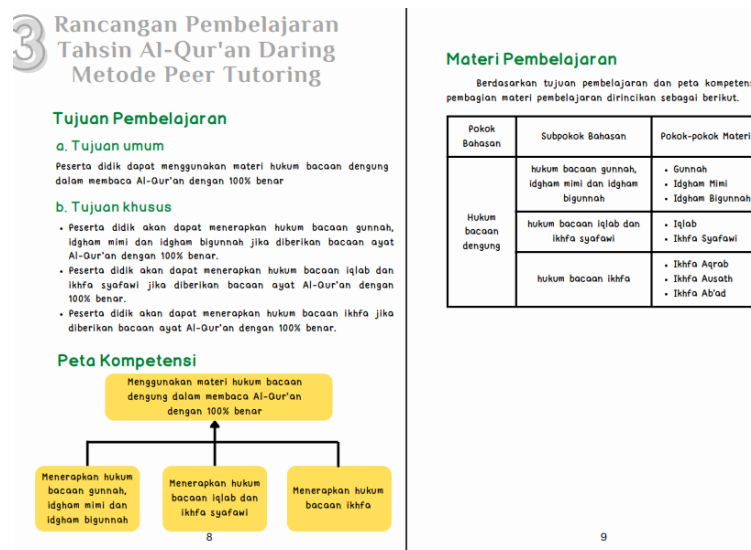
Figure 3. 3. Display of Tahsin Quran Online Learning with Peer Tutoring Method for Tutors (Guide Book)
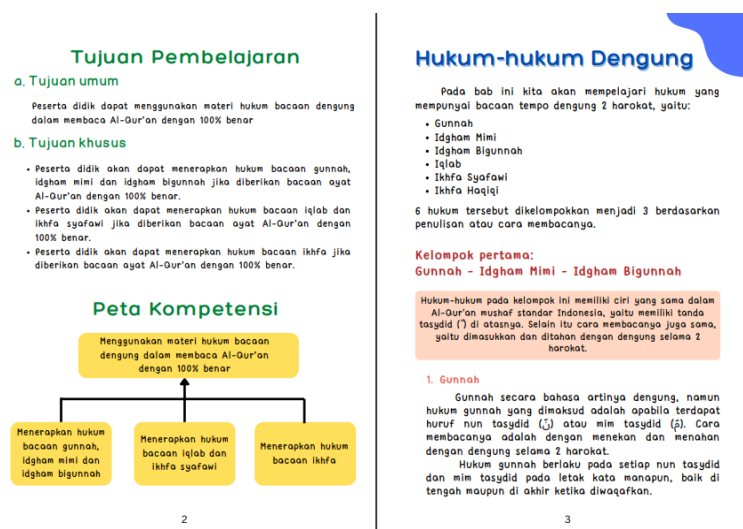
Figure 3. 4. Display of Tahsin Quran Online Learning with Peer Tutoring Method for Students
(Student Book)

4 CONCLUSION

This research has made a framework for online tahsin Quran learning with the peer tutoring method using 7 of the 8 steps in the Instructional Development Model (MPI). The online learning used is a combination of synchronous (virtual) settings for the explanation of the subject matter and asynchronous in the WhatsApp group to carry out the tutoring process with the peer tutor. Although it is intended for learning tahsin Quran, this learning design can be used for other learning by adjusting the subject matter, the mentoring process, independent assignments, and the assessment of learning outcomes used.

This learning design has not been tested by experts and has not been tested for the effectiveness of its use on students. The results of these tests will be continued in the next study.

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AUGMENTED REALITY VIDEO AS A LEARNING MEDIA FOR DOING CHEMISTRY PRACTICUM

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Abstract

Augmented reality videos in this study are learning videos that contain practical activities on experimental topics that can be accessed via smartphones, but do not describe the direct interaction of the user. The purpose of this study was to explore the views of students and lecturers on the need for augmented reality video learning media about the introduction of laboratory equipment and examples of experiments to help students prepare for practicum. This research is survey research with an instrument in the form of augmented reality video which is equipped with a questionnaire and interview guide. A survey through a questionnaire was conducted on 39 Chemistry Education students and interviews were conducted on 4 lecturers of the Chemistry Education study program. Data were analyzed descriptively qualitatively. The results obtained show that (1) The experimental material can be accessed by students via smartphones and is considered efficient because it does not require the use of a large internet network, (2) The results of student respondents' impressions of the learning media provided are considered good and necessary, easy to use, have pictures interesting, showing clear articulation, in accordance with learning objectives, can be used to introduce students to experimental material. In addition to the good response given by respondents, there are several suggestions including 1) The use of markers should only appear on the camera so that the markers do not have to be scanned again, 2) it is necessary to revise this application because when the camera shifts the video will disappear and if it is re-scanned then the video will start again from the beginning. Although there are several obstacles, in general, augmented reality videos are useful as a provision for doing practicals.

Keywords: augmented reality video, the chemistry practicum course, student's response.

1 INTRODUCTION

The introduction of laboratory equipment is provided in order to obtain the required learning outcomes in one subject in one study program such as the Chemistry Education study program at the Open University. The course in question is the Chemistry Practicum course. The introduction of laboratory equipment, especially chemical laboratories, needs to be introduced to its users. This is so that dangerous things do not happen due to the nature and presence of chemical substances.

There are limited materials and tools at secondary school partners if practicum activities are carried out there, resulting in several experimental topics that students cannot carry out (Sunarsih and Hamda (2017). Students who are in areas far from cities and far away from university partners, practicum activities can be carried out in partner schools. practicum activities can generally be carried out well. With the conditions of the presence of students and independent study students, students need to be equipped with an introduction to laboratory equipment as well as experimental examples before they actually work in the laboratory. Provision of knowledge that can describe / visualize the existence of

a tool that will be used as well as examples of practicum activities aimed at avoiding obstacles to doing practicum.In addition, the development of web and internet technology is currently playing a role in the development of a learning media lesson. Learning media are becoming more interesting and more concise even though they do not reduce the essence of the material (Heinich, R., Molenda, M. & Russel, J.D.; 1989). One of the developments in learning media that is currently still new is learning media using Augmented Reality.

Augmented Reality is an application that combines the real world with the virtual world in two-dimensional and three-dimensional forms that are projected in a real environment at the same time. (The use of Augmented Reality as an alternative learning media is expected to be more attractive to students. Another benefit that can be found is what is obtained is that Augmented Reality learning media can be a solution to overcome the constraints of sufficient modules or trainers and students can still carry out practicums by seeing goods as they are, but in virtual form.

The Chemistry Education study program at UT offers chemistry practicum courses that students must follow. Some students experience problems in doing practicum due to lack of familiarity with the nature and use of laboratory equipment. Therefore students are equipped with augmented reality video-based learning, even though the level of direct interaction from this media cannot be achieved. The results of the development need to be tested on students. In connection with this then

1. How is the development of augmented reality applications based on videos of laboratory equipment and chemical experiments?

2. How do students respond to augmented reality shows from videos of laboratory equipment and chemical experiments?

2 METHODOLOGY

This research is a research on the development of augmented reality applications from videos of chemical experiment tools and examples of chemical experiments. The video has previously been developed and validated. Then made a marker and its application program. Furthermore, to assess the quality of the results of developing this augmented application, a questionnaire was used through a survey given to 39 students and 4 chemistry lecturers. The questionnaire instrument developed was validated by 2 Chemistry Education lecturers and 1 learning designer. In collecting data, students are collected in one room given an initial briefing, then divided into small groups of 2-4 students to try the augmented reality application one by one. After trying the students were given an instrument in

the form of questions to assess the quality of the augmented reality application. The results of the questionnaire received were analyzed descriptively qualitatively.

3 FINDINGS AND DISCUSSION

3.1 Development of augmented reality video program applications

The existence of Chemical Education student respondents includes 39 regular class students, meaning they are students participating in class learning. Students of the Chemistry Education study program who were the respondents consisted of 79.5% women and 20.5% men, and their ages ranged from 18 to 21 years.

In the development of augmented reality applications, it was initially developed in the form of a marker that was read via an Android cellphone with an application address link. Then download and install the AR application and then the icon will appear on the HP screen. Then open the application that has been installed by clicking on the icon on the Android cellphone and the HP camera directed to the marker to access the video, and an animated video related to the practical procedures for simple laboratory tools will appear on the cellphone screen.
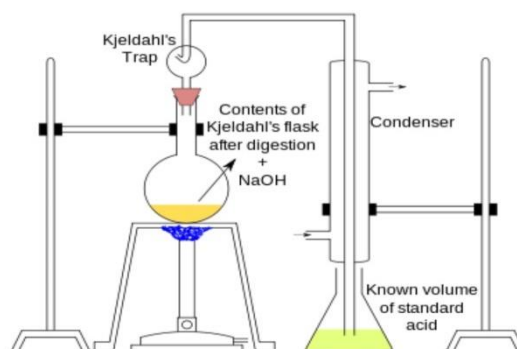
Figure 1. Kjeldahl Destruction Tool

After the augmented application has been developed, students are gathered in one room given an initial briefing, then divided into small groups of 2-4 students to try the augmented reality applications one by one. As shown in Figures 2 and 3. The results obtained show that the experimental material can be accessed by students via smartphones

Figure 3. Group Briefing

Figure 4. Small Group Briefing

3.2 Student response to the augmented reality video program application

The results of student respondents' impressions of the learning media provided are considered good and necessary, easy to use, have interesting pictures, show clear articulation, in accordance with learning objectives, can be used to introduce students to the material. El-Ariss et al. (2021). Video-based e-learning provides better learning outcomes through the e-learning approach and effectively engages an audience and provides a multi-sensory learning environment to present information interestingly (Preradović et al., 2020). In addition, video programs can be used for practicum activities. (Tembrevilla & Milner-Bolotin, 2019;; Adji, S.S. and Nurhayati, S., 2022). While augmented reality is also able to give a real picture of an object, through augmented reality students seem to be directly interacting with the actual object (Sallow, A.B. and Younis, M., 2020). If the topic or chemical experiment requires long stages and a long time, the use of augmented reality applications for video experiments can be an option because it is easy to use, does not change the message and can be made interactive by adding button clicks and marker scans. In addition, learning with Augmented Reality is easier to access from anywhere at any time without requiring a large internet quota because the application can be installed directly on each student's smartphone.

The results of the development of augmented reality applications that students responded to are shown in Table 1.

Table 1. Student responses to the results of the augmented reality video program application

	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	AR video display introducing laboratory equipment and examples of practical experiments showing Image Clarity/Sharpness	25.6%	74.4%	0.0%	0.0%	0.0%
2	AR video display Introduction to laboratory equipment and examples of practical experiments showing the suitability of illustrations	38.5%	61.5%	0.0%	0.0%	0.0%
3	AR video display Introduction to laboratory equipment and examples of practical experiments have interesting Captions/Graphics	17.9%	69.2%	12.8%	0.0%	0.0%
4	AR video display Introduction to laboratory equipment and experimental examples has an easy-to-understand presenter's voice	15.4%	74.4%	7.7%	2.6%	0.0%
5	AR video display The introduction of laboratory equipment and experimental examples show that the presenter's voice is too fast	0.0%	25.6%	41.0%	33.3%	0.0%
6	AR video shows introduction to laboratory equipment and experimental examples have illustrations of easy-to-remember tools	30.8%	59.0%	10.3%	0.0%	0.0%
7	AR video display Introduction to laboratory equipment and experimental examples showing Sound Effects well	35.9%	61.5%	2.6%	0.0%	0.0%
8	AR video display Introduction to laboratory equipment and experimental examples showing interesting pictures	30.8%	66.7%	2.6%	0.0%	0.0%
9	AR video display Introduction of laboratory equipment and experimental examples show clear articulation	25.6%	66.7%	7.7%	0.0%	0.0%
10	AR shows use communicative and easy-to-understand language	30.8%	64.1%	5.1%	0.0%	0.0%

4   CONCLUSION

Although there are several obstacles, in general, augmented reality videos are useful as a provision for doing practical's. This is because this application can still make it easy for students to understand chemistry concepts which are mostly abstract in nature, besides providing real representation in the introduction of laboratory equipment for students. The visualization of chemistry learning becomes more real, especially helping students with the concept of Distance Education in the depiction/imagination of several tools in a chemical laboratory through the use of augmented reality applications. However, the results of this application still need to be revised because when the camera shifts the video will disappear and if it is re-scanned then the video will start again from the beginning.

ACKNOWLEDGEMENTS

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STRATEGIES AND CHALLENGES IN ARCHIVING AND SHARING RESEARCH DATA

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Abstract

Research data management is increasingly important for research sustainability and the data is best when it is reusable. Collecting research data from previous research is not always easy, especially if there are no regulations governing the management of research data. Management of research data is still new in Indonesia and only a few institutions have implemented these regulations. When requesting research data to initiate research data storage, responses vary. This raises the question of why the researchers refused to submit their data.This study aims to (1) find out what researchers in the field of library and information science do about research data management; (2) whether they are willing to share their research data for reuse; (3) what factors influence the submission of data. This research is a qualitative research about the acceptability of submitting research data. The informants are researchers in the field of library and information science in Indonesia. Data was collected through online interviews with several researchers in their fields. Researchers in Indonesia are still not aware of the importance of managing research data. While the National Science Agency (LIPI) has launched a Research Data Repository for all research in Indonesia, most institutions have not implemented regulations regarding the submission of research data within their institutions. This is also found in the management of subject-based research data, such as the management of library and information science research data. Lack of understanding about the importance of data usage, data citation and the importance of data reuse, causes researchers to ignore invitations and inducements to send their research data. The results of the study also show that (1) Not all researchers are willing to share their data because they are afraid that the data will be used by other people and want the data to be kept confidential. Indeed, this is different from data hierarchies where data reusability has the highest value. Some researchers claim that they used the data for once and they let the data deteriorate. This then causes data loss. Even though they are willing to submit their data, but they can't find their data anymore. In addition, some researchers admit that they do not have valid data and they feel uncomfortable if others find out that their data is not valid.

Keywords: Research data management, researchers, data, data sharing, data archiving

1   INTRODUCTION

Advances in technology for collecting, storing, and analyzing data have facilitated the collection of more data now than ever before in history — a phenomenon known as data proliferation (Borgman et al. 2007; Quinn and Alexander 2008). The era of data proliferation has brought new opportunities and challenges in areas such as marketing, homeland security, and molecular biology (Spengler 2000; Shaw et al. 2001; Seifert 2004). In China recently, research data management (RDM) was highly demanded by international Higher Education Institutes (HEI) from 2005 to 2010 (Moe, 2015). The increased breadth and depth of required data has driven the development of new data strategies to efficiently manage and share available data. The governments of Sweden, America and Canada have decided that America and Canada have decided that in all disciplines, all research results funded by public funds are expected to be openly accessed by attaching research data (Borglund and Bogerud, 2020). Policies ensuring research data is available in public archives are increasingly being

implemented at the government, funding agency, and journal levels. This policy is based on the idea that authors need to be ambassadors of our data, to represent them in a way that demonstrates why you are seeking to collect it and what you hope to learn from it. The idea behind open data is that it should make it possible to access, reuse public information for free to create new ideas and innovations.

Slightly different in Indonesia, most research is only concerned with final results, institutions or tertiary institutions are required to convey the content/subject of research only, research data is only for complement (1), namely with administrative reports (2), data that has been collected or processed by researchers are only kept alone (3). In practice, data is still not considered in research either from sponsors or research institutions, the value of research data is still not considered. This causes researchers to be unable to manage their research data properly. According to Childs et al (2014) researchers often store research data on unreliable media for preservation, important data is easily lost. Most researchers when it comes to storing and archiving research data, often preferably on personal PC or laptop hard drives, or external hard drives/USB drives or even the cloud. There are many considerations and arguments given by researchers when they want to share their research data. The absence of data management regulations and policies makes researchers unable to understand the concepts and processes of RDM. However, the Government of Indonesia is still not aware of the importance of managing research data. Lack of understanding about the importance of data usage, data citation and the importance of data reuse, causes researchers to ignore invitations and inducements to send their research data. This is because most of the research data is still managed by researchers or research groups. One of the problems in librarianship is data management in the library. Awareness about Research and data management has emerged recently.

The Indonesian Institute of Sciences (LIPI) was the first institution to start building work and data management and national data research, namely the National Scientific Repository (RIN) in all disciplines. After that National Library followed to build a repository in the librarianship only. These two national agencies are currently starting to build RDM and repository.

Previous research on open data concluded that the regulations regarding the collection and preservation of research data were unclear (Grants 2017). In addition, archival aspects are rarely considered in research projects, and there is a lack of knowledge about how to preserve research data over time.

Hence, there is a need to better understand the challenges of open research data from an archival perspective. The purpose of this research is to find out to what extent researchers in Indonesia can understand data sharing and its benefits, as well as their willingness to share data.

2   METHODOLOGY

In this paper is a qualitative research on acceptance of submission of data researchers. The informants are researchers in Indonesia. Data collection was carried out through online interviews with several researchers in their fields, via video calls and telephone.

Good research is research that has good management including data that can be reused. In Indonesia the data is not well managed. Researchers usually keep their data alone. Good or bad data management depends on how each researcher stores it. When researchers were asked to submit their data, their responses varied—some were willing to share, while others were reluctant to do so. What may have been the reasons behind their willingness and reluctance has yet to be analysed. This research is to find out the reasons for how far researchers know about data management, benefits and also understanding for conveying research data.

3   FINDINGS AND DISCUSSION

Data used to be collected or produced as part of an academic research process and are now being generated in ever-increasing volumes and in a variety of digital formats that are often rapidly being replaced. (Berman and Cerf, 2013; Borgman, 2012; Pryor, 2012). Research data Can exist in any format in which it is generated, for example: text, numeric, audio-visual, model, computer code, discipline specific, instrument specific. Data is divided into two types, including; (1) primary data (data collected for a particular research problem, using the procedures best suited to the research problem. (2) secondary data (data that has been collected by others, for other purposes, but has some relevance to your research) this practical need is a change in the perception of the value of research data: it has been seen as an asset that must be managed to maintain its value (Higgins, 2012; Lavoie, 2012).

According to Whyte, A., Tedds, J. (2011) "Research data management is concerned with organizing data, from entry into research cycle to disseminating and archiving valuable results. It aims to ensure reliable, up-to-date and innovative verification of results to build existing information." In data management research concerns how you to: Generate data and plan its use (1) Organize, compile and name data, Store it – make it secure, provide access (2), store and back it up, Find sources of

information (3), and share with collaborators and more broadly, publish and get citations (4). it focuses on what is needed for validation and reuse.

Good management of data management must consider the life cycle of research data, enabling scientists to reliably re-analyze data and verify results and replicate studies to train new generations of researchers, to create new ideas and innovations (Bertagnolli et al. 2017). Data sharing has been promoted for various reasons: first, without data sharing it is impossible to verify research results, a key principle of good science (Borgman, 2012). However, it can increase reuse, author visibility, collaboration and research integrity. In addition, it reduces the risk of data loss (1), data leakage (2), copyright infringement (3), and breach of contract (4).

The research data life cycle model describes and identifies the steps that must be taken at different stages of the research cycle to ensure the successful curation and preservation of data. There are several stages in the research data life cycle, e.g. data creation, data processing, data analysis, etc.
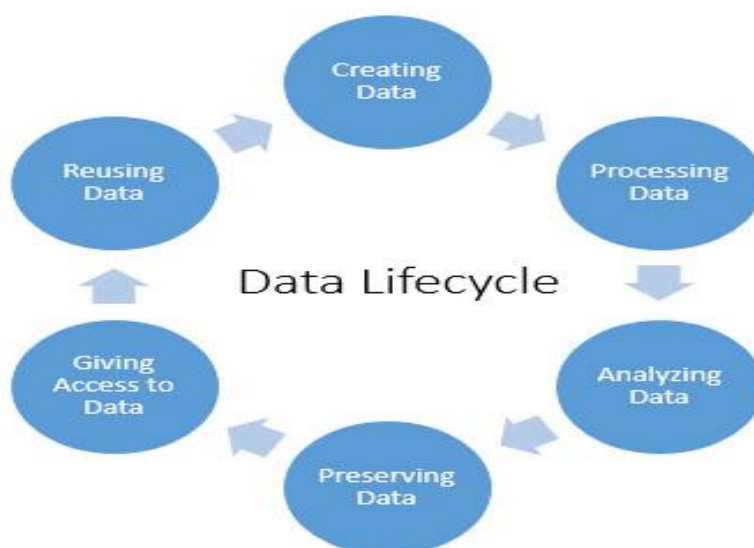
Figure 1: research data lifecycle (source: https://www.reading.ac.uk/RES/rdm/about/res-rdm-lifecycle.aspx)

There are several models that can be used to plan data management activities, for example the DCC Curation Lifecycle Model. The diagram below and the following legend illustrate this life cycle in six stages. The research data cycle needs to be considered by institutions in implementing RDM policies and services, which include: (1) Create; it includes the research design, creating a data collection framework and metadata (2) Process; data entry, validation, description and storage (3)

Analysis; interpretation, data derivation, and publication (4) Preservation; metadata, documentary and archive (5) Share; metadata backup, storage, sharing, access control, copyright and promotion (6) Reuse; Data available for discovery and access can be reused by other researchers

Digital Curation: a life cycle approach to managing and preserving usable digital information so a life cycle approach is necessary because: Reliable reuse of digital materials is only possible when materials are curated in such a way that their authenticity and integrity are maintained (Pennock, 2007).

Data is an important economic resource in all aspects, in any discipline including biomedical research (Downey and Olson 2013). Data can be shared and reused in an unrestricted fashion without being "consumed" or reduced in availability (Pronk et al. 2015).

Research data management is useful for possible future research, but not all researchers are willing to share their data and some take data for granted or allow data to deteriorate and disappear. Regulations regarding data management in an institution need to be implemented to raise awareness of the importance of data storage and data management among researchers. Unfortunately, in Indonesia most researchers, for the most part, have never received training on how to share and communicate about their data, even to their colleagues. In fact, there are many potential benefits from good research data management, other researchers, and the wider community: Increasing research impact through knowledge transfer (1), Efficiency and ease of data control, reduced data loss (2), Research progress through data reuse by international researchers (3), Adherence to policies and expectations of funders and institutions (4), Demonstration of research integrity and validation of research results (5) (Markowetz (2015) Genome Biol 16, 274).

Of the 40 researchers contacted, 15 indicated a willingness to participate in the survey. Many informants did not answer all survey questions. Out of 40 researchers, 5 are interested in sharing data. Out of 40, 10 gave fully into their research but without sharing data. They think that the lack of attention in storing research data has a negative impact on managing the management of their personal data, they only focus on research results.

In terms of the level of policy awareness, the researcher shows a low level of awareness. Of the researchers who archived their data, only 5 did so for reuse. They can manage it, Store it, make it secure, provide access, store it, and back it up.

What was also surprising was that several informants admitted that they did not want to share because they were afraid that the original data could be manipulated by others. This is quite challenging,

because they don't want other people to know that some researchers make mistakes when conducting research. And the rest have no concern for keeping their data. They cannot properly manage the management of their personal data, but they have no worries when sharing research results. Furthermore, researchers do not regard their research materials as public, but as complementary.

4 CONCLUSION

Sharing data can increase the returns on research projects by allowing other researchers to carry out secondary data collection, furthering their own exploratory studies.The lack of clarity on regulations for sharing data makes researchers reluctant to provide data (1) There are no regulations from research institutions (2).

Related to this, the authors provide several recommendations to scientific journal managers, research institutions, funders, and policy makers. (1) For this reason, it is necessary to socialize the data sharing movement both in research institutions and in tertiary institutions.

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THE USE OF SMART ONLINE TEACHER PORTAL (GURU PINTAR ONLINE/GPO) TO EXPLORE TEACHERS' INFORMATION LITERACY SKILLS

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Abstract

People in this era have gotten much information from many sources. Therefore, people need to be selective in accepting an information. Information literacy is some skills needed by people who live in this era. Information literacy is a person's ability to articulate his information needs, identify, find, and evaluate the sources of information found and the ability to use that information. Universitas Terbuka (UT) through its faculty of Education has some information and provisions to help Indonesian teachers in improving their competencies. One of the efforts is to develop a smart online teacher portal (Guru Pintar Online/GPO). Smart Online Teacher Portal (GPO) is a scientific forum dedicated to teachers and others who are concerned with efforts to improve the quality of teacher education and the quality of learning in schools. This research was carried out to explore Early Childhood Education (ECE) students' teachers' information literacy skills. The respondents were observing, analyzing and writing an report about some videos from the GPO. The instruments used were open questions which was sent through online to the respondents. The answers were analyzed qualitatively by the researchers. The online questions were consisting of questions in exploring how the ECE student teachers can access the videos, how the videos can help the student teachers analyzed the teachers' teaching, and how the student teachers have learned from the videos. This research was held in Bekasi and through online. The respondents were UT's ECE student teachers. The results of the research were 1) the respondents can access the video via you tube, 2) the respondents can determined strengths and weaknesses of the teachers in the videos, 3) the respondents can wrote a written report about how to use GPO to help PAUD teachers to develop their abilities as PAUD teachers. The research showed that the ECE student teachers have already got some skills in information literacy.

Keywords: information literacy, ECE student teachers in UT, a smart online teacher portal, (Guru Pintar Online/GPO)

1 INTRODUCTION

Information literacy is a person's ability to articulate his information needs, identify, find, and evaluate the sources of information found and the ability to use that information. Advances in information technology and the principle of lifelong learning are two reasons for the importance of information literacy. Advances in information and communication technology make information abundant and can be communicated in a relatively short time without recognizing spatial or geographical boundaries. With the principle of lifelong learning, a person is required to be able to learn independently through available information sources from various media (http://journal.uinjkt.ac.id/index.php/al-maktabah/article/view/1604).

Education is central to improving human resources, whether or not the quality of education is inseparable from the responsibility of a teacher in transferring knowledge to students as future generations of the nation (http://www.gurupintar.ut.ac.id/index.php/en/85-news/263-workshop-teaching-with-technology-fkip-ut-2016 (http://www.gurupintar.ut.ac.id/index.php/id/85-news/263-workshop-mengajar-dengan-teknologi-fkip-ut-tahun-2016).

The Open University (UT) is a state university that implements the distance education system (SBJJ). UT has a teaching faculty where almost all of the students are teachers. With its distance learning system, UT has students all over Indonesia. To make it easier to reach and to help its students, UT uses a lot of Information and Communication Technology (ICT). ICT needs to be learned and utilized by everyone including teachers. Given that one of the biggest challenges in today's digital era that teachers and other education practitioners cannot avoid is the rapid development of Information and Communication Technology (ICT).

Increasing teacher competence in mastering technology in learning is not as fast as the development of technology itself. On the other hand, students are easier to adapt to technology because they are used to using digital technology in their daily life (http://www.gurupintar.ut.ac.id/index.php/id/85-news/263-workshop-mengajar-dengan-teknologi-fkip-ut-tahun-2016)..

Along with these developments, teachers and education practitioners are required to have competence in applying the field of science by utilizing ICT advances. In addition, teachers are also expected to be able to adapt to the development of the digital era to produce graduates who are not only intelligent and skilled, but also have noble character and are devoted to God Almighty.

In this paper the researchers tried to investigate the ECE UT students information literacy skills using Guru Pintar Online Portal (GPO) as a tool to be used by the respondents.

One of the things that UT did to help Indonesian teachers was to develop a smart teacher portal (GPO). Smart Guru Online (GPO) is a scientific forum dedicated to teachers and others who are concerned with efforts to improve the quality of teacher education and the quality of learning in schools. The term "Smart" in Guru Pintar Online means "Door of Interaction Between Teachers", with the hope that this online media can be used as a means of interactive communication within the framework of fostering a culture of lifelong learning. The GPO portal provides access for teachers and teacher education observers to together contribute to efforts to increase knowledge and

experience of good practice (Best Practices) in the field of education and learning. Contributions can be made through the GPO website, in particular through the Education Laboratory and Profile Gallery (http://www.gurupintar.ut.ac.id/index.php/id).

Information Literacy

According to the American Library Association, "Information literacy is a set of abilities requiring individuals to 'recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information (https://libguides.madisoncollege.edu/InfoLitStudents).

Information literacy is a person's ability to articulate his information needs, identify, find, and evaluate the sources of information found and the ability to use that information. Advances in information technology and the principle of lifelong learning are two reasons for the importance of information literacy.

Information Literacy Skill is an ability that must be possessed by everyone and from all age groups. In information literacy there is the ability to recognize when information is needed and then use it to initiate search strategies designed to find the information needed. This includes evaluating, synthesizing, and using information appropriately, ethically and legally after it has been accessed from the media, including electronic or printed sources of issues accurately and creatively in various information (https://dip.fisip.unair.ac.id /en_ID/importance-information-literacy-skills-in-the-globalization-era/)

Information literacy is also defined as information literacy, namely the ability to recognize information needs to solve problems, develop ideas, ask important questions, use various information gathering strategies, determine suitable, relevant and authentic information (BSN, 2009 in https://dip.fisip .unair.ac.id/id_ID/importance-information-literacy-skills-di-era-globalisasi/). In short it can be said that information literacy includes the ability to recognize what information needs, find where the information is, evaluate the content of information that is really needed, and then use and communicate it effectively.

ECE student teachers in UT

In Universitas Terbuka (UT) early childhood education teachers are students who already been a teachers at kindergarten or early childhood education schools.

A smart online teacher portal (Guru Pintar Online/GPO)

Universitas Terbuka (UT) through its faculty of Education has some information and provisions to help Indonesian teachers in improving their competencies. One of the efforts is to develop a smart online teacher portal (Guru Pintar Online/GPO). Smart Guru Online Portal (GPO) is a scientific forum dedicated to teachers and others who are concerned with efforts to improve the quality of teacher education and the quality of learning in schools (www.ut.ac.id).

2 METHODOLOGY

This research was carried out to provoke ECE students teachers' information literacy skills by observing some videos from the GPO. The instruments used were open questions which was sent through online to the respondents. The answers were analyzed qualitatively by the researchers. The online questions were consists of questions in exploring how the ECE student teachers can access the videos, how the videos can help the students teachers' analyzed the teachers' teaching, and how the student teachers have learned from the videos. This research was held in two modes. One was a face to face in Bekasi, Jawa Barat and the other mode was 2 online meetings. The respondents were UT's ECE student teachers. The research was conducted in August to November 2020. There were around 40 ECE UT students from Bekasi West Java who attended the webinar in the guiding the students to get access to Smart Teacher Online portal. However, only 15 ECE student teachers who did the assignment and sent their reports to the reseachers. The assignments was the ECE Students teacher should watched the videos, analyzed and wrote a small paper about what they did in learning from the ECE instructional video. In watching, analyzing and evaluating the video and finally they had to write a report about the video that they already observed.

The components assessed by ECE students using the GPO are:

1. Ability to access GPO PAUD series videos

2. Analyze 1 video and find the weaknesses and strengths of the video

3. Write a report on the results of observations and video analysis from the GPO

4. Send a report on the results of the analysis to the UT research team

3 FINDINGS AND DISCUSSION

The findings of the research were 15 reports that were sent by the 15 out of 40 UT's ECE student teachers who attended the online and face to face meeting in Bekasi, West Java. The findings of the research were the respondents can access the video via you tube, the respondents can determined

strengths and weaknesses of the teachers in the videos the respondents can wrote a written report about how to use GPO to help PAUD teachers to develop their abilities as PAUD teachers. The research showed that the ECE student teachers have already got some skills in information literacy. From this research activity, the research team got the following results.

1. participants initially did not know what and why and how information literacy was, but from webinars and face-to-face activities as well as the existence of a WA group, then most of the participants felt they had understood what and why they should learn about information literacy.

2. In addition, participants can find out about GPOs and can access videos from GPOs.

3. The participants' ability in information literacy is proven by their ability to make reports about the advantages and disadvantages of the videos they have learned and can provide suggestions for improvement in the form of word or video files.

4. In addition to helping students, the research team provided books on honesty and books on the environment to be studied and applied by early childhood teachers.

3.1 Discussion

From the findings it showed that the respondents of this study are ECE teachers who already got the information literacy skills. Even though the respondents got some small training from the researers when the researers and the respondents met directly, the respondents can do the assignments such as get access to the video through the GPO portal, then they can watch and analyze the videos to look for the weakness and the strengths and they can write a short report to inform what they think about the videos. These results show that they already got the information literacy skills. These findings also show that the video from UT's GPO portal can be used as a media for the ECE teachers to learn how to be a good ECE teachers.

4   CONCLUSION

UT has provided various sources of information, such as GPO, but without intensive socialization, information about the existence of GPO will not be widely known and used by the public, especially UT students. The results of this study indicate that PAUD UT students have information literacy skills which are indicated by the ability of students to access information from GPOs, analyze GPO videos and make reports on the results of the analysis of learning videos in PAUD.

ACKNOWLEDGEMENTS

The researchers are very gratitude and thank Universitas Terbuka to let the researchers did the research in this university. Also the researchers thank all of the respondents of this study for their contributions and support with this study.

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THE DEVELOPMENT OF SELF REGULATED LEARNING INSTRUMENTS IN TUWEB LEARNING AT UNIVERSITAS TERBUKA

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Abstract

Self regulated learning is one of the determining factors in supporting student success during the Webinar Tutorial (Tuweb) learning process at Universitas Terbuka. It is important for each tutor to identify student learning independence by using a tested instrument. The purpose of this study was to produce a student learning independence assessment instrument that is valid, reliable and can be used widely. This type of research is descriptive qualitative, with instrument testing involving experts, validity and reliability testing. The results showed that the student learning independence assessment instrument developed for TUWEB learning at Universitas Terbuka was valid with expert judgment and statistical analysis and was reliable based on the Cronbach alpha test. The instruments produced in this study have been widely usable and allow for re-exploration by other researchers to assess students' learning independence. With this instrument, it is expected that it will also be able to help other researchers to be more motivated in conducting research, especially to assess student learning independence or increase student learning independence either in learning on a regular basis or on other online learning patterns.

Keywords: Evaluation Instruments, Self Regulated Learning, Webinar Tutorials, Online Learning, Distance Learning

1   INTRODUCTION

Today's lecture system continues to evolve and is always innovating in accordance with the development of science and technology [1]. The comparison of learning patterns in the last 10 years is quite significant and has undergone considerable changes, especially in the use of technology media as a link between lecturers and students. Many things tend to change along with the popular use of technology applications in learning [2]. The use of applications in opening the boundaries of space and lecture time makes lectures can be carried out flexibly and efficiently. The opportunity to study and learn is not only focused on face-to-face learning held in the classroom only, but further learning can also actually be done anywhere and anytime [3]. Based on this concept, distance learning is present as a solution to the barrier of learning space by the limitations of space and time that have been a problem in conventional lectures.

Universitas Terbuka (UT) as one of the campuses of distance education organizers comes with innovation and utilization of technology in optimizing the quality of learning [4]. Tuweb learning is part of the synchronous learning patterns applied at UT. Through Tuweb students and lecturers meet in a virtual space and allow the formation of interactive communication patterns. In Tuweb, lecturers and students also make regular and regularly patterned meeting schedules and allow the formation of collaboration and student learning independence. In fact, the use of technology directs students as active learners and increasingly independent in participating in learning activities [5]. Learning independence can be formed with the increasing habit of students following patterns of self-study, extracting information independently and allowing the construction of science based on findings and learning experiences.

The concept of self regulated learning does not release students working alone, it needs the assistance of lecturers as facilitators and givers of direction in learning [6]. Students are also encouraged to be able to work collaboratively with other students so that students can directly discuss and exchange information. Some aspects that also do not go unnoticed when self-study is self-evaluation. By evaluating and self-reflection students have been able to coordinate learning independently.

Learning independence allows students to be able to control themselves, make learning planning and set learning achievement targets [7]. Learning independence also allows students to construct knowledge and understand how to establish learning flow, study time and strategies to achieve learning targets. Some things to consider related to learning independence, including: The ability to manage yourself and time, make small notes of learning, collect and use information, remember materials and work with others. Learning independence is also related to how students are motivated to follow the learning process.

Independence is one of the factors that also contribute to the success of students in learning, especially in learning with online concepts or distance learning. Distance learning allows students to learn independently, manage their own study time and control the success of learning independently as well [8]. Learning independence is also driven by the availability of facilities in learning, such as the availability of online learning references, the availability of online discussion containers and the possibility of online tutoring as well as by lecturers. Independence of learning and Tuweb is a unity and interconnectedness.

Tuweb lectures are synchronous, but in the excavation and deepening of materials students can explore independently. The role of learning independence is needed in Tuweb learning. The

information presented is not only limited to the material presented by lecturers in sync in Tuweb,but allows students to explore their knowledge independently by utilizing various learning resources and references that they obtain independently. The importance of learning independence requires every lecturer to focus on paying attention to these aspects in the implementation of learning, especially Tuweb

To know the independence of learning students, it takes a decent instrument and has been tested. A viable instrument is to have tested both validly, an ability and has passed testing by experts [9,10]. The instrument of learning independence can be developed by paying attention to the instrinsic and extrinsic aspects of the learner, the student's ability to explore the material independently and how the student reflects on what he has learned. Developing learning independence instruments requires reviewing key indicators and having to go through extensive testing. Some aspects that can improve the quality of instruments are thoroughly evaluated and tested by students, experts,and researchers themselves before being disseminated and worthy of mass use[11,12] The questions that will be answered in this study are:

Q1: How is the process of developing self regulated learning instruments?

Q2: What are the characteristics of self regulated learning instruments that are worth disseminating?

2 METHODOLOGY

This type of research is qualitative descriptive. This study aims to test validity based on expert assessment and validity; reliability based on tests of instruments by students. The data collection instrument in this study is in the form of aquestionnaire. Data analysis uses statistical techniques, among others: Validity using multivariate tests, Reliability using Cronbach Alpha tests. This study involved respondents as many as 1,947 UT students spread from Sabang to Merauke in Indonesia. The process of developing an instrument begins with formulating an instrument indicator, with reference to the expert theory [13,14]. Based on the selected indicators, continued the development of sub-indicators and question items that will be used to assess student learning independence. The initial instrument developed is first validated by the expert,and revised based on expert input advice. After the instrument is declared valid by the expert, continue the test of the instrument by implementing the instrument to all respondents. The results of instrument trials by students are analyzed to find out the level of validity and reliability. After valid and reliable instruments, the instrument is worth using in assessing the independence of students' learning widely when tuweb learning is carried out.

3 FINDINGS AND DISCUSSION

3.1 The Development of the Self Regulated Learning Instrument

The student's developed learning independence evaluation instrument has 38 question items incorporated into an instrument. The learning independence instrument is developed from 3 main aspects, then formulated into 6 indicators. From the 6 existing indicators, the question item item was further developed to 38. Once the instrument is structured and designed, the initial form of the instrument is presented in Table 1.

Table 1. Criteria and Indicators for Developing Valid and Reliable Student Self Regulated Learning Instrument

No	Aspect	Indicator	Sub-Indicator
1	Motivation	Intrinsic and extrinsic Self-efficacy	
2	Learning strategies	Metacognitif self-regulation	Goal setting Achievement of goals Achievement of science goals and science learning *Monitoring*
		Managing time and learning environment	
		Source management	Regulatory *efforts*
3	Self-Reflection	Self-Evaluation	Self-reaction

The development of student learning independence instruments is focused on the development of key indicators, namely by paying attention to aspects of motivation, learning strategies and self-reflection. For the development of indicator aspects, researchers design indicators that focus on self-concept and intrinsic and extrinsic elements. Students who have been independent in learning, have high motivation in learning, have good learning strategies and are able to do self-reflection. Independent means students can make self-regulations while studying, can control the slow pace of understanding of materials individually and can manage time and learning environment well. Based on the aspects and importance of this element, eating is designed a learning independence instrument consisting of 38 item questions. Furthermore, this instrument will be tested for validity by experts.

3.2 Expert Review

Once the instrument is designed, it is validated by an expert. The study involved two experts as instrument validators, with assessments including an assessment of the content and language of the instrument, as well as an assessment of the accuracy of indicators developed in the instrument grid.

Based on the results of expert assessment of the development of instrument indicators, of the 38 question items formulated in the instrument, there are several question items on some indicators must be revised and re-corrected. Some items that need to be improved include intrinsic and extrinsic indicators, metacognitive self-regulation, time and learning resources management, resource management and self-evasion. For self-concept, the entire item of question items developed is valid, and can be used without revision. Here is the distribution of the results of expert assessment of the grid of instruments that can be observed in Table 2.

Table 2. Assessment Results of the Independent Learning Instrument

N	Indicator	Accept (%)	Revision (%)	Reject (%)
1	Instrinsic and Extrinsic	83.3	16.7	-
2	Self-Concept	100	0	-
3	Metacognitive Self-Regulation	88.9	11.1	-
4	Managing Time and Learning Resources	80	20	-
5	Source Management	50	50	-

Based on the results of the experts' assessment, the average acceptance of indicators and questions designed is 78.15%. This means that instruments designed and represented in grids are valid by experts. The results of the instrument assessment are also strengthened by expert assessment of content and language. Assessment and results of the instrument's content and language analysis are presented in Figure 1.
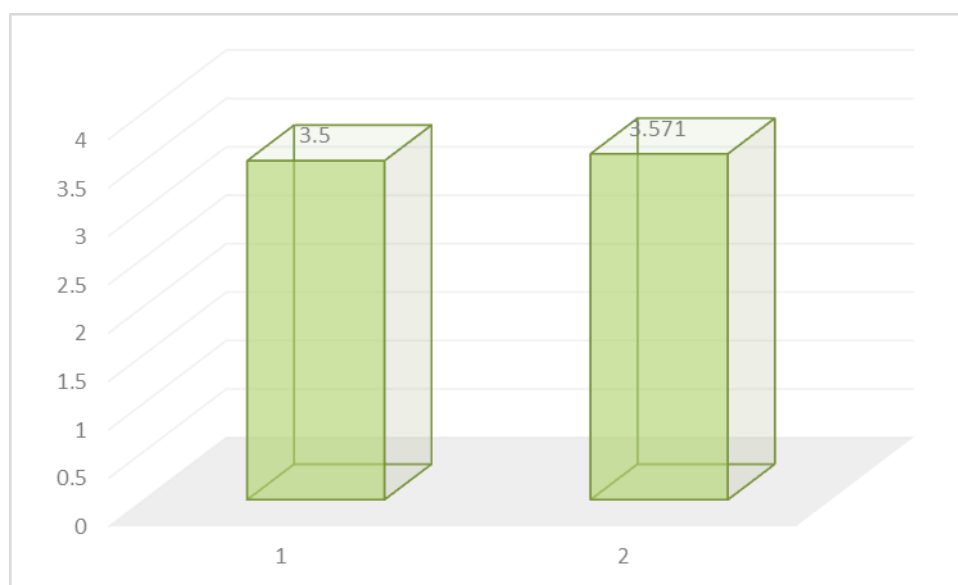
Figure 1. Validation Results of SRL Instruments for Use in Tuweb

Information:

1 = Assessment of Language Aspects

2 = Assessment of Content Aspects

Some suggestions and input from experts include improvements to the quality and governance of sentences in instruments. There are several revisions that have been done in accordance with expert advice so that instruments that are considered not valid become suitable for use. The meaning of sentences becomes the main focus in the improvement and revision of instruments. In addition, based on advice and input to the instrument, improvements are also made to the variety of instruments.

3.3 Revision I

Revisions made to the instrument include revisions to several question items in 5 indicators, including instrinsic and extrinsic indicators, metacognitive self-regulation, time management and learning resources, resource management and self-evaluation. After the instrument is revised based on advice and input from experts, then the instrument trial phase continues the student trial. The instrument trial involved 1,947 students spread from sabang to merauke in Indonesia.

3.4 Try Out

The test stage that will be tested is a test of the validity and reliability of the instrument. The validity of the instrument is tested by multivariate techniques. All items on the instrument were tested on randomly selected students, and the results of the validity test calculation showed that all instrument items were in a valid category. This is evidenced by 38 items of instruments after a validity test showing the same Sig 2 Tailed number, which is 0.000. This indicates that the Sig 2 tailed number obtained is smaller than the alpha value (0.05). So, it can be concluded that the results of the analysis of the validity of the student's learning independence instrument developed as a whole have valid points. Instrument testing can be continued on the instrument reliability test.

The instrument reliability test was conducted using the Alpha Cronbach technique. All the details contained in the instrument are tested for reliability. Each test result shows that all the details contained in the instrument are reliable.

For the 38 items of student attachment instruments tested, the results of the analysis showed the total R value was 0.918. It can be concluded that the evaluation instrument to assess student involvement

is already reliable. Reliability tests of each instrument item show a Sig 2 value. Tailed is 0.000, and smaller than the alpha value (0.05), so it can be concluded that all instrument items are reliable.

3.5 Final Instrument

Based on the test results, all item question items used in the instrument are valid and reliable. This indicates that all items contained in the instrument have been piloted and the student's learning independence instrument is worth using. The entire question item meets valid and relibel criteria so that the learning independence instrument is worth using and disseminating.

Distance learning by utilizing technology applications in supporting the learning process is a step in succeeding the equalization of educational programs. In distance education such as the use of the concept of online learning is a must to pay attention to the independence of student learning [15,16]. Independence can be one of the determinants of learning success when implementing distance learning. The role of lecturers will be reduced as distance learning programs spread. With the existence of student learning independence assessment instruments that have passed expert tests, validity and reliability can be a solution in assessing student learning independence.

4   CONCLUSION

Independence of learning is an important aspect in supporting student success in learning tuweb. For that, it takes a valid and reliable instrument and worth using to measure student learning independence. SRL instruments developed in research have gone through three stages of testing, namely expert assessment, validity testing and reliability with respondents are students. Based on the results of the data analysis that has been conducted, the student learning independence assessment instrument that has been developed has been valid according to experts, valid and reliable based on the results of the instrument trial applied to UT student respondents. In the future, it is expected that there will be continued research and development of learning independence instruments so that learning independence can be one of the focus of attention in carrying out learning on a Tuweb basis or online learning.

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CORPORATE UNIVERSITY AS AN INTEGRATIVE HUMAN RESOURCE DEVELOPMENT STRATEGY FOR DISTANCE EDUCATION AS PUBLIC ORGANISATION

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Abstract

The Open University is a distance university with more than 400,000 students spread throughout Indonesia and 52 cities in 49 countries. The number of Universitas Terbuka employees is 2,538 people and they are spread over 39 regional offices. Currently, UT requires a human resource development system that can reach all of UT's human resources, and HR development activities can be carried out effectively and its success can be easily measured. To meet these needs, the choice is to form a corporate university. The corporate university is a learning method based on increasing employee capabilities to improve organizational performance to increase organizational growth to be more productive, efficient, and optimal. The development step is carried out through two stages, namely corporate university assessment and corporate university Strategy Masterplan development. In this paper, the components and steps for implementing the corporate university assessment and feature corporate university construction will be presented. Corporate university assessment is carried out through self-assessment of the enterprise learning system at UT and compiling the results of a strategic roadmap based on the results of the study. The measurement of the enterprise learning system includes an assessment of the inputs consisting of management commitment, learning function, facilities, learning solutions, learning technologists, learners, and learning culture. While the assessment of the process is carried out by assessing the UT learning value chain. Output is measured by learning performance indicators. Meanwhile, the corporate university features consist of the main components of learning strategy governance, learning focus, learning solution architecture, and learning solutions delivery system. UT, which operates remotely, has strong industrial characteristics, so an integrated and programmed HR development system is needed to produce output as expected and measurable.

Keywords: Corporate University, Corporate University assessment, Corporate University Strategy Masterplan development

1 INTRODUCTION

Universitas Terbuka is a distance university with more than 400,000 students spread throughout Indonesia and 52 cities in 49 countries. The number of Open University employees is 2,538 people and they are spread over 39 regional offices and 1 overseas service. UT is also supported by 869 study groups and 50 service centers throughout Indonesia. The large number of UT students spread across various regions with unequal social conditions, unequal availability of internet access, unequal technical competence, and UT's industrial business processes make UT a complex organization. The high complexity of UT's business processes demands high competence from its managers.

As a university with a long-distance mode, UT's competency needs are very diverse, starting from the academic competency group, the managerial competency group, the academic technical competency group, and the administrative competency group. Each unit at UT requires various combinations of these competencies. The complexity of this competency requirement causes difficulties in developing HR competencies. The method of human resource development used by UT so far has not been able to carry out human resource development to meet the required competencies. The current HR development method is less integrated between training need analysis, development planning, development methods, monitoring, and post-training evaluation with the needs of the units.

For example, the HR Development Unit in Indonesia does not yet have a TNA that is integrated with the unit's competency development needs. As a result, proposals for activities still appear while the activity is in progress. Another consequence is the timing of the implementation of some of the training that is out of sync with the timing of the activities. Another example is the program implementation strategy that is not related to the training provided. Another thing is that the location of UT's HR is spread out, making HR development programs expensive. Some of these examples show that the current HR development system does not meet the needs of UT's HR development as a public enterprise (PTN BH). Currently, UT requires a human resource development system that can reach all of UT's human resources, and HR development activities can be carried out effectively and its success can be easily measured. To meet these needs, the choice is to form a corporate university.

Corporate University (CorpU) is a learning method based on increasing employee capabilities to improve work unit performance. CorpU can also be used to increase organizational growth and achievement of strategic programs. Learning techniques at Corporate University are oriented toward increasing employee competence. The ultimate goal is to maximize the performance of the work unit. To be able to meet the competency needs in an integrated manner, UT needs to increase the capacity of employee development by adopting an integrated learning system based on the Corporate University (Corp-U).

The corporate university is a management intervention that takes a company or organization into a new robust and sustained phase of business development that it would not achieve with its current levels of opportunity for thought leadership and styles of learning behavior (Dealtry, R. 2017). I define a corporate university as a function strategically aligned toward integrating the development of people within a specific organization (Grenzer, JW. 2006).

2 METHODOLOGY

This paper is developed from a best practice on how UT as a public university develops a grand corporate university design.

3 FINDINGS AND DISCUSSION

As a new policy, Corp-U is not yet recognized at UT. Leaders and staff are not familiar with Corp-U. Therefore, Corp-U needs to be introduced to policymakers. UT's experience in developing Corp-U has a long way to go. After being convinced that Corp-U is the right instrument to develop UT's human resources, the next step is to convince the leadership that UT is effective in developing UT's human resources.

There are five Steps to developing a Corp-U grand design. The stages of making the Grand-Design Corp-U start from;

3.1 Corp-U Assessment

There are two activities in the Corp-U Assessment with independent assessments: Enterprise Learning System (ELS) and Feature Corp-U. ELS aims to see the level of readiness of functions within the organization to run an Enterprise Learning System. While Feature Corp-U aims to see what features should be owned by a Corp-U.

ELS has seven components, the first is the Fit and Management Commitment Strategy, which is how management supports and commitments to learning in the organization, the second is Learning Function and Organization, which is how the learning organization functions are carried out, and the third Facilities and Infrastructure are facilities and infrastructure that support the learning process. Furthermore, Learning Solutions are how to ensure the availability of learning solutions through adequate learning programs, Learning Technologists are how employees in the learning unit act as experts in learning, and Learners are how the readiness and responsibilities of learning

participants. The last component is Learning Culture, which is how the learning culture is in the learning participant organizations.

The process in the Learning System, or known as the Learning Value Chain (LVC) consists of five components, namely Learning Need Diagnosis, Acquiring Leaning Solutions, Deliver and Deployment, Learning Impact Measurement, Learning Administration, Infrastructure, and Support System.

The feedback that must be applied in the Learning System is to ensure that the learning activities are monitored and given feedback so that the performance of the Learning System is increasing. The expected output is an increase in organizational performance related to learning carried out for learning participants.

Mapping in this self-assessment uses 6 assessment criteria. The criteria are as follows;

a. Value 0: None

b. Grades 1-2: Early Stage / Ad Hoc

c. Grades 3– 4: Repetitive but Intuitive

d. Score 5– 6: Defined Process

e. Value 7-8: Monitored and Measured

f. Value 9-10: Optimal

The results of the self-assessment mapping of the UT ELS are shown in Fig. 1 below.
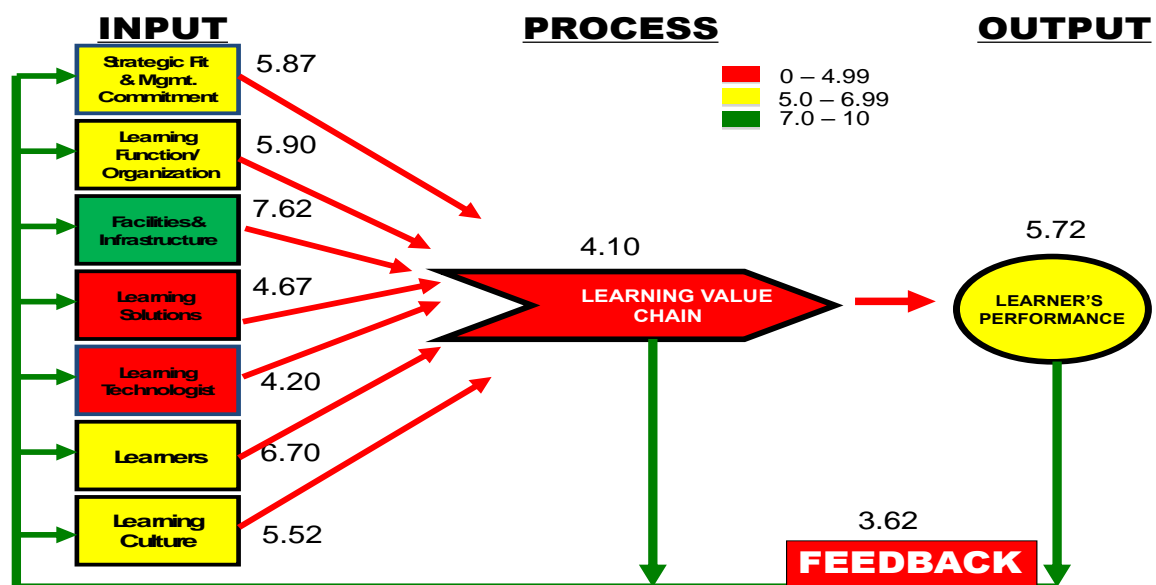
Figure 1. The ELS UT Mapping

The summary of Self-Assessment Results can be seen in Table. 1 of the following:

Table 1. ELS UT Assessment Result

HASIL ASSESSMENT : ENTERPRISE LEARNING SYSTEM

SUMMARY			
INPUT	MAX	MIN	AVG
Stategic Fit & Mgt Commitment	10	3	5,87
Learning Function / Organization	10	2	5,90
Facilities & Infra-structure	10	2	7,62
Learning Solutions	9	2	4,67
Learning Technologist	9	2	4,20
Learners	9	5	6,70
Learning Culture	9	2	5,52

0 – 4.99
5.0 – 6.99
7.0 – 10

PROCESS			
Learning Value Chain	9	2	4,10

OUTPUT			
Learner's Performance	9	2	5,72

FEEDBACK			
System Feedback	7	1	3,63

The results of the assessment in Table 1. show that the Feedback System has the lowest score of 3.63 out of 10, which means that the learning activities are monitored and given feedback so that the performance of the Learning System is increasing. While the highest score was in the Facilities & Infrastructure point which had the highest score of 7.62 out of 10, where UT already had a campus and adequate training facilities.

There are 5 components owned by UT, which are marked with yellow shading, but they still need to be improved because they are not optimal, namely Strategic Fit & Management Commitment (5.87 out of 10), Learning Function/ Organization (5.90 out of 10), Learners/Training Participants (6.70 out of 10), Learning Culture (5.52 out of 10), Learner's Performance (5.72 out of 10). Meanwhile, 4 (four) components that need improvement are Learning Solutions (4.67 out of 10), Learning Technologist (4.20 out of 10), Learning Value Chain (4.10 out of 10) System Feedback (3.63 out of 10)

The processes in these four areas have been carried out routinely but are still intuitive. A proactive approach still needs to be improved. To leverage quickly, organizations can increase their strengths or minimize their weaknesses. The second self-assessment carried out was to see what features a Corp-U should have. Implementation and management using the rules and framework of Corp-U.

Table 2. below shows the results of the mapping of Corp-U Features UT. The component with the highest score already owned by the organization and running well is the Learning Infrastructure (point 3.67 out of 5.0). This is consistent with the ELS self-assessment where the infrastructure has a high value as well.

Table 2. Results of Self-Assessment of Home Corp-U UT

0.0 - 2.0	RED	NO
2.1 - 4.0	YELLOW	SOME EXTENT
4.1 - 5.0	GREEN	YES

No.	CORPORATE UNIVERSITY FEATURE	GROUP ASSESSMENT							MAX	MIN	AVG
		#1	#4	#5	#6	#7	#8	#9			
1	LEARNING FOCUS	2	3	3	1	2	3	1	3	1	2,14
2	LEARNING INFRASTRUCTURE	4	4	4	4	4	2		4	2	3,67
3	KNOWLEDGE MANAGEMENT	3	4	4	2	2	2	2	4	2	2,71
4	LEARNING SOLUTION ARCHITECTURE	4	2	2	1	2	2	2	4	1	2,14
5	LEARNING SOLUTION FACULTIES										
	5.1 Business Academies	2	3	3	2	3	2	2	3	2	2,43
	5.2 Competency Schools	2	3	3	3	4	2	2	4	2	2,71
	5.3 Organization Culture Development School	4	3	3	4	3	1	2	4	1	2,86
	5.4 Leadership & Talent Development Institute	3	2	2	1	3	3	3	3	1	2,43
	5.5 Assessment Centre	2		2		1	1	3	3	1	1,80
	5.6 Organization Learning Research Centre	4		4		4	1	2	4	1	3,00
	5.7 Suppliers/Customers Development School	4	2	4	4	4	1	3	4	1	3,14
	5.8 Alliances & Partnership Centre	2	2	4	1	4	2	2	4	1	2,43
6	LEARNING SOLUTIONS DELIVERY SYSTEMS	4	3	3	3	4	4	2	4	2	3,29
7	LEANING STRATEGY GOVERNANCE	3	2	2	1	1	2	2	3	1	1,86

The Learning Focus and Assessment Center Components scored 1.86 and 1.80, which are the two components with the lowest scores, so these should be the focus of the Strategic Roadmap drawn up.

3.2 Corp_U Strategy Masterplan Development

Corpu Strategy Masterplan Development is the second step that must be carried out so that the implementation of Corp-U UT is more focused and systematic, and takes into account the results of self-assessment. The results of the preparation of the UT Corp-U Masterplan consist of 3, namely the UT Corp-U Strategic Roadmap, the detailed Project Plan for 2022 – 2023, and the Killer Program for 2023.

The UT Corp-U Strategic Roadmap, activity begins with the preparation stage which will be carried out in 2020 with activity initiation activities, presentations to get full support from management, as well as the preparation of a Corp-U implementation budget, and carrying out a Corp-U Workshop

so that all stakeholders have the same perception associated with CorpU. The adoption in 2022 begins with benchmarking companies that have implemented Corp-U and conducting self-assessments.

Implementation activities will begin in 2023, which include activities (1) implementation of Identification of learning needs & Preparation of Curriculum & Talent Capabilities, (2) preparation of CorpU-based learning design and development, (3) Full Implementation of Post-Training Evaluation, and (4) Preparation of the UTCorpU Implementation Quality Manual and implementation of implementation audits, as well as (5) Implementation of the Learning Council Meeting. It is hoped that in 2024, Corp-U UT can gain world recognition through the implementation of strengthening and developing Corp-U UT, as well as the development of Corp-UT with 70% technology-based implementation.

The Detail Project Plan for 2022 – 2023 is to prepare a Detailed Project Plan from the UT Corp-U roadmap, which includes: Strategic Direction, Strategic Key Program, and Innovative Program, as well as Key Performance Areas (KPA), needed to monitor the implementation of Corp-U UT. Strategic Direction contains the Intention / Objectives for the Establishment of CorpU-UT, Vision & Mission, Learning Service Standards, and Learning Culture to be formed through Corp-U UT. Designing and building the corporate university is a journey of discovery and there must be a clear vision of the benefit that is being sought after otherwise the adage -if you don't know where you're going any road will take you there- is also true in this area of business development ((Dealtry, R. 2017)

The proposed Killer Program for 2022 – 2023 is the Leadership Development Program, Academic Product Development Training Program, Academic Service Development Training Program, Technical Training Program for Education Personnel, and Research and Publication Competency Improvement Program.

3.3 UT Corp-U House Development

There are 8 important components in the Corp-U house, including the Business Academy, Competency School, Organization Culture School, Leadership & Talent Development Institute, Assessment Center, Organizational Research Center, Supplier / Customer Development Center, and Alliance & Partnership Center. The Open University Corp-U House which is prepared refers to UT's

organizational structure and the results of self-assessments that have been carried out previously. At the UT Corp-U house, there are 3 main components, namely the Main Competency Development Field, the Organizational Core Competency Development Field, and Enablers (supporters).

3.4 UT Corpu Governance

After the preparation of the UT Corp-U House, the next stage is to develop Governance to ensure that the U Corp-U House can be implemented properly. The following Figure 4. is the Governance compiled for UT Corp-U. The purpose of the preparation of Governance is to ensure that Ownership of Learning involves all levels of positions and all work units so that the programs carried out in the implementation of Corp-U get support from all components within the organization, especially from work units that require capability development to support the improvement of organizational performance.

3.5 Developing of Learning Focus Strategy

The last step in the stage of making the Grand-Design Corp-U is to develop a learning focus for the Corp-U UT. Figure 2. The following illustrates the Learning Focus Strategy of Corp-U of UT
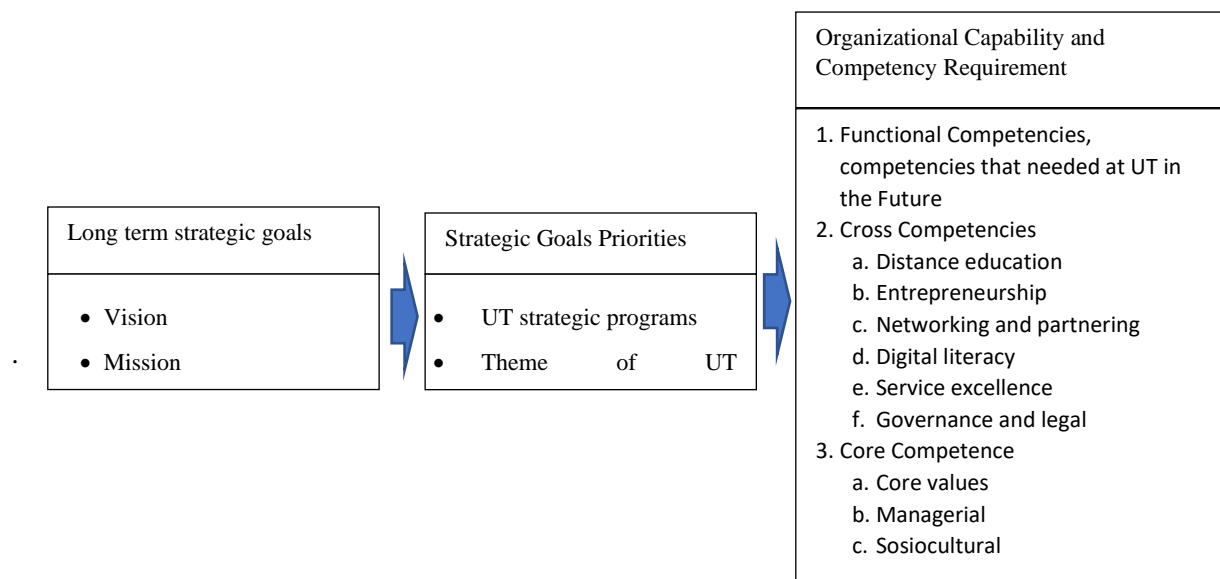
Figure 2. Developing UT Corp-U Learning Strategies

From the Learning Strategy that has been prepared above, the next step is compiling each competency group's details and definitions. The next step is to describe the competency needs at each level of the position.

With these Five Steps, the Grand Design Corp-U of the Open University was formed and the next step was the implementation of the UT Corp-U so that learning based on increasing employee capabilities to improve the performance of UT work units and organizations would be realized even though UT is now a PTN BH meaning half private and government. According to Fauziah, N.M, and Prasetyo, W.A (2019) in private organizations, the ultimate goal of a Corporate University lies in the profits that companies will get from maximizing human resource training that is in line with business strategy (profit-oriented focus) while in government organizations, Corporate University functioned to create more professional human resources for the apparatus, as well as having a mindset and culture-set that reflects higher integrity and performance in the context of excellent service to the community.

4   CONCLUSION

Thank you to Ms. Anna Maria and the Team for helping UT develop the System of UT Corpu. The funding for this development comes from UT. Thanks to the Chancellor for funding the development of the UT Corpu System.

Open University is a tertiary institution with a large and scattered number of students. To be able to carry out the mandate of providing higher education services to all levels of society, UT needs the support of highly competent human resources. The method chosen by UT to develop HR effectively is a corporate university. The Corp-U method is an effective method for implementing systematic, integrative, and sustainable human resource development. The corporate university is a learning method based on increasing employee capabilities to improve organizational performance to increase organizational growth to be more productive, efficient, and optimal.

UT's experience in building Corp-U was not easy. The decisive initial effort was to convince top managers that Corp-U was the solution for developing UT's human resources. The next step is to conduct a corporate university assessment and then conduct a corporate university strategy master plan development. The development of the corporate university Strategy Masterplan is carried out

through the stages of UT Corp-U House Development, UT Corpu Governance, and Developing a Learning Focus Strategy. The corporate university features consist of the main components of learning strategy governance, learning focus, learning solution architecture, and learning solutions delivery system. With these steps, it is hoped that an HR development system will be created that can produce output as planned and measurable.

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THE DESIGN OF MOOT COURT PRACTICE IN LAW STUDY PROGRAM UNIVERSITAS TERBUKA

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Abstract

Legal education in tertiary institutions must be strengthened to produce competitive law graduates in the era of society 5.0 by equipping students with legal skills that include both knowledge and practical aspects. Litigation practice is one of the legal skills that can be developed through moot trials. The characteristics of its students, whose domiciles are in all corners of Indonesia and abroad, pose a challenge for the Open University law study program, which implements a single mode of distance education, as not all of them can attend face-to-face moot court practices. As a result, the Open University law study program created a face-to-face court simulation court as well as an electronic court simulation adapted from an electronic court in Indonesia during the Covid

Keywords: Design, Moot Court, Court Simulation, Legal Study

1 INTRODUCTION

Since the establishment of the Rechthoeschool, or legal higher education, during the Dutch colonial period in 1924, legal education in Indonesia has evolved. Initially, legal education was designed to meet the needs of bureaucratic employees, but the work environment today requires more law graduates who can apply their knowledge to solving societal problems rather than simply being a mouthpiece for laws.

Academics and companies have agreed that in order to produce competitive law graduates who can be absorbed by the world of work in an era of global competition, students must be equipped with various competencies, both theoretical and practical, starting in college (Adrian Bedner, Stin Cornelis, and Bivitri Susanti, 2020), as defined in Peraturan Pemerintah Nomor 8 Tahun 2012 Tentang the Kerangka Kualifikasi Nasional Indonesia (KKNI).

Competency in litigation or dispute resolution processes in court is one of the competencies required of law graduates. Students can hone their skills through trial simulations or the moot court, in in addition to learning trial theory in procedural law courses. Moot Court is a simulation of a real court process that is as close to a real trial as possible. Moot Court is a simulation of a real court process that is as close to a real trial as possible. Students will be assigned roles based on the type of trial being conducted. In criminal justice, roles include judges, prosecutors, legal advisers, witnesses,

defendants, and clerks, whereas in civil trials, roles include judges, clerks, plaintiffs, defendants, attorneys for the plaintiffs, attorneys for the plaintiffs, defendants, and witnesses. The trial flowed according to the stages of the original trial, using scenarios and trial files that the students had previously prepared. The moot court has become a part of practical courses at several law schools in Indonesia, and it has even become a national competition.

Since 2015, the Law Study Program has developed a practical course, Praktik Pengalaman Beracara (PPB), with the study code HKUM4410, which students must take and pass. This is an experimental learning course in which students observe the trial process in court and create legal document (Daryono et al, 2015). HKUM4410 can be taken face-to-face or asynchronously via a learning management system, depending on the preferences of the student.

The challenge for the Open University Law Study Program, which organizes a single mode of distance education, is that students' domiciles are spread throughout Indonesia and abroad, and the majority of students have jobs, so Moot Court as part of the practical courses cannot be implemented either synchronously or asynchronously.

The research team developed a Moot Court design that can accommodate the characteristics of Open University students in order to provide technology-based legal education to overcome distance and time limitations as part of the vision and mission of the Open University Law Study Program.

2 METHODOLOGY

This study is a Research and Development (R&D) study, which is a type of research approach used to create new products or improve existing ones. Gall and Borg (1983;722). Preliminary studies, product design, product development, and evaluation are all stages of research.

3 FINDINGS AND DISCUSSION

3.1 The Urgency of Online Moot Court in Practical Subjects

Law is a popular study program at several Indonesian universities, including the Open University. The chart below shows a comparison of the number of law students in Indonesia and the number of law students at the Open University.
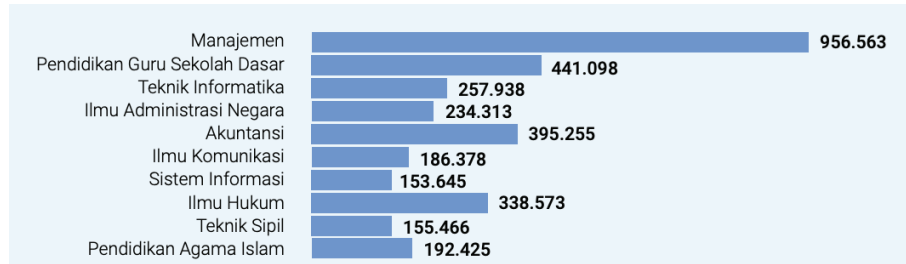
Figure 1. Statistics of Study Programs with the Most Number of Students in Indonesia

Source: Higher Education Statistics 2020, Secretariat of the Directorate General of Higher
Education
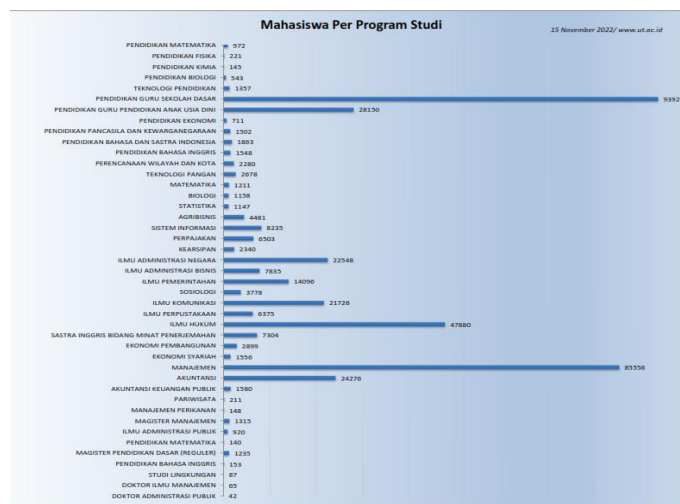
Figure 2. Statistics of Study Programs with the Most Number of Students at UT

Source: UT in numbers https://www.ut.ac.id/ut-dalam-angka

During the 2022.2 registration period, the number of law study program students reached 37,855, accounting for approximately 10.92% of all Open University students. Based on these two statistics, it is possible that the number of new students at both Indonesia and the Open University will increase significantly.

Along with the increasing number of law students, the quality of law education at the Open University must be aligned so that the graduates produced have equal competitiveness and even excel with other law graduates.

Litigation or court proceedings is one of the skills that every law graduate should have, even if they do not work as judges, prosecutors, or lawyers. Moot Court is one of the learning methods that can

train students' abilities in the litigation process because by performing this role simulation, students can directly practice what they have learned.

Ideally, moot court is carried out directly by a group of students who register for the course because in one trial simulation, several main roles must be played by students, but at the Open University, several aspects make a direct simulation impossible, including the domicile factor that is remote, unavailable meeting location access, and work reasons.

Students have also increased the number of students who prefer online UN courses (HKUM4410) in the last four years, as shown in the graph below.

Registered Students for Online Practice HKUM4410 every Semester

Semester	Registered Students
2019.1	1942
2019.2	1945
2020.1	2635
2020.2	3535
2021.1	4331
2021.2	4018
2022.1	5865
2022.2	5791
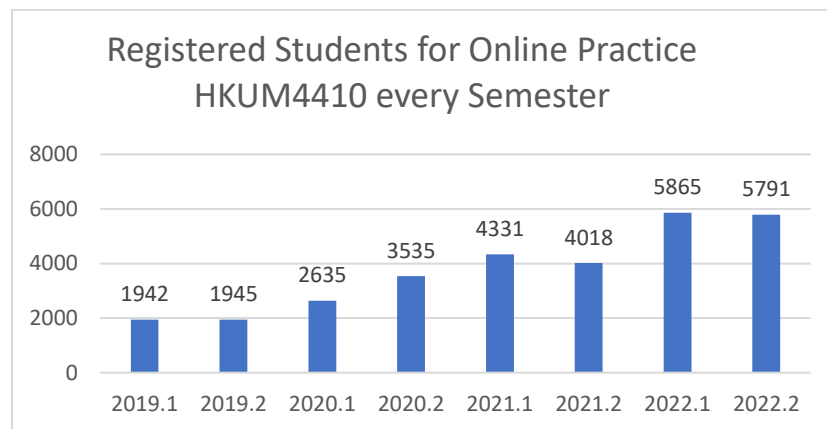
Figure 3. Graph of Students Enrolled in HKUM4410 Online Practices each year

Based on this explanation, moot courts can be designed to improve the quality and accessibility of Open University students by providing both synchronous and asynchronous options.

3.2 The Design of Moot Court Practice

Moot court is intended to be a component of criminal and civil practice courses, with an assessment weight that contributes to the overall grade for the practical course. The role-play method is the learning strategy used in moot court, in which students act out role simulations aimed at solving problems through intrapersonal communication patterns (Shaftel & Shaftel: 1982). Trial simulations in moot court are designed to be as realistic as possible so that students can feel their role.

The Synchronous or face-to-face moot court refers to the code of law on both criminal and civil procedural law, supreme court regulations and other related regulations. Meanwhile, the

asynchronous or online moot court refers to Supreme Court Regulation Number 4 of 2020 concerning the Trial of Criminal Cases in Electronic Trials and other related rules

If a class is formed with a minimum of 5 students and can hold face-to-face meetings, the class can practice moot court face-to-face; however, if students in one class are unable to carry out face-to-face activities, the moot court is carried out online.

The stages of synchronous and asynchronous moot courts are similar, as shown in the table below.

Table 1. Stages of Moot Court

NO	STAGES OF IMPLEMENTING MOOT COURT
1	Formation of groups by tutors
2	Case scenarios are given by tutors and can be developed by students
3	The trial file used is the file that received the best assessment on previous legal drafting practices.
4	Student guidance by tutors is carried out face-to-face or online.
5	Self-practice by students face-to-face or online.
6	The Appearance of criminal moot court with stages: 1. Opening Session 2. Indictment Reading Session 3. Pledoi Reading Session 4. Verstek Decision Session 5. Claim Reading Session 6. Objection Note Reading Session 7. Reply 8. Duplicate 9. Evidence 10. Judgment Session Civil moot court appearance with stages: 1. Opening of Session and Mediation 2. Lawsuit Reading Session 3. Trial for Reading the Answers to the Lawsuit 4. Verstek Decision Session 5. Reply 6. Duplicate 7. Evidence 8. Conclusion 9. Reading of the verdict

7	Assessment by the tutor

The difference between face-to-face moot court and online moot court is that trial participants can attend the trial process from different locations and use video communication media, in accordance with Supreme Court regulations regarding electronic trial procedures. The electronic criminal trial process at the Makassar district court is depicted in the figure below.

Figure 4. Electronic Court at a Criminal trial with Zoom at the Makassar District Court

n practice, the use of electronic justice that arose as a result of the Covid-19 pandemic has proven to be more effective and efficient than traditional trials (Panji Purnama, Feby Mutiara Nelson: 2021). As a result, the implementation of electronic courts in Indonesia is very likely to continue. The presence of electronic courts in Indonesian trials can serve as a model for online moot courts in law study programs at the Open University.

4   CONCLUSION

The implementation of moot court practice in law study programs is urgent because the law study program, which has seen a significant increase in student enrollment, needs to improve the quality of its graduates in order to compete with other law graduates in Indonesia and even internationally. Mastery of practice in the field of litigation is required of Open University law graduates, so students must be trained in moot court practice in addition to observing trials and practicing court dossiers. The challenges of the Open University as a distance tertiary institution, with students who cannot all meet synchronously, as evidenced by the large number of law students who prefer online practice,

necessitate that the law study program design two modes of moot court implementation, namely face-to-face and online, so that all students can access it.

For both face-to-face and online moot court, the moot court design supports the role-play method and refers to relevant legal rules as the foundation for the stages of conducting trials. This is done to ensure that the moot court implementation adheres to its main goal, which is to make it as similar to a real trial as possible. For students who are unable to attend face-to-face moot courts, online moot courts may be an option. Using video communication media, moot court can be implemented online at the location of each student..

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TEACHER COMPETENCIES NEEDED BY THE PRINCIPAL IN THE DIGITAL AGE

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Abstract

Teachers, as the spearhead in the field of education, are required to have competence in digital age in the 21st century. The principal hopes that the competence of the teachers who teach in schools is to the current development demands. This study's aim is to determine the competence of teachers needed by the principal. The data were obtained from a questionnaire given to the principal containing 28 statements. Of the 272 principals who filled out the questionnaire, the results showed that 1.6% of principals were very satisfied, 51.6% satisfied, 46% dissatisfied, and 0.8% very unsatisfied with teacher competence.

Keywords: competence of teachers, school principals, literacy, digital era

1   INTRODUCTION

Competence is the ability of the teacher to be able to carry out their duties in teaching. In the current digital era, a teacher must have competencies that are by the demands of the times, namely the ability to understand digital technology. Teachers have a big challenge. The students of this era are familiar with technology, using internet technology. The internet makes it easier for us to access content, including learning content. Teachers are also required to be able to adjust their abilities in serving students who are used to the digital world. The Regulation of the Minister of National Education Number 16 of 2017 states that one of the mandatory components of teachers is to utilize information technology for organizing educational learning activities. Challenges for teachers in the 21st century and with changes to the 2013 Curriculum, pedagogical competence of teachers as instructors demanded to be better able to design learning to make it more interesting (Daryanto and Karim, 2017).

The digital era is not only a challenge for teachers but also for tertiary institutions, especially related to improving the quality of human resources. The competence of teachers must increase according to technological developments to improve the quality of human resources. The improvement will be beneficial for teachers to teach and also for teacher career development. The study is to discover whether teachers who graduated from college have the competencies required by schools and to get

an overview of current teacher competencies according to needs in the digital era. Teachers must have four competencies (Mendikbud, 2007) and have skills in digital technology use in class.

Four Teacher Competencies

By the Regulation of the Minister of Education and Culture Indonesia Number 16 of 2007, there are four teacher competencies those are pedagogical, personal, social, and professional. Pedagogic competence consists of 10 (ten) items, personality 5 (five) items, social 4 (four) items, and professional 5 (five) items. With these four competencies, we hope all teachers will become professionals. The substitute of the 2006 Curriculum to be 2013 Curriculum following the National Education Standards based on Government Regulation Number 57 of 2021 it has an impact on changes in teacher competency standards. Competency standards by graduate competency standards, content standards, process standards, and assessment standards.

Literacy Needed by Teachers

 The concept of teacher competency can refer to Aoun's (2017) humanistic model, which is a model that combines the human side with technology application. A teacher must have competence those are data literacy, technology literacy, and human literacy. Data literacy includes abilities related to the ability to read, analyze and digital information. Technological literacy is the ability to understand how a machine works and technology. Human literacy is an ability related to humanity, communication, and design. The ability of data literacy, technology literacy, and human literacy is able to apply artificial intelligence in everyday life (Sudlow, 2017).

Two literacies, namely data literacy and technology literacy, have become literacy that dominates the industrial sector, especially industries based on production and automation techniques (Benešová & Tupa, 2017; Sudlow, 2017; Mourtzic, Vlachou, Dimitrakopoulos, & Zogopoulos, 2018; Sung, 2018). Because two literacy is widely used in the industrial sector, these two literacies can be run by machines so that it is feared that they will replace human labor. This paper will discuss teacher competencies needed by school principals referring to competencies in Permendikbud (2007) and competencies related to literacy concepts Aoun (2017).

Teacher Literacy and Competence

By combining data literacy competency, pedagogical competency, personality competency, social competency, human literacy, and professionalism, we hope that teacher competence will be more qualified. Integrating these competencies can be done by incorporating information technology literacy into competencies in pedagogical and professional aspects. Meanwhile, human literacy is mixed in personality competence and social competence. However, we have not been able to integrate data literacy into existing competencies because the relevance is remote. So for our data literacy competence, we create a separate group.

2 METHODOLOGY

Research data collection by distributing questionnaires to school principals. From the questionnaire data, we obtained data from 149 elementary school heads, 78 junior high school heads, and 45 high school heads. We collected data using a proportional stratified random sampling technique. We attack the number of respondents using $(n)=N/((1+(Nxe^2)))$, n is the number of samples, N is the population, and e is the level of error, which is 5%. The questionnaire that spreads the reach of 33 proxies uses a Likert scale of 4 with excellent (SB), good (B), average (TB), and poor (STB). As for statements for each aspect, namely literacy as much as 5, pedagogic 11, personality 6, social or human literacy 6, and professional 5. Data were analyzed using the formula: H= ([(4xSeparation)+1])/3 (Sumintono & Widiharso, 2013)

3 FINDINGS and discussion

After the data is processed, we can group the data into 7 difficulty strata based on the results of the statement logit distribution (Wibisono, 2016). Of the 28 statements used in this study, 13 statements fall into the categories of low scores. This means that school principals are not satisfied with this competency. So these 13 statements are statements of competence needed by teachers. Data literacy competence includes statements number 1, 2, and 3. Pedagogic competence includes statements 6, 8, 9, 12, and 13. Professional competence includes statements number 24, 25, 26, 27, and 28.

While there were 15 that were considered good by school principals, namely statements 4, 5, 7, 10, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, and 23. Principals gave high scores which shows that the principal is satisfied with the competence of the teachers.

So from these several statements, the findings are: (1) there are two competencies, namely personal and social competencies in all aspects that are excellent. (2) two competencies, namely data literacy competency and professional are the most needed competencies. (3) five pedagogic sub-

competencies are urgently needed, namely the ability to develop curriculum, the ability to utilize information and communication technology, the ability to facilitate the potential development of students, the ability to utilize the results of assessment and evaluation, and the ability to take reflective action to improve the quality of learning.

3.1 School Principal Satisfaction with Teacher Competence

The satisfaction of school principals regarding teacher competency is excellent at 1.6%, good at 51.6%, average at 46%, and poor at 0.8%. If the percentages of good and poor mixed, it becomes 47.4%, while excellent and good mixed, it becomes 53.2%. It means that school principals are satisfied with the competence of existing teachers, although not ignoring competencies that are sufficient.

To the demands of scientific development, there is a need for renewal. One of the reforms is the link and match that connects the world of education and industry. The need for teacher competence must be by the competency needs in the school world or in the world of work or the field. The need for this competency is in line with the trend of the needs of large companies, such as Microsoft and Apple (Care, Griffin, & McGaw, 2012; Salgues, 2018). The need for this competency also encourages schools to create qualified human resources as desired by the company (Care, Griffin, & McGaw, 2012). The formation of the competence of qualified workers starts with qualified teachers. Teacher competence now and in the future is closely related to the willingness of tertiary institutions to prepare their curriculum (Nasir, 2018). Hopefully, tertiary institutions are expected to produce quality graduates, especially teachers who have the competence and can adapt to the internet of think era and the big data era (Aoun, 2017).

3.2 School Principal Satisfaction with Teacher Competence

3.2.1   Data LiteracyCompetence

Data literacy includes skills, namely the ability to read, analyze, and use information in the digital world (Aoun, 2017; Sudlow, 2017), and these competencies are needed by workers (Aoun, 2017). When these literacies are applied in the field of education, they are hoped that teachers will be able to collect, analyze, and interpret data to help develop learning (Mandinach & Gummer, 2016; Huda, et al., 2017). It means that teachers can combine the understanding of data with standards, disciplinary knowledge and practices, curricular knowledge, pedagogical content knowledge, and an understanding of how children learn (Heafner, Fitchett, & Knowles, 2016).

Seven main knowledge areas are integrated with the use of data in the inquiry process. The seven knowledge areas are content knowledge, general pedagogy, curriculum, student characteristics, educational context, educational goals, and values (Mandinach & Gummer, 2016). These seven pieces of knowledge inform the use of data for the teaching domain (Mandinach & Gummer, 2016).

Literacy is an important element in improving learning (Campaign, 2014) with sub-aspects, namely breadth of insight across disciplines, the ability to comprehensively analyze data or information in supporting the learning process, and the ability to present data or information obtained. In the future, teachers in schools will be faced with very large, continuous, and very instant data (Aoun, 2017; Sudlow, 2017)

3.2.2 *Professionalism Competence*

The professionalism sub-competencies needed in this research consist of statements number 24, 25, 26, 27, and 28. These statements are often the subject of research studies. According to Dudung's research (2015), teachers' professional competence shows low, medium, and high. For science teachers at SMPN 1 Kota Ternate, low 26%, medium 46%, and high 28%. While teachers at SMPN Kota Tobelo shows low 27%, moderate 43%, and high 30%. Based on these data, they are still necessary to increase teacher qualifications related to professional competence.

The low competency in mastering and developing this material is due to the teacher's educational background. (Hidayat, Agusta, Siroj, & Hastiana, 2019). In addition, according to Wilujeng, Prasetyo and Djukri (2016) teachers are still experiencing difficulties related to the skills of integrating Basic Competency (KD) and Competency Achievement Indicators (GPA) in Subject Specific Pedagogic (SSP) analysis.

3.2.3 *Pedagogical Subcompetencies Required by Teachers*

The pedagogic sub-competencies that are urgently needed by teachers in the future include statements 6, 8, 9, 12, and 13. Research on the pedagogical competence of science teachers at SMPN Kota Ternate shows that there are low 12%, medium 36%, and high 52%. (Dudung, 2015). The pedagogic competence of SMPN teachers in Loa Kulu District, Kutai Kertanegara Regency, shows a low of 15%, a medium of 49%, and a high of 36% (Dudung, 2015). Research (Maryati, Prasetyo, Wilujeng, & Sumintono, 2019) shows that teachers have mastered curriculum knowledge and students' understanding of science.

Meanwhile, the competence to utilize information and communication technology for learning is still low. According to (Antony & Paidi, 2019), the technological pedagogical and content knowledge abilities of biology teachers at SMAN Magelang are low. The role of information and communication technology is predicted to change the role of teachers in the future (Baron, 1969; Mitzel, 1974).

4 CONCLUSION

This paper concludes that the principal is very satisfied with the current teacher competencies, although they still expect additional competencies in the form of data literacy competencies and professionalism.

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ONLINE LEARNING ON ACADEMIC WRITING: IMPLEMENTING THE EXPERIENTIAL LEARNING APPROACH

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Abstract

This present study aims to elaborate on the use of the experiential learning approach that can facilitate students in fulfilling their academic writing assignments. Writing an academic paper requires not only knowledge of the substance, but also the skills to write. Most of the students have no idea of what to write and how to write the proper academic paper. The Academic Writing Course is one of the courses which is offered to students. This course offered an online tutorial program to help the students to master their academic writing skills. This present study involved 30 participants. Those were the students who took an instructional online course on Academic Writing offered by the Educational Faculty of the Universitas Terbuka. The online course was designed and developed by implementing the principles of experiential learning which was aimed to facilitate the participants to write a proper academic paper. At the end of the program, the participants must submit an example of the written assignment of an academic paper. In this study, the papers were assessed and graded based on the rubric of the standard for academic writing papers. The results of the study indicate that implementing the experiential approach in academic writing courses facilitates the students in achieving the competencies in writing the proper academic paper.

Keywords: Online learning, academic writing, experiential approach.

Background

Recently, online learning has been used as a delivery mode of courses by many higher education institutions. Universitas Terbuka (UT), a higher education institution that implements the open and distant learning system, uses an online mode to support students' learning process. Online tutorial programs are offered to facilitate the students to attain the predetermined learning competencies. The Academic Writing Course is one of the courses which is offered to students. This course offered an online tutorial program to help the students to master their academic writing skills.

Academic writing skills are required for students since the majority of them face difficulties or problems in writing the proper academic papers. Karavas and Zorbas (2019) in this sense noted that one of the most disconcerting and dreadful moments for any college student is the laborious preparation and prompt submission of the academic writing assignment.

Most of the students have no idea of what to write and how to write the proper academic papers. Writing academic papers require not only knowledge of the substance, but also the skills to write. There are ten principles of writing a good standard of academic papers which include (1) clear purpose; (2) analytical period; (3) informative purpose; (4) audience engagement; (5) clear point of

view; (6) single focus; (7) logical organization; (8) strong support; (9) correct APA style; and (10) using formal words (Whitaker, 2009). These principles of academic writing must be applied to produce a good standard of academic paper.

Academic writing requires real experience and continuing exercise for the students. Indeed, the learners have to be involved in real learning activities to be able to write academic papers properly. Universitas Terbuka (UT) offers an academic writing course as a compulsory credit for all study programs. The students have to submit an academic paper as one of the requirements for completing their study program at UT.

Since the students have difficulties in writing the papers, UT must find an instructional approach that can be used appropriately to facilitate the student's learning process in writing the academic papers. It is assumed that the students have meaningful learning experiences to master their academic writing skills.

One of the instructional approaches that can be implemented to solve the students' learning problems in writing the paper is exposing the students to experiential learning. This approach provides the students with the opportunity to engage in the authentic experiences and activities of writing the academic paper. This present article will elaborate on the use of the experiential learning approach to facilitate students in fulfilling their academic writing assignments.

Research problems

The research problems that will be elaborated on in this present study include:

1. Does the experiential learning approach contribute to the student learning process in writing academic papers?
2. How to implement experiential learning that can facilitate the student's learning process of academic writing?

Literature review

Academic writing

Academic writing is, of course, any formal written work produced in an academic setting (Valdes, 2019). In addition, Oshima and Hogue (2017) note academic writing as the kind of writing used in high school and college classes. Academic writing is different from creative writing. The purpose of academic writing is to inform, analyze, and persuade the reader to engage critically in a scholarly dialogue. Valdes (2019) also noted that academic writing has the following specific characteristics such as (1) Literary analysis; (2) Research paper; (3) Dissertation; and (4) Impersonal tone.

Every paragraph and sentence of the academic paper related to that previously stated focus. The academic paper includes background or contextual information. The whole content of the academic paper is directed to support the stated thesis statement.

Academic writing requires a logical and straightforward structure. In general, it consists of an introduction, body paragraphs, and a conclusion. The introduction describes the background of information, lays out the essay's scope and purpose, and states the thesis. The body paragraphs of the academic writing support the thesis statement. Every paragraph of academic writing elaborates on the supporting point. The conclusion part of the academic writing refers back to the thesis, summarizes the main points, and highlights the implications of the paper's findings. Each sentence and paragraph is related to the next to present logic and a clear argument.

Academic writing needs well-informed arguments. The written statements must be supported by evidence from scholarly sources or quotations from a primary text. The use of evidence in academic writing provides credibility to the argument.

The purpose of academic writing is to communicate a logical argument from an objective standpoint. Emotional, inflammatory, or otherwise biased language must be avoided in academic writing. Agreement or disagreement with the idea must be presented accurately and objectively in academic writing.

The students must be involved in real writing experiences to master academic writing skills. It involves continuous practice and real-world experiences to be able to write the proper academic paper. The authentic learning approach must be implemented to facilitate the student's learning process of academic writing.

The experiential learning approach

Online learning

Online learning has been used by many educational institutions in the world. This new approach to teaching promises many advantages both for faculties and students. Online learning is defined from many perspectives. Online learning is defined as a new domain of learning that combines distance education with the practice of face-to-face instruction utilizing computer-mediated communication (Harasim, 2017).

Bakia, et.al. (2012) noted that online learning refers to instructional environments supported over the Internet. Online learning comprises a wide variety of programs that use the Internet within and

beyond school walls to provide access to instructional materials as well as facilitate interaction among teachers and students.

As a new model of teaching and learning, the use of online learning has some characteristics that promise advantages to support effective learning activities. Dull and Sakshi (2017) noted the following advantages of using online learning: " 1) Accessibility, 2) Personalised learning, 3) Develops cognitive abilities, 4) Cost-effectiveness, 5) Promotes research, 6) Basic computer skills, 7) Equal opportunity to all, 8) Self-pacing, and 9) Globalization.

Nevertheless, Dull and Sakshi (2017) also noted the disadvantages of using online learning as follows: " 1) Poor communication, 2) Feeling isolated, 3) Lack of motivation, 4) Lack of quality, and 5) Poor accessibility in Remote Areas."

To avoid the disadvantages of using online learning, it is necessary to design and develop the program in advance. The whole components of online learning – instructors, curriculum, students, methods and media, and supporting facilities – must be integrated to ensure that the program works well to enhance learning effectiveness.

Online students benefit greatly from the online learning program in the following ways: (1) because of their connectivity with one another, they can share knowledge and fulfill common goals, which can reduce students' dropout rates; (2) the relationship and interaction between the instructor and learners and among peer learners can increase student performances and their satisfaction of the course; and (3) learners can receive supports and help from their peers, and at the same time they can add their knowledge base through their interactive actions (Yuan & Kim, 2014)

The use of online learning has to engage the students in previously designed and developed learning activities. The students' learning engagement is one of the important factors determining the success of online learning.

The most powerful instruction is interactive and generative.

Interactive instruction actively engages the learner with the resources and learning context to construct new knowledge and skills. Generative instruction, like generative assessment, brings learners with different perspectives together to produce shared understandings. (Jones, B.F. et.al, 1995)

Media and technology, one important feature of using online learning, can be used to increase students' learning engagement in online learning. Appropriate selection of using media and instructional strategy enables the students to attain the learning outcomes.

Sun and Chen (2016) noted that the effectiveness of online instruction is dependent on well-designed course content, motivating interaction between the instructor and learners, and well-prepared and fully supported instructors. With our thorough analysis of this matter, this study further confirms that teachers definitely and indisputably play a crucial role in online education.

Experiential learning

Experiential learning is considered the idea that experiences are triggered through our intensive interactions and engagement with our real world. Learning in this sense is viewed as an inevitable product of experience. This learning theory is different from cognitive and behavioral learning theories as it takes a more holistic approach.

Experiential Learning is defined as the process of learning by doing. By engaging students in hands-on experiences and reflection, they are better able to connect theories and knowledge learned in the classroom to real-world situations. Implementing experiential learning provides benefits for students in terms of 1) a **better grasp of concepts, 2) the opportunity to be more creative, 3) the opportunity to reflect, 4) Students' mistakes become valuable experiences, 5)** engaging students' emotions as well as enhancing their knowledge and skills. (https://www.easchooltours.com/blog/experiential-learning-learn-through-experience).

In addition, Kolb and Kolb (2005) provide more insight into the definition of experiential learning through propositions of experiential learning theory. These propositions include 1) learning is best conceived as a process, not in terms of outcomes. 2) all learning is relearning. 3) learning requires the resolution of conflicts between dialectically opposed modes of adaptation to the world. 5) learning is a holistic process of adaptation to the world. 8) learning results from synergetic transactions between the person and the environment. 7) learning is the process of creating knowledge. (p. 194).

Methods

This present study involved 30 participants. Those were the students who took an instructional online course on Academic Writing offered by the Educational Faculty of the Universitas Terbuka. The online course was designed and developed by implementing the principles of experiential learning which was aimed to facilitate the participants to be the ability to write a proper academic paper. In this course, the participants wrote exercises systematically with real writing activities as experiential learning. The participants had to complete every step of the academic writing assignment for example introduction, research problem, research objective, literature review,

research method, findings, discussion, conclusion and recommendation, and references. Every step of the student's assignment was graded and provided constructive learning feedback.

At the end of the program, the participants must submit an example of the whole written assignment of the academic paper assignments. In this study, the papers were assessed and graded based on the rubric of the standard for academic writing papers. The rubrics of the academic writing standard can be shown in the following tables.

Table. The Academic Writing Standard

NO	STANDARDS	COMPONENTS
1	Problem Definition and Methodology	• Statement of the research problem, the aims of the paper, and the significance of the research. Explanation of the scope of the study. • Use of a research methodology appropriate to the task. • A discerning selection of the relevant, current, and seminal law (legislation, cases, main texts, and journal articles)
2	Analysis and Argumentation	• Analysis of the research sources used to address the research problem. • Discussion of implications of the analysis and its relationship to the research problem. • Use of logical argument. • Suggestions for law reform, directions of future research, or other avenues to promote the resolution of the issues (as appropriate to the specific task).
3	Structure and Writing	• Articulation and progression of major components or sections of the project. • Maintenance of the overall theme or point that gives the project coherence and significance. • Clarity, precision, and economy of writing.

		• Accurate use of academic language and writing conventions appropriate for the specific task.
4	Presentation and Referencing	• Good overall presentation of paper as appropriate to the task. • Appropriate pagination, layout, margins, typographical accuracy, consistent and appropriate citation style, use of headings, etc. • Correct attribution of sources through citations. • References are listed in the bibliography.

Source: https://www.monash.edu/__data/assets/pdf_file/0006/296025/Assessment-criteria-for-Masters-research-paper.pdf

In addition, the questionnaires and interview sessions were used to gather information regarding the students' perception of experiential learning in academic writing. The questionnaires and interview guide were based on the components of authentic learning shown in the following tables.

Research findings and discussion

The results of the study indicate that implementing the authentic learning approach in academic writing courses facilitates the students in achieving the ability in writing the proper academic paper. The provision of systematic steps in completing the academic writing helped students improve their understanding of writing the academic paper or article.

Real learning exercises during the process of academic writing were provided to facilitate students to complete their drafts of academic writing papers or articles. 95 % of the student achieved 85 % of the determined passing grade based on the academic standard rubrics. Students learned the substance or content better when they are allowed to encounter the real experience of academic writing (Kolb, 2014).

The systematic processes of writing an academic paper were introduced to students. The processes of writing include

In addition, Hill and Macdonald (2016), noted that constructive feedback provision during the academic process of learning facilitated the learners to improve their learning

performance. Providing constructive feedback enables the students to learn and correct their academic writing assignments during the process of learning.

Throughout the study that implements the process of experiential learning, the learner engaged in posing questions actively, investigating, experimenting, being curious, solving problems, assuming responsibility, being creative, and constructing meaning, and is challenged to take initiative, make decisions and be accountable for results. Students construct their knowledge of writing an academic paper by interacting with instructors, peers, and learning materials.

The analysis regarding students' perception of using experiential learning in writing academic papers indicated that the majority of the students were enthusiastic and enjoy the whole learning process. They are involved in the elements of experiential learning such as concrete experience, reflective observation, abstract conceptualization, and active experimentation. Kolb proposes the relationship between the elements of experiential learning in the following figure.
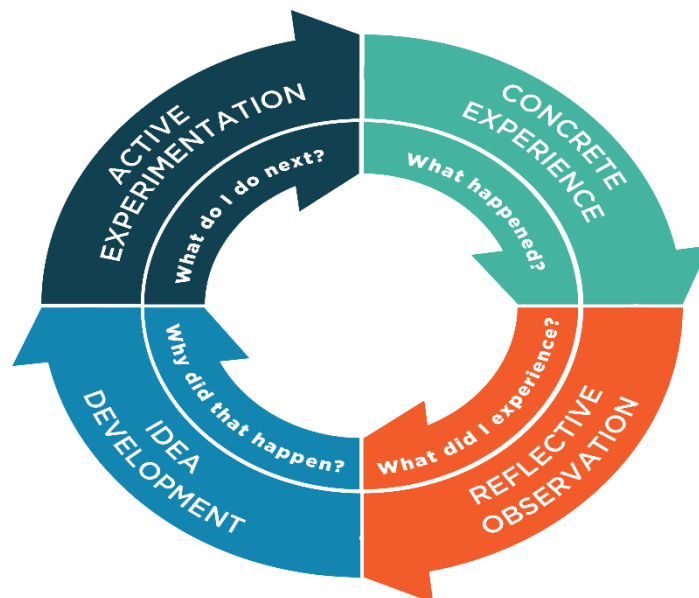
Gambar. Elements of Experiential Learning

https://www.google.com/search?q=learning+process+with+experiential+learning&rlz

Conclusions

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STUDENT INVOLVEMENT IN THE IMPLEMENTATION OF PRACTICUM IN DISTANCE EDUCATION FKIP UT

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Abstract

The COVID-19 pandemic has had a fairly broad impact, including in the field of education. Ut also felt considerable changes during the Covid-19 pandemic, especially in the implementation of practicum for UT FKIP students. The purpose of this study is to analyze student involvement in the implementation of practicum during the COVID-19 pandemic. This type of research is descriptive quantitative. This study involved 127 samples of FKIP UT'students. The instrument used in research activities is a questionnaire to obtain information about student activities and involvement in the implementation of practicum during the Covid-19 pandemic. To see the influencing factors, a test based on the p-value is used. Testing groups students into several factors including: gender, age, last education, location/region, UPBJJ and others. One of the conclusions in this study was drawn from the p-value obtained for each category. To see the relationship between student characteristics and student engagement, a correlation test was used. After the analysis is carried out, it can be concluded that if you want to increase involvement and compile instruments and guidelines for the standard process of implementing practicum, you need to pay attention to several things, including: location / domicile, type of tutorial given, student GPA and work done. In designing and implementing practicum activities, differences in student involvement that arise due to these factors need to be considered. Based on the results of the analysis between student characteristics and student involvement in the practicum, it shows that engagement will be strong when considering the enriching educational experience.

Keywords: student engagement, distance learning, science, learning technology

1   INTRODUCTION

The Covid-19 pandemic changed the academic environment significantly with the technological advancements that have developed today. Online learning is one of the best answers to the problems faced by the world of education during the pandemic. Universitas Terbuka (UT) as a pioneer of distance education in Indonesia has used the e-learning approach as one of the learning methods. One of the activities that can support student learning is practicum.

Practicum activities are usually carried out in the laboratory, where the activities include research with an object, observation, and revealing facts directly so that they can align with concepts that have been learned from a source of knowledge such as books, the internet, and research journals. This laboratory activity can provide students with an understanding of what they are learning (Rahmawati et al., 2021).

Praktikum is an activity that aims to equip students to understand concepts and theories better. This activity is a form of teaching and learning activity that is intended to strengthen the mastery of

applicable material. According to Romlah (2009), practical activities or practicums are often associated with science learning activities carried out by students in the laboratory, while Rustaman (2010) added that practicum is a learning carried out in a laboratory where students are expected to be able to apply the knowledge they have gained in lectures. The implementation of laboratory / practicum activities is one of the elements and efforts that cannot be separated from learning (Djohar Maknun, 2015).

Since there have been restrictions on interaction activities recommended by the government due to the spread of the Covid-19 virus, it has an impact on one type of tutorial organized by the UT. As of the beginning of 2020, TTM (Face-to-Face Tutorial) activities which are usually carried out offline (Outside the Network) are now replaced with Tuweb (Web Tutorials) which are carried out online (In Network). This change also has an impact on tutorial activities for practical courses. Practicum activities that must be carried out online receive more attention, because in practicum activities not only the results of student work are the subject of assessment, but the process during which students carry out practicum activities is also an assessment in itself.

Practicum is a learning method that is proxended in science learning because it has many advantages when compared to other methods. These advantages include: being able to cultivate students' confidence in the truth or conclusions through experiments they do instead of just receiving explanations from teachers or from books; able to develop an attitude to conduct exploratory studies on science and technology; able to cultivate scientific attitudes of students such as being honest, cooperative, critical, open, and tolerant (Rahayu & Eliyarti, 2019).

Practicum is essentially held with the aim of honing students' cognitive, affective, and psychomotor abilities. In addition, practicum can foster interaction between students and the teaching materials used. According to Malati (2012), through independent, guided practicum activities, and the use of optimal practicum facilities as a whole in the practicum implementation system, it is hoped that students can achieve their learning goals well. In terms of organizing practices and practicums during this pandemic, UT has carried out online mentoring through webinars and tutons.

In fact, at UT, which has very heterogeneous student characteristics, the implementation of the practicum must be modified so that it can be carried out in accordance with scientific rules. In addition, during the COVID-19 pandemic, student engagement has dropped and affected the final

results of the practicum assessment. There are several obstacles and obstacles found in the management of the implementation of this practicum, including human factors (managers, instructors, and students), facilities and infrastructure factors (location/place, costs, materials, and tools), and management factors (Malati, 2012).

Learning by carrying out practicum activities is very effective in achieving and increasing knowledge simultaneously, including training so that theory can be applied to real problems (cognitive), training activity planning independently (affective), and training the use of certain instruments (Elyas, 2018).

To further increase student involvement in the implementation of practicum, it is necessary to conduct an in-depth analysis of the factors that affect student involvement in the implementation of practicum activities. In addition, it is necessary to further study the relationship between student characteristics and student involvement in the implementation of practicum activities.

The formulation of the problem that will be answered in this study is:

Q1: What are the factors that influence student involvement in practicum implementation?

Q2: What is the correlation between student characteristics and student involvement in practicum activities?

2 METHODOLOGY

This type of research is descriptive quantitative. This study involved 127 samples of FKIP UT'students. The instrument used in research activities is a questionnaire to obtain information about student activities and involvement in the implementation of practicum during the Covid-19 pandemic. To see the influencing factors, a test based on the p-value is used. Testing groups students into several factors including: gender, age, last education, location/region, UPBJJ and others. One of the conclusions in this study was drawn from the p-value obtained for each category. To see the relationship between student characteristics and student engagement, a correlation test was used.

3 FINDINGS AND DISCUSSION

3.1 Characteristics of Respondents in Practicum Practice Courses

This study involved 127 respondents of FKIP students consisting of 68% women and aged between 21-56 years with an average age of around 34 years, and had an average income of around Rp. 1,918,566.93. Respondents are currently students in semesters 1-51 with an average semester of

around semesters 7 and 8. Figure 1 shows that the most respondents came from the provinces of Central Java and East Java (15.7%), then West Java (14.2), West Kalimantan (7.1), and Banten (6.3%).
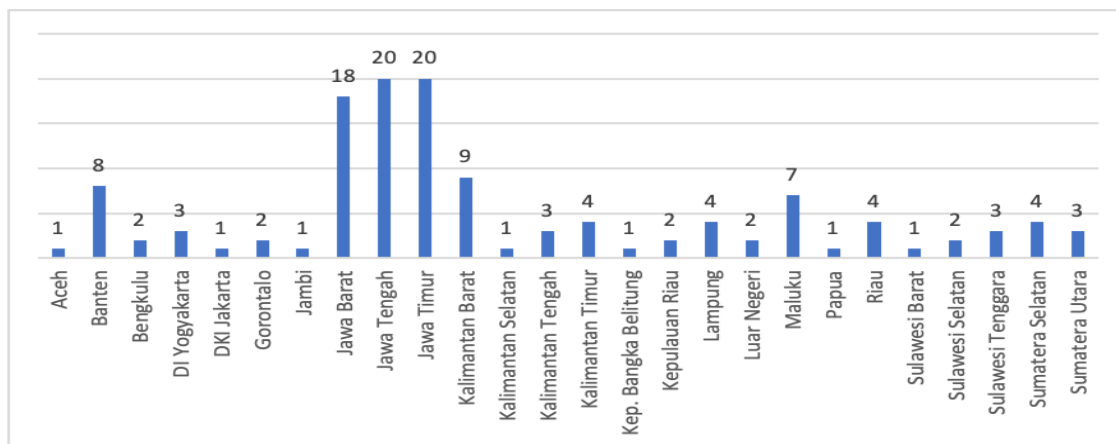
Figure 1. Provincial Distribution of Respondents to Practicum Course Students

3.2 Student Involvement in Practicum Subjects

Student engagement as straightforward and easy-to-understand engagement in the sense that the more students learn a subject, the more they know it, and the more students practice and get feedback from faculty and other staff about writing and how they solve problems collaboratively, the deeper they understand what they are learning". This understanding emphasizes how the results of student involvement in the learning process (such as participating in discussions and or collaborating in solving a given problem), as well as contributing to their learning and maintaining their further involvement in course activities. The activities in the sense of engagement above are a picture of student involvement in online learning which is the focus of this research.

Table 1 shows that there are some differences in student involvement in MK. Practicum, namely in the UPBJJ category, tutorial type, GPA, employment status, and domicile of the respondent's area of residence. This means that those who are enrolled in UPBJJ in Java, actively participate in online tutorials as well as web tutorials, achieve a GPA of the same / more than 3.34, and have a job status as full-time workers, and live in predominantly rural areas and border villages and cities have a better student engagement rate than vice versa.

Table 1. Comparison of Student Involvement in Practicum Subjects

Category	Sub-Categories	Number of Students (N=405)		Student Engagement		p-value
		N	%	Mean	SD	
Gender	Woman	86	68	131,53	18,68	0,170
	Man	41	32	135,63	13,97	
Age	< 30 years old	44	35	135,34	18,03	0,252
	≥ 30 years old	83	65	131,54	16,94	
Final Education	High school graduates are equal	60	47	131,93	18,61	0,575
	Non-High School Graduates as equals	67	53	133,69	16,24	
Courses	Exact	98	77	133,54	16,74	0,457
	Non Exact	29	23	130,55	19,40	
Year of Class	< Third year	39	31	134,97	14,47	0,318
	≥ Fourth year	88	69	131,92	18,48	
UPBJJ	Outside Java Island	57	45	129,07	18,03	**0.028***
	Java	70	55	135,94	16,26	
Device Type	Mobile & Tablet	62	49	130,97	19,27	0,235
	Laptop/PC	65	51	134,66	15,23	
Internet Access	Difficult and Very Difficult	16	13	126,19	19,04	0,146
	Easy and Very Easy	111	87	133,82	16,97	
Tutorial Type	Face-to-Face Practicum in the Laboratory / Online Tutorials / Web Tutorials	66	52	129,11	17,07	**0.011***
	Face-to-Face Practicum in the Laboratory / Online Tutorials & Web Tutorials	61	48	136,92	16,86	
Number of Practicums	< 2 practicum	70	55	134,64	15,93	0,208
	≥ 2 practicum	57	45	130,67	18,87	
Grade Point Average	< 3.34	97	76	130,69	18,28	**0.002*****
	≥ 3.34	30	24	139,87	11,64	
Types of Work	Non Teachers	9	7	124,78	13,99	0,108
	Teacher	118	93	133,47	17,48	
Working Period	< 6 years	84	66	134,17	18,59	0,201
	≥ 6 years	43	34	130,30	14,50	
Employment Status	Works Part Time & Freelance	50	39	128,62	19,88	**0.037***
	Works Full Time	77	61	135,61	14,99	
Income	< 1,000,000	44	35	133,23	19,83	0,871

Category	Sub-Categories	Number of Students (N=405)		Student Engagement		p-value
		N	%	Mean	SD	
Sources of Tuition Fees	≥ 1,000,000	83	65	132,66	16,01	0,838
	Alone & Family	123	97	132,95	17,13	
	Scholarships & Third Parties	4	3	130,00	26,36	
Regional Domicile	**Rural & Border Dominant**	95	75	134,58	18,19	**0.028***
	Urban & Overseas Dominant	32	25	127,75	13,56	
Duration of Study Before the Pandemic	< 3 Hours a Day	47	37	130,02	13,94	0,128
	≥ 3 Hours a Day	80	63	134,53	18,96	
Duration of Learning During the Pandemic	< 3 Hours a Day	46	36	130,35	16,39	0,211
	≥ 3 Hours a Day	81	64	134,28	17,81	

Description: ** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed).

3.3 The Relationship between Student Engagement and Respondent Characteristics

In addition to acting descriptively on each dimension of student involvement in this study, it also tried to find out what variables are related to student involvement based on the characteristics of respondents. The table of relationships in each course is presented in Table 5.

Table 2. The Relationship between Student Involvement and Characteristics of Practicum Course Respondents

Student Engagement	Correlation Coefficient
UPBJJ	0,198*
Tutorial Type	0,226*
Grade Point Average	0,244**
Level of Academic Challenge	0,907**
Active/collaborative learning	0,879**
Student-faculty interaction	0,791**
Enriching educational experience	0,877**

In Table 2 below, it can be seen that the characteristics of respondents related to student involvement in the Practicum course include: upbjj location, tutorial type, and cumulative achievement index. Meanwhile, the subdemence of respondents' student involvement that is most strongly related to this

course is the *level of academic challenge.* This means that to increase student involvement in this Practicum course, it is necessary to raise the level of academic challenges, especially related to the encouragement to give the best effort in each practicum, guidance on the implementation of practicum in class that encourages the emergence of ideas / ideas, or methods in the learning process, the experience of compiling and writing practicum reports more clearly, practicum experiences that make more critical thinking and analytical, as well as helping to reveal ideas more clearly.

In addition, the tasks in the implementation and reporting of the learning practicum should relate to the application of theories or concepts to practical problems and new situations, as well as help organize ideas, information or experiences into interpretation. Another thing is that the practicum task encourages students to complete on time and is able to analyze problems (quantitative) better after participating in the practicum implementation, as well as making it easier for students to learn all the modules in the assigned practicum guide / BMP. Practicum activities carried out in universities will restore the role of lecturers as supervisors or facilitators and students as implementers who must actively work experimenting in accordance with their goals of finding the expected scientific results (Rahayu & Eliyarti, 2019).

Practicum should be able to encourage the creation of joint success in study groups with a cooperative spirit (Ita, 2021). Practicum is a science literacy learning activity that is very important for students to have as a provision to face the challenges of the development of the 21st century (Abidin et al., 2020). In the stages of the learning process, many aspects can affect the quality of a learning process. One of the aspects that affect this is the quality of the implementation of practicum activities. The findings obtained in research related to student involvement in practicum activities become a reference in the development of standards and procedures for implementing practicum activities for FKIP UT students.

In the implementation of the learning process in the classroom, the implementation of practicum activities has a very crucial role to support the quality of results and the learning process because practicum activities will be more effective to improve students' expertise in observation and improve psychomotor skills / aspects as well as a means of practicing in using or utilizing tools and materials in the laboratory. In addition, practicum activities can develop student curiosity, will foster activeness, cooperation, accuracy, tolerance, and foster scientific honesty in students (Wahyudiati, 2016).

Practicum plays a very important role in lectures, this is because practicum activities will open up opportunities for students to apply and develop the process skills learned and can also develop the attitude of a researcher in supporting the process of understanding the material in students (Rahmawati et al., 2021).

4 CONCLUSION

Practicum activities are an important part of the lecture process at FKIP UT. Practicum activities can ideally increase student engagement and increase student understanding and knowledge. After the analysis is carried out, it can be concluded that if you want to increase involvement and compile instruments and guidelines for the standard process of implementing practicum, you need to pay attention to several things, including: location / domicile, type of tutorial given, student GPA and work done. In designing and implementing practicum activities, differences in student involvement that arise due to these factors need to be considered. Based on the results of the analysis between student characteristics and student involvement in the practicum, it shows that engagement will be strong when considering the enriching educational experience. The findings obtained in research related to student involvement in practicum activities become a reference in the development of standards and procedures for implementing practicum activities for FKIP UT students.

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BREAKTHROUGH STUDENTS WHO REGISTERED BASIC CHEMISTRY I COURSE IN SOLVING PROBLEMS IN ONLINE TUTORIAL

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Abstract

Online Tutorial (Tuton) is an internet-based tutorial service or web-based tutorial, which is offered by Universitas Terbuka (UT) and is followed by students via the internet and is one of the tutorials held by UT.The objectives of organizing Tuton are: Optimizing the use of the internet network to provide study assistance services to students, and enabling the distance learning process in a more communicative and interactive alternative choices for students who have access to the internet network to obtain optimal learning assistance services.To be able to access Tuton, students must activate an account on the http://elearning.ut.ac.id website Tuton is held every semester for 8 (eight) weeks or approximately 2 (two) months before carrying out UAS each semester. The contribution of the tuton value to the final value is a maximum of 30%. Maximum value can be obtained if students become active participants in implementing tutoring. Active participants are participants who read initiations, respond by asking questions or responses, discuss and work on assignments at initiations 3, 5 and 7. Students' breakthroughs in answering discussions and assignments in Kimia Dasar I (Basic Chemistry I)/KIMD4110 tutorials which mostly consist of molecular formulas and chemical structural formulas that are not easy to type in word format are manipulated by students by drawing in handwriting and then combining them with typing in word format.

Key words: tutorials, Kimia Dasar I, molecular formulas, chemical structural formulas, word format.

1   INTRODUCTION

In a traditional learning model, students arrive at class, the instructor introduces the material, expounds on relevant concepts, assigns follow up readings and assignments, and ends class. Students are then expected to go home, review their class notes, attempt to complete assigned readings and assignments, actually learn what was taught in class (which doesn't always happen), come to class the following week with any questions they have from the previous lecture, and be ready to move on and explore new material and concepts. The problem with this model is that it's ineffective, especially with subjects and material that are challenging to learn.

Tuton is an internet-based tutorial service or web-based tutorial (WBT), which is offered by UT and is followed by students via the internet and is one of the tutorials held by UT.

The objectives of organizing Tuton are:

1. Optimizing the use of the internet network to provide study assistance services to students.

2. Allows the distance learning process to be designed more communicatively and interactively Link.

3. Provide alternative choices for students who have access to the internet network to obtain optimal learning assistance services.

To be able to access Tuton, students must activate an account on the http://elearning.ut.ac.id website. After this process is carried out, students will get account password to be able to enter the Tuton site. Before students do the login process, it is recommended for students to download and read the tutorial guide that is available on the tutorial site.

Tuton is held every semester for 8 (eight) weeks or approximately 2 (two) months before carrying out UAS each semester. The contribution of the tuton value to the final value is a maximum of 30%. Maximum value can be obtained if students become active participants in implementing tutoring. Active participants are participants who read initiations, respond by asking questions or responses, discuss and work on assignments at initiations 3, 5 and 7. While passive participants are participants who only read initiations, without participating in providing questions, responses, and answers to assignments.

As Universitas Terbuka students' enrolments in Online Tutorial continue to increase, there is a need to understand how students can best apply self-regulated learning strategies to achieve academic success within the online environment. (Gary Cheng 2013).

This article was compiled using the literature review method and the author's experience as a tutor for Kimia Dasar I (Basic Chemistry I) at the UT Faculty of Science and Technology. Currently, the author teaches Basic Chemistry I Online Tutorials in 3 classes of 50 students each. This course is a compulsory subject that is registered by students of study programs within the UT Faculty of Science and Technology, namely, Food Technology, Biology, Agriculture, Mathematic, and Statistics.

The Basic Chemistry course (KIMD4110) is a basic course that contains the main ideas in chemistry which became the basis for the scientific thinking patterns of chemists in the past. The Subject Learning Outcomes (CPMK) are students who are able to explain basic principles in chemistry as a basis for studying science related to chemistry and understand basic concepts in basic chemical calculations and their application with advanced science. To achieve this goal, Basic Chemistry I Course consists of material on Introduction to chemistry, Atomic theory, Periodic arrangement and

electron configuration, Stoichiometry, Chemical bonds, Acids and bases, Introduction to chemical thermodynamics, chemical equilibrium, and chemical kinetics, Basics organic chemistry, and the basics of biochemistry. Basic Chemistry I is carried out synchronously and asynchronously. Evaluation of learning outcomes is carried out with participatory assignments, mandatory assignments, and end-of-semester exams.   Activities in the Tutorial class are for 8 sessions, in each session students are expected to: - Read the module according to what will be discussed

- Reading the Tutorial Activity Plan (RAT)

- Fill attendance at each session

- Reading and studying initiation

- Respond to discussions in each session

- Doing exercises in each session including the final practice in session 8

- Doing assignments in sessions 3, 5 and 7

- Fill out the tutorial evaluation instrument in session 7. (Universitas Terbuka 2022).

This study explores the students' self-regulated learning (SRL) ability and their achievement in a Kimia Dasar I cource. Undergraduate students are given the obligation to answer discussion assignments at the end of each meeting, and do 3 tutorial assignments at meetings 3, 5, and 7. (Universitas Terbuka 2022).

2   FINDINGS AND DISCUSSION

The author observes student responses in answering discussions in each meeting. Students' breakthroughs in answering discussions and assignments in chemistry course tutorials which mostly consist of molecular formulas and chemical structural formulas that are not easy to type in word format are improvement by students by drawing in handwriting and then combining them with typing in word format as follow:

1. An example of an uploaded discussion using handwriting

Figure 1. Discussion 1 on Acids and Bases

In Figure 1 It can be clearly seen that solving problems using handwriting can explain the structure of Lewis Bases. Thus, students understand and are competent about the material

2. An example of an uploaded tutorial assignment using a combination of handwriting and word format

Figure 2. Completion of Tutorial Assignment 1 on Reaction Equation

In Figure 2, student answers that combine word and handwritten formats are very clever and innovative thinking, this is one of the student breakthroughs in dealing with how to answer questions in online tutorials
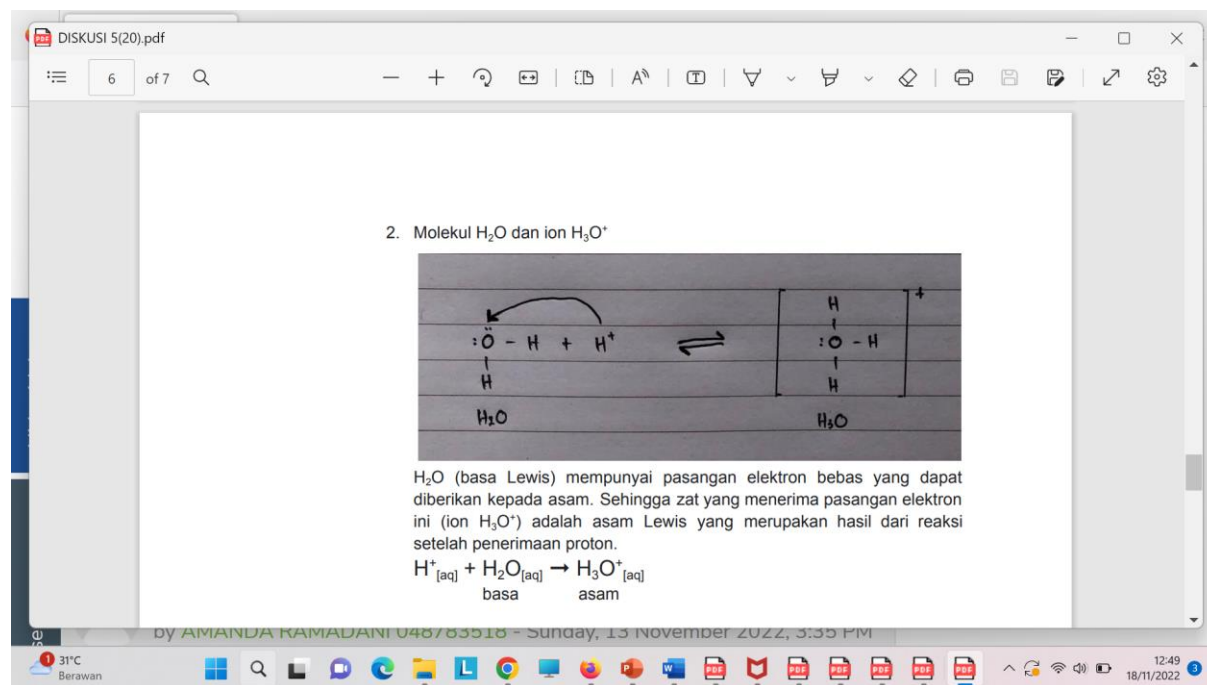
The following is an example of completing task between students who try to answer in word format compared to students' answers using handwriting

3. An example of an uploaded discussion using word format
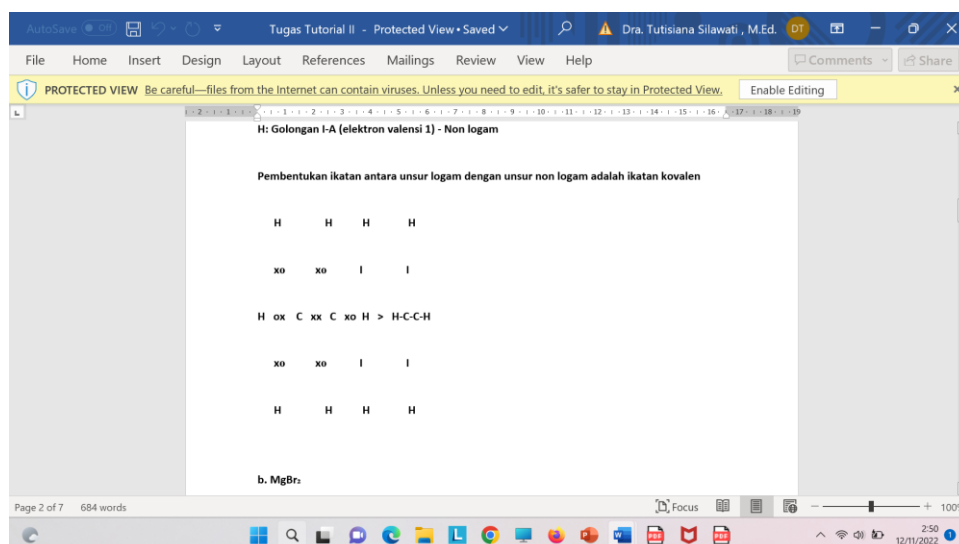
Figure 3. Tutorial Assignment 1 on Lewis's structure

From Figure 3, it can be seen that the students' answers using word format have difficulty in describing the Lewis structure for C2 H6

4. An example of an uploaded discussion using handwriting
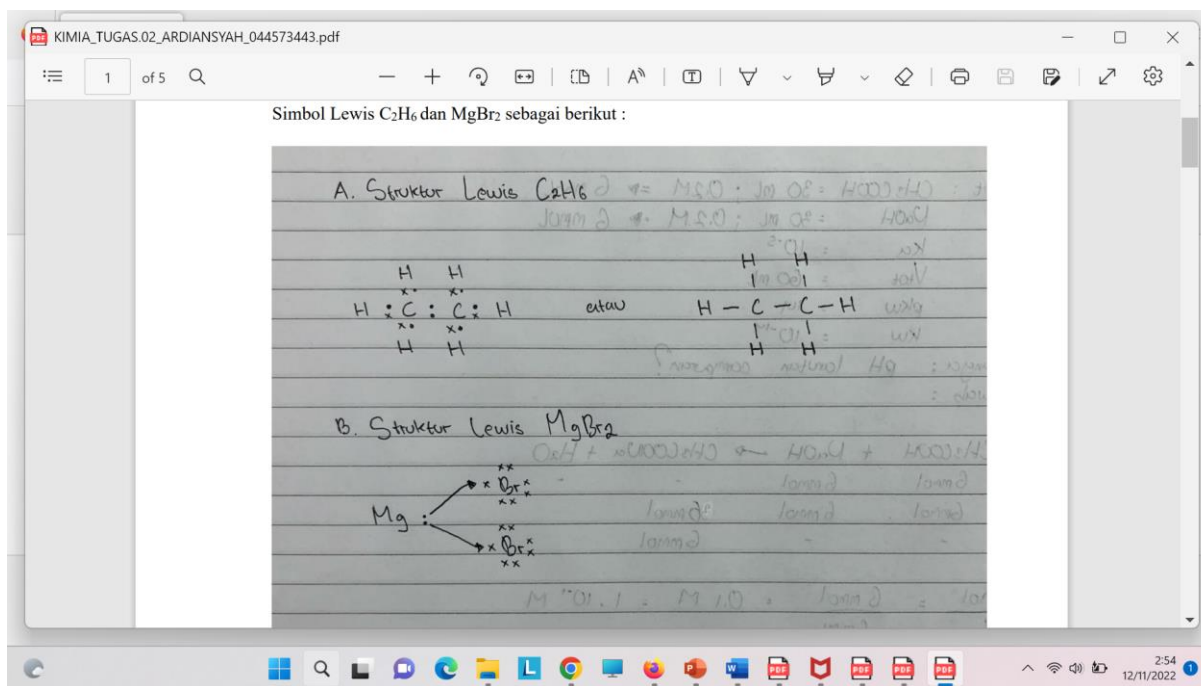
Figure 4. Tutorial Assignment 1 on Lewis's structure

In Figure 4, students can complete tutorial assignments using handwriting allows students to answer online tutorial assignments accurately and easily

3   CONCLUSION

Our findings reveal that Students in completing discussion discussions and assignments in the online tutorial for Basic Chemistry 1 by using a combination of handwriting and word format or using handwriting, it is easier and more accurate to describe the completion of the tutorial task. This article is only limited to the online tutorial for Basic Chemistry 1.

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THE AUTHORITY OF POLITICAL PARTIES IN RECALLING MEMBERS OF THE HOUSE OF REPRESENTATIVES WHO ARE SUSPECTED OF COMMITTING CRIMINAL ACTS

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Abstract

The recall arrangement reappeared in Law Number 22 of 2003 concerning the Composition and Position of the MPR, DPR and DPRD. In Article 85 subsection (1) it is affirmed that members of the House of Representatives stop between times because: a. death; b. resign as a member at his own request in writing; and c. proposed by the political party concerned. Recall is defined as the process of recalling a member of a representative institution to be dismissed and replaced with another member before the end of the term of office of the withdrawn member. From this understanding, it can be seen that the Recall mechanism is the prerogative of political parties.

Meanwhile, in Law Number 2 of 2011 concerning amendments to Law Number 2 of 2008 concerning Political Parties, it is stipulated in Article 12 that political party members who are members of a people's representative institution can be terminated from membership from a people's representative institution if: a. declare to resign from the membership of the political party concerned or declare to be a member of another political party; b. dismissed from membership of the political party concerned for violating AD and ART; or c. committed a violation of the laws and regulations that caused the person concerned to be dismissed.

Keywords: Political Party, recall, House of Representatives, Criminal Acts.

1 INTRODUCTION

In general, democracy can be interpreted as people's control over public affairs on the basis of political equality rooted in a spirit that upholds freedom and recognition of individual rights. In making a decision is based on the will of the majority, regardless of the differences in social and economic status backgrounds.

Democracy is born out of the spirit of breaking down traditional-patrimonial power relations and seeking to realize equality in the relationship of the people and the ruler. The legitimacy of power no longer comes from above like in the theocracy model, but is rooted from below, from the mandate given by the people. Therefore, whoever holds power must hear and embody the voice of the people if he wants his power to have the support of the people (*Vox populi vox dei*). If the ruler ignores the voice of the people, his power will undoubtedly not last because he will lose the trust of the people, and lose the mandate he holds[1].

Participation and accountability are the keywords that will determine the dynamics of politics. This opportunity for participation is concretely facilitated through elections which are essentially a

mechanism for renewing the social contract between the government and the people as holders of sovereignty. The holding of elections always has significance for the political course of a State, elections play an important role as[2] : (1) a form of peaceful change efforts; (2) elections become an arena for contestation and competition of various political forces in a fair manner; and (3) with elections, there are efforts to make the distance between institutions and the people close. The public can communicate with the institution. Given the important role of elections, it is not surprising that the holding of elections is always accompanied by the hope of improving power relations and political leadership.

The term *recall* in Indonesian constitution is known as a substitute between times (PAW) [3]. The right of recall in terminology in the political dictionary by B.N Marbun can be interpreted [4] " a process of recall or replacement of members of the House by its parent organization, namely a political party, *Recall* as etymology is "*recall*". Meanwhile, the right to recall a political party is a *recall* or dismissal in the term of office of a member of parliament (DPR / DPRD) by his political party.

2 METHODOLOGY

The research method used in this study is doctrinal law research method (doctrinal research) is research that examines laws that are conceptualized and developed on the basis of doctrines adopted by the conceptor or the developer[5]. It is called doctrinaire legal research, because this research is conducted or indicated only in written regulations or other legal materials. Research or document studies are due to this research being carried out more on secondary legal materials in libraries[6]. This type of research is also referred to as normative research, In accordance with the substance of the legal problem to be studied in this paper, namely the right to recall political parties. This writing is a writing that mainly examines the provisions and principles of law and the application of rules or norms in positive law

3 FINDINGS AND DISCUSSION

Recall is a natural thing to exist as an instrument / institution that can control the membership of the DPR, because when it meets one of the *recall* conditions above, the dpr membership concerned will be able to be dismissed during its term of office. We can imagine if this *recall* was abolished , where there was no mechanism for dismissing the house's membership and even if he made a

mistake. However, what becomes a problem is when this *right of recall* is also given to political parties, because according to Article 239 paragraph (2) letter d, g and letter h of Law Number 13 of 2019 concerning amendments to three laws 17 of 2014 concerning the People's Consultative Assembly (MPR), the House of Representatives (DPR), the Regional Representative Council (DPD), and the Regional People's Representative Council of the DPRD) states that it gives special authority to dismiss a member of a political party who will boil down to the determination of a person as a member of the House of Representatives as well, as well as in article 16 paragraph (1) letter d of Law Number 2 of 2011 concerning amendments to Law Number 2 of 2008 concerning Political parties which also explains that political parties can *recall* their members on the grounds that the member violates the Ad and ART of the political party.

When a person is dismissed as a member of a political party carrying it, it will also be followed by dismissal from membership of the House of Representatives and more tragically if a member of the political party concerned moves or becomes a member of another political party, it will be recaal from the membership of the DPR (Article 16 paragraph (1) letter c) and from that article, there is a conflict of norms between the norms regulated in article 16 paragraph (1) letter c of Law number 2 of 2011 tentai political parties with norms regulated in Article 28E paragraph (3) of the 1945 Constitution which states "everyone has the right to freedom of association, assembly and expression of opinion" so as to cause juridical consequences that are both private law and public law.

3.1 Authority of Political Parties

In essence, political parties have the main function of seeking and maintaining power, besides that political parties also have fun gsi among others[7]:First, As a Means of Political Communication, in carrying out functions as a means of political communication, political parties have an important role as a liaison between the governing and the goverished. Second, as a means of political socialization, the function of party politics is an effort to create an *image* that political parties fight for the public interest and higher in value if they are able to educate their members to become human beings who are aware of their responsibilities as citizens and put their own interests under the national interest. Third, as a means of political recruitment, the function of this political party is the selection of leadership and qualified cadres. Fourth, Political participation, political participation is the activity of ordinary citizens in influencing the process of making and implementing general policies and in participating in determining the implementation of government. Fifth, as a means of regulating

conflict, the potential for conflict always exists in every society. The heterogeneous Indonesian state consists of ethnicity, religion, and others. Such differences can lead to conflicts. Thus political parties carry out the function of being conflict regulators.

3.1.1 Recall Authority by Political Parties

Recall in the Indonesian constitutional system and as part of the consequences of a democratic state in carrying out the wheels of government must be in accordance with the wishes or aspirations of the people, as stated in the 1945 Constitution of the Republic of Indonesia Article 1 paragraph (2) expressly hints that Indonesia recognizes the sovereignty of the people. In other words, the ruling government must gain legitimacy or recognition from the people. In the Indonesian government system, the legitimacy of the people is represented to the people's representatives who sit in the DPR RI at the central level and the regional level DPRD. [8]

3.1.2 Recall of Board Members suspected of committing Criminal Acts

Recall reappeared in Law No. 22 of 2003 concerning the composition and position of the MPR, DPR, and DPRD. In Article 85 paragraph (1) it is emphasized that members of the House of Representatives stop between times because: 1. Unable to carry out their duties on an ongoing basis or are unable to remain as members of the DPR; 2. No longer meets the requirements for candidates for Members of the House of Representatives as referred to in the Law on ELECTIONS;3. Violate the oath/promise, code of ethics of the DPR, and/or not carry out obligations as a member of the DPR based on the results of the examination of the honorary body of the DPR; 4. Violates the regulations prohibiting duplicate positions as stipulated in the provisions of the laws and regulations; 5. Found guilty based on a court decision that has permanent legal force for violating a criminal offense with a criminal threat of as low as five years in prison.

Regarding the People's Consultative Assembly, the House of Representatives, the Regional Representative Council, and the Regional People's Representative Council, it is determined that a member of the House of Representatives (DPR) can be dismissed from membership in the House of Representatives (DPR) through Inter-Time Dismissal (PAW), if: a. unable to carry out duties on an ongoing basis or unable to remain as a member of the DPR for 3 (three) consecutive months without any information; b. violates the oath/promise of office and the code of ethics of the House; c. found guilty based on a court decision that has obtained permanent legal force for committing a criminal

act that carries a penalty of imprisonment of 5 (five) years or more; d. not attending plenary meetings and/or meetings of dpr fittings which are his duties and obligations as many as 6 (six) times in a row without valid reasons; e. proposed by his political party in accordance with the laws and regulations; f. no longer qualified as a candidate for DPR member in accordance with the provisions of the laws and regulations regarding the general election of members of the DPR, DPD, and DPRD; g. violates the prohibition provisions as stipulated in Law Number 27 of 2009 concerning the MPR, DPR, DPD, and DPRD; h. dismissed as a member of a political party in accordance with the provisions of laws and regulations; or i. be a member of another political party.

The problem arises if the recall is made when a new board member is suspected of committing a criminal offence contrary to the principle of presumption of innocence but the Honourable Body, as the body authorized to enforce the code of conduct and order of the members of the Council, expressed its readiness to crack down on troubled members of the House. For a member of the Board who stumbles upon a criminal case, as long as the status has not been accused, it cannot be temporarily dismissed (disabled). So if the status is already the new defendant is biased to be temporarily deactivated in office. The HonorAry Body of the Council must uphold the principle of presumption of innocence. Because, even in court hearings, many of the Members were eventually acquitted. The HonorAry Board cannot process Board members who are still undergoing legal proceedings. The HonorAry Body may only deactivate a member of the Board if it is already a defendant.

4 CONCLUSION

Recall by Political Parties cannot be eliminated and is still needed to control its members who sit as members of the people's representative body in the House. However, the right and the people in making recall decisions are still needed as a form of People's Sovereignty which is embraced in order to continue to create checks and balances in the management of the state. So the role of Political Parties as a place where councillors are housed plays an important role in terms of conducting Recalls when there are Councillors who are suspected of committing these criminal acts are more in the forefront of ethics and moral responsibility before the Community.

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DEVELOPMENT OF OFFLINE LEARNING MEDIA REPOSITORY

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Abstract

Currently the repository is a rich potential source of useful information, data, images and research results. Repositories are systems that enable institutions to store and manage digital documents as well as interact and collaborate between users within one institution. There are several digital library software available as "open source" or as "proprietary format". Open source software helps primarily in lowering initial and ongoing costs, eliminating vendor lock-in and allowing for greater application flexibility. The main advantage of open source software is that it is generally free to use such as the DSpace application. DSpace is an open source software platform for storing, managing and distributing collections in digital format. The DSpace application supports the generation of digital archives that are more permanent and shareable than analog archives. DSpace can support various kinds of artifacts, including learning media. Learning media is a physical tool, which is used by humans as an intermediary tool in conveying ideas about subject matter. The subject matter is related to real situations. Such as digital 3D scans (objects, photographic films, videos, research data sets). This research is a development with the R&D method. The first year (2022) Scheme Analysis, Design, Development, Implementation and Evaluations (ADDIE) Development Model produces an offline repository application prototype and the 2nd year (2023) model and implementation guide.

Keywords: offline learning, media repository

1 INTRODUCTION

Entering the era of the industrial revolution 4.0, all parties began to improve to make adjustments. Human resources are required to have 21st century skills in order to be able to compete in the industrial environment. Educational institutions are starting to apply 21st century learning methods to unlock the potential of every student.

The era of the Industrial Revolution 4.0 was marked by the increasing number of job automation using the internet, robots, and AI (Artificial Intelligence). Referring to this, it is predicted that several professions will disappear and be replaced by technology. Types of work that are quite vulnerable to being replaced are jobs that are repetitive in nature. This condition is quite threatening for workers with low levels of education who tend to work in repetitive lines of work.

This global problem encourages the need to formulate skills or skills that are needed to deal with this revolution. WEF or the World Economic Forum formulates a framework called 21st Century Education. This formulation is then used by educational institutions to form a 21st century learning model that can spark the potential of students so that when they graduate they can become superior human resources. Seeing the demands of the world of work above, the contribution of learning media

is by utilizing repository applications in supporting learning processes that are relevant to current and future conditions.

Currently the repository is a rich potential source of useful information, data, images and research results. Repositories are systems that enable institutions to store and manage digital documents as well as interact and collaborate between users within one institution. There are several digital library software available as "open source" or as "proprietary format". Open source software helps primarily in lowering initial and ongoing costs, eliminating vendor lock-in and allowing for greater application flexibility. The main advantage of open source software is that it is generally free to use such as the DSpace application.

The ultimate goal of this research is to produce an offline learning media repository model with the following annual objectives:

1. analyze and map the needs of the application
2. develop models and implementation guidelines
3. developing policy briefs and recommendations, as well as testing application utilization

Stages of the development of DSpace, including:

1. Defining the DSpace Service Offering.

DSpace is a flexible and powerful repository system. Before building the technical infrastructure of the system, it is important to define exactly how to plan to use the system and what types of services will be offered.

2. Creating Service Support Infrastructure

Just as a technical staff builds DSpace's technical infrastructure, it is necessary to build DSpace's service infrastructure. Building a DSpace service requires input and planning from various sectors of the research institution such as staff and administrators.

3. DSpace Object Model (Building Communities and Collections)

DSpace is designed to make participation by depositors easy. Information systems are built around the idea of organizational "Communities", natural sub-units of institutions that have the information management needs. Each community can adapt the system to meet specific needs and manage its

own collection process. Items are arranged into a hierarchy which resembles items that are grouped and aggregated into collections of similar content. Community is the highest level of organizational content. Just like a collection that can enter into more than one community. Each item stored in the DSpace repository is made up of a binding of streams, so that files can be stored in a single digital object as many times as needed. Bitstreams follow the bitstream format that has been recognized by the previous system, and DSpace has the opposite behavior with different types of objects, for example an image can be displayed as a thumbnail when browsing the system.

4. DSpace metadata

Uses qualified Dublin Core metadata standards to intellectually describe items. Only 3 fields are needed, namely title, language, and submission date, the other fields are optional. There are fields for document abstracts, keywords, and technical metadata and rights metadata, among others. This metadata is displayed in the item log in DSpace, and is indexed for system browsing and searching (within collections, between collections, or between communities). For the Dissemination Information Package (DIP) of the OAIS framework, the system currently exports metadata and digital materials in a custom XML schema while metadata works with the METS community to develop the necessary extension schematics for technical metadata and permissions about digital formats. haphazard.

5. User Interfaces

DSpace's current user interface is web-based. There are several interfaces, one for collectors and another involved in the collection process, one for end-users who want to find information, and one for system administrators. Both end-user and public interfaces support searching and receiving of items by browsing or searching the metadata (all fields now, and certain fields in the future). Once the item is placed in the system, receipt can be completed by clicking on the link which will cause the archived material to be downloaded to the user's web browser. "Web-native" formats (which will display directly in a web browser or with a plug-in) can be viewed directly, other formats must be saved to the user's local computer and viewed in a separate program and can interpret the file (for example a Microsoft spreadsheet Excel, SAS datasets, or CAD/CAM files).

6. Technology Platforms

DSpace was developed to be open source, and in this case institutions and organizations with minimal resources can run it. The system is designed to run on the UNIX platform, and includes middleware and other open source tools, and programs written by the DSpace team. All original code is written in the Java programming language. Other connected technologies include relational database management system (PostgreSQL), web server and Java servlet engine (Apache and Tomcat, both from Apache Foundation), Jena (RDF toolkit from HP labs), OAICat from OCLC, and several other useful libraries . All leveraged components and libraries are also open source software.

7. System Architecture

The DSpace architecture is a straight 3-layer architecture, which includes the storage, business, and application layers. Each uses the API documentation to allow for customization and future additions. The storage layer is implemented using a file system, as well as database tables managed by PostgreSQL. The business layer is where DSpace's specific functionality resides, including workflow, content management, administration, and module discovery. Each module has an API that allows DSpace adopters to override and add to that functionality as desired. Furthermore, the application layer overrides the interfaces of the system: the web UI and the batch loader, to a certain extent, but also on the OAI support and server handles to resolve persistent identifiers on DSpace items. This layer will receive a lot of attention regarding future releases, such as adding web services for new features (eg to support interoperability with other systems) and defining government services across institutional reach by adopting DSpace.

8. DSpace

In a purposive system, perhaps the most critical aspect of the system is how data enters the system. This appears in DSpace in 2 ways. UT's web base for the software allows its users to submit items to collections as long as they are logged in as a registered user. When users log in, they are passed through a configurable workflow where they can upload and describe their collected items. DSpace Ingest Process Alternatively, DSpace Administrators who have content to be imported in large-scale batches can take advantage of the system's import/export functionality. Item importer is a command line tool that comes bundled with the system and allows the user to import a collection of content into the system archive_directory/ item_000/ dublin_core.xml — qualified Dublin Core metadata contents — text file containing one line per filename file_1.doc — files to be added as bitstreams to

the item file_2.pdf item_001/ dublin_core.xml contents file_1.prg. DSpace's Simple Archive Format for Importing and Exporting. The item importer uses the DSpace archive format, which is a simple directory that stores items to be imported into the system (An example of a simple archive is shown in Figure 4 above). A top-level archive directory contains unique directory names, each containing everything needed to import a single item. Each sub-folder is required to store 2 files, in addition to the actual content to be imported. The required file "dublin_core.xml" contains an XML representation of the qualified Dublin Core element names and textual content containing metadata notes, including author, title, and so on. A flat text "content" file has one line containing the filenames of each file that will be included in the digital object. When this structure is put in place, the import command can be executed immediately and all content will be imported into the repository. The tool provides a "map file" after run, which describes all imported items and their new location in the system, this file can be useful in the future for exporting or removing imported contentAlur Kerja DSpace

The DSpace collection system workflow is a critical part of the DSpace architecture allowing the collection, processing, and eventual addition of content to an existing repository. The model owned by DSpace, including EPeople, is a user who is registered with the system and has certain authorizations, roles, rights, and privileges that translate the ability to complete certain tasks in the DSpace system. Collection usually begins with the system asking the user a few questions about the digital documents to be added to the repository and some of the files associated with the collection. The system leads the user through several steps:

Description 1.

Describe Users enter metadata about the documents they collect, including the author, title, keywords, and description

Description 2.

Upload Users select and upload files present on the local machine that they will upload as part of the submission. Each file type is identified by the system and the user verifies it.

Description 3.

Verify Here an overview of all the details of the collection is given, including a summary of the metadata that has been entered and the files associated with the collection.

Description 4.

License The user is shown and must agree to the license the system administrator has assigned to collect content for this collection.

Description 5.

Complete The user action in the collection process has been completed. Based on the defined workflow steps for collection, items may be added immediately to the collection or must be reviewed by a system administrator prior to addition to the collection.

9. Deployment Items that have been collected and archived into DSpace digital library repository

Can be distributed and accessed by users via the internet and browsers. DSpace provides its users with the ability to search for DSpace items in a simple, easy, and sophisticated way. From the DSpace home page, users can see all the items in DSpace by category of author, title, or publication date.

10. DSpace Observations

Provides a way to organize research and publication materials in professionally organized repositories to provide great visibility and accessibility over time. It can help to:

a. Get research results quickly, to a worldwide audience
b. Reaching a worldwide audience through its openness with course management systems
c. Archiving and distributing material that can be placed on personal websites
d. Save examples of student projects (with approval)
e. Displaying student thesis (with approval)
f. Keeps track of personal publications/bibliographies
g. Have a strong network identifier to work with, which will never change or get corrupted.

2   METHODOLOGY

Analysis, Design, Development, Implementation and Evaluations (ADDIE) Development Model Research and development methods or in English is Research and Development is a research method

used to produce certain products, and test the effectiveness of these products (Sugiyono, 2017). Model development can be interpreted as an effort to expand or bring a condition or situation on a regular basis to a better situation or condition (Trisiana and Wartoyo, 2016). This research and development is longitudinal (in stages), because in producing a particular product research is used which is needs analysis in nature and in producing product effectiveness so that it can function in society it is necessary to test the effectiveness of the product. This research and development produces a product in the form of media. The ADDIE development model is a model used to design and develop learning programs that contain analysis, design, development, implementation and evaluation.

1. Analysis (Analysis) The analysis phase is the initial stage in the development of the ADDIE media model. Trisiana and Wartoyo (2016) state that the analysis stage is a process of defining what the participants (students) will learn, namely conducting a needs assessment and conducting a task analysis. At this analysis stage, it is necessary to analyze the existing problems in the field, namely needs analysis and performance analysis. This research is focused on the problem of learning models/methods that have been applied. After the problem is identified, then the right product development plan is carried out to overcome the problem. At this stage the researcher will also analyze the feasibility and requirements for product development that can overcome these problems.

2. Design (Design) The design stage is the product or media design stage that will be used. The product design process begins with designing storyboards, creating materials, questions and answer keys, selecting backgrounds, images and backsounds. This is in line with Pribadi (2016) in the design stage what needs to be done is to design a program and determine a format in the form of competencies, methods, media and evaluation of learning outcomes. The design at this stage is still conceptual and serves as the basis for the subsequent development process.

3. Development Development in the ADDIE model is in the form of realization of the product design that was carried out in the previous stage. At the development stage, the conceptual framework will be realized into a product. Product testing is carried out by validating experts to assess the feasibility of learning media before it is implemented.

4. Implementation (Implementation) At the implementation stage, the product that has been developed will be used in class for the learning process. The implementation can be done in several stages, including: Small group trials According to Sadiman (in Imunandar and Mardiyah, 2016) the number of small group trial subjects was 9-20 students and 30 students in field trials. At this stage a trial was carried out by 20 students with different student characteristics. In this trial it was intended to find out the opinions and input from students as a basis for further product evaluation and revision. b. Large group or field trials. This trial was conducted by 15-36 students. Researchers monitor the course of activities as long as learning media are used by students in class. At this stage questionnaires were also distributed to assess media responses, apart from students, teachers also distributed teacher response questionnaires.

5. Evaluation Evaluation is the final stage of developing the ADDIE model. Evaluation is carried out to assess whether product development is in accordance with the expected specifications or not. The purpose of this evaluation is to provide feedback and revisions if needed to the developer.

System Development Stages

In the development of information systems there is a system life cycle, which is to describe the process of building an information system in a structured and orderly manner. Several systems development frameworks are based on the systems development life cycle. O'Brien (2009) stated, "SDLC (System Development Life Cycle) is a cycle that describes the software being built". Fatta (2007) System Development Life Cycle (SDLC) is a framework that describes the activities carried out at each stage of making a software. Mulyani (2016) argues that, "SDLC is a logical process used by a system analyst to develop an information system". Rosa and Shalahudin (2015) concluded that, "SDLC or software development life cycle or often called the system development life cycle is the process of developing or changing a software system using models and methodologies that people used to develop previous software systems." . From the description of some of the opinions above, it can be seen that the system development life cycle is a framework or description of the activities that will be carried out to carry out system development. The seven stages in the systems development life cycle proposed by Kendall and Kendall (2007), namely,

    a. Identification of problems, opportunities and goals.

b. Determination of user information requirements.

c. Analysis of system requirements.

d. Recommended system design.

e. Software development and documentation.

f. Test and maintain the system.

g. System implementation and evaluation.

System Analysis

System analysis is carried out to study and understand the running system and the problems that are currently occurring in the old system so that it can provide a solution to the problematic system. Sutabri (2004) put forward a definition of system analysis, namely, a report that can describe systems that have been studied and known problems to determine new directions and strategies, as well as develop alternative solutions to problems that arise in order to make specifications in decision making. According to Kendall & Kendall (2007) system analysis is the decomposition of a complete information system into its component parts with a view to identifying and evaluating problems, opportunities, obstacles that occur and expected needs so that from the analysis results can be proposed improvements to the system. that information. According to Laudon (2010) states that, "system analysis consists of defining problems, identifying causes, determining solutions, and identifying information needs that must be met with system solutions". McLeod and Schell (2007) stated that, "system analysis is research on existing systems with the aim of designing new systems or updated systems".

Previous research on Repository Design has been done before by other researchers so this research is not a new research. Research title on Design of Institutional Repository System for High School of Agricultural Agribusiness Plantation Medan by Dewi Suriani in 2016 with the type of research namely descriptive qualitative research, the results obtained for designing a repository system at STIPAP-Medan, namely based on system requirements analysis carried out found 3 (three) points The main requirements for their system are

1. The type of repository collection currently in STIPAP
2. Procedures for managing repository collections
3. Repository service

Product development results:
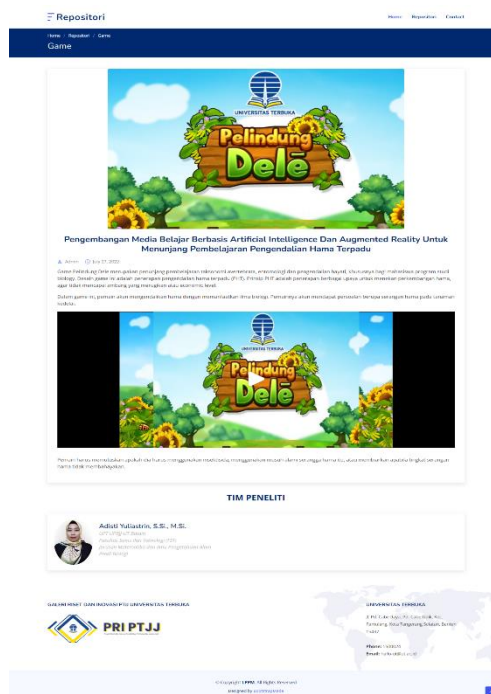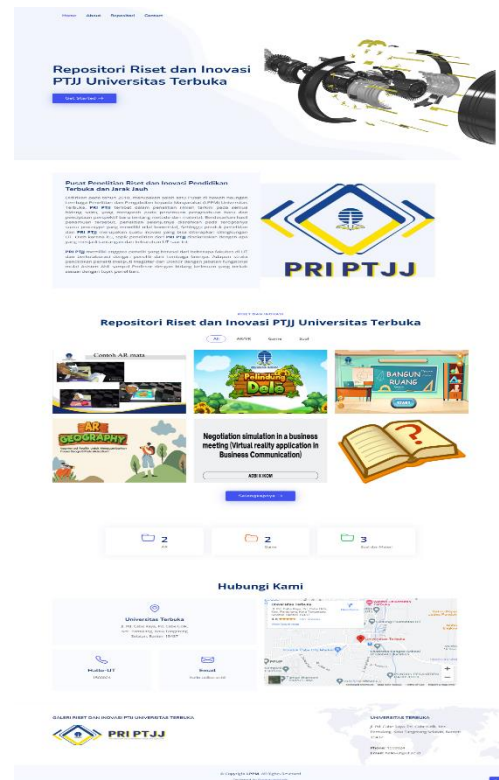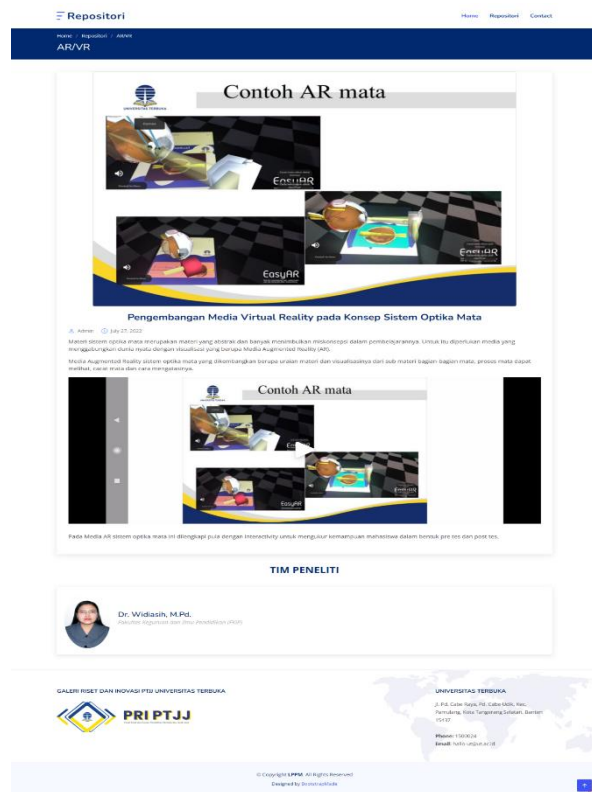
3 CONCLUSION

Research related to the creation of Institutional Repositories with various platforms, including:

1. The offline-based repository development program helps in providing a very massive variety of materials

2. The media repository that has been developed uses an application

3. One of the materials included in this offline repository application consists of learning materials and access UT

4. The results of application trials show various problems in storing material and require conditions of adjustment to the available application loads and the need for further development

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LIGHTWEIGHT E-LEARNING USING BLUDIT CMS FOR STUDENT WITH LOW-BANDWITH INTERNET

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Abstract

More student can use internet to learn but the speed of the internet is not the same on every area. Many student in remote or faraway places had trouble to learn with internet because of the low-bandwith internet. Bludit CMS is a flat-file content management system that can make a website without using databases, that make a website is lightweight. This paper explains the posibility to make an open educational resource and or e-learning platform using Bludit CMS that can be use to learn by student with low-bandwith internet.

Keywords: e-learning platform, flat-file cms, low-bandwith internet learning, bludit

1   INTRODUCTION

As the internet penetration and internet user in the world getting higher, e-learning is booming everywhere. The problem is every place has different speed and stability of the internet, especially in remote areas. Internet in developed country is different with internet in developing countries. This happen to make e-learning accessibility differs in some parts of the world.

Education is a basic human right (UNESCO, 2022). E-learning is one of the method for people doing distance learning. E-learning can be use asynchronously and not limited to time and space.

On around 2016, flat-file content management system (CMS) is gaining more user and recogniztion. Flat-file CMS didn't use database, that make it very lightweight. An e-learning website that is lightweight more likely to be easily accesed with student with low-bandwith internet.

The question of the study is can a flat-file CMS (Bludit) be use for e-learning alternative? How to do it?

The aim of this study is to give reference for educator on the use of flat-file CMS, in this case Bludit, to make e-learning more accessible especially for student with low-bandwith or slow internet.

2   METHODOLOGY

This study using RnD Method with ADDIE Model. ADDIE Model using five-step process: Analysis, Design, Development, Implementation, and Evaluation. The data gathered for analysis is from the Bludit official documentation and forum. And then the author install Bludit CMS on the webserver using the default template and making the content for e-learning. And then, the website is live and evaluated. For this study, the domain of the website is kampus.nihanlanisy.com. The website then

evaluated with https://tools.pingdom.com/ to know how easy and lightweight the website is (using Asia-Tokyo server).

3   FINDINGS AND DISCUSSION

Bludit in the official documentation stated that. "*Bludit is a web application to build your own **website** or **blog** in seconds; it's completely **free and open source**. Bludit is a Flat-File CMS, which (in this case) means that Bludit uses files in the **JSON** format to store the content. You don't need to install or configure a database; you only need a web server with PHP support.".* Bludit is not the only flat-file CMS around, there're Grav, Nibbleblog, Flatpress, etc. Those flat-file CMS share similar characteristic with major difference on the user interface of the admin panel.

The website that been made (kampus.nihanlanisy.com) is a simple blog that contains material as e-learning to learn about website making. The content is distributed as a blog that can be searched, without feature for grading, discussion, etc. The main goal is to serve the learning material first. Below is how it loaded for the homepage https://kampus.nihanlanisy.com. The loadtime is 1.21 second and the homepage is as low as 1MB in size.
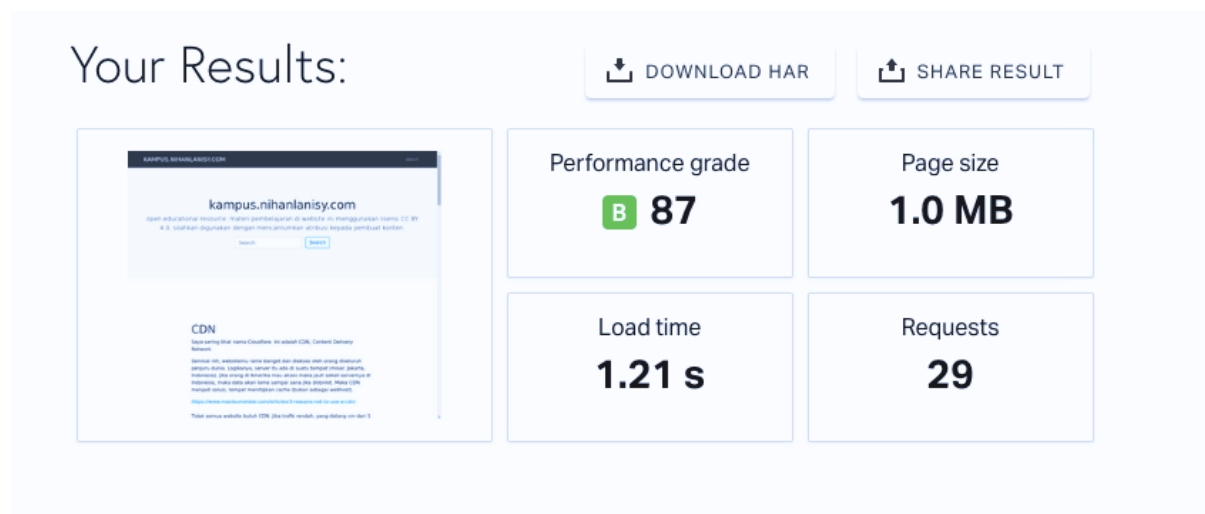
And then for the test of an example page of https://kampus.nihanlanisy.com/autocrat (picture below), with an embedded video and text it is only needed 1.08s for 1MB page size.
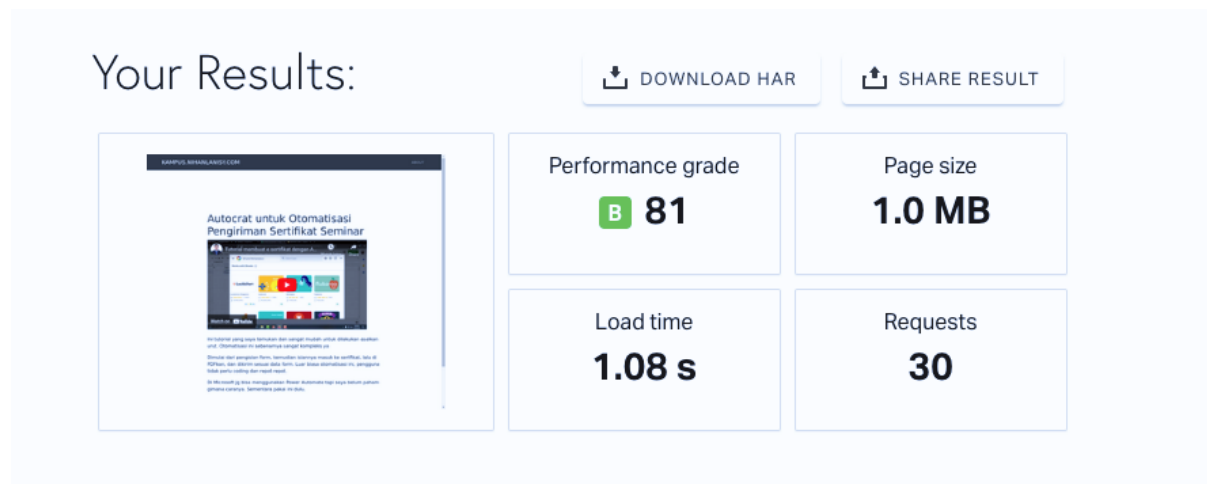
From those two simple test, we can see that Bludit can be used to deliver learning material for E-learning for low-bandwith internet.

4   CONCLUSION

Bludit, as a flat-file CMS, can be use for e-learning with simple feature. Bludit is not design specifically like Moodle, that feature-rich for e-learning. For future research, flat-file CMS that specifically designed for e-learning can be develop.

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DEVELOPMENT OF AUGMENTED REALITY MEDIA FOR THE HUMAN DIGESTIVE SYSTEM

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Abstract

This study aims to discover the opinions of learning media experts and concept experts from the digestive system in the developed Augmented Reality media. In addition, this research will also provide an overview of the experience of users who have used this AR media. The research method used in this research was mixed method research through Forum Group Discussion (FGD) and distributing questionnaires to experts and questionnaires consisting of 12 questions related to respondents' responses regarding the developed AR media. The number of respondents in this study consisted of 2 experts and 658 student respondents. The results of the expert's review of the generated media obtained 86.7% for the developed media and 90% for the concepts in the AR media. Meanwhile, based on the responses of the respondents, it was found that on average the respondents gave a value of 92.78%, which can be interpreted that the AR media developed is very good for studying the concept of the digestive system.

Keywords: Augmented Reality, Human Digestive System, Learning Media.

1 INTRODUCTION

Information and communication technology development allows for the modernization of the learning process (Midak et al., 2020). This renewal occurs in the learning media used in the learning process, which can make the process of knowledge and experience quicker to be understood by students (Rossano et al., 2020) Besides, this technological development positively impacts the quality of learning and education (Carbonell Carrera & Bermejo Asensio, 2017). Integrating technology into the learning process will certainly make the learning process more enjoyable, attractive and increase student motivation (Demitriadou et al., 2020; Midak et al., 2020).

Learning media has a significant role in making it easier for students to learn something, especially now that the world is in their hands because of smartphones and the internet (Alfadil et al., 2020). Currently, digital education is the most common approach because using media with increasingly advanced technology will make learning more exciting and can involve students more optimally (Chen et al., 2020).

In recent years educational research has focused on Augmented Reality media, or AR for short (Akçayır & Akçayır, 2017). This medium is considered promising in digital learning and developing constructivism theory. AR allows users to enter the artificial environment to create an interactive experience between virtual and real objects. The main purpose of this AR media is to enrich sensory

activity and feel the emotional factors of users to increase their involvement during the learning process (Jaber & Towfik, 2021).

Using AR media in the learning process can also improve student learning outcomes (Cazzolla et al., 2019) because the purpose of this media is to enhance the information we receive naturally through our five senses and augment it with the addition of virtual elements that are superimposed and constructed to carry complementary information and meaning that cannot be done naturally (Baran et al., 2020).

The development of AR media in this study focused on the material of the human digestive system. This study provides an overview of how the story of AR media on the human digestive system can help students better understand it based on the validation carried out by experts and respondents' responses. One of the complex concepts to learn is the human digestive system. Even though this concept is contextual to life, there are difficulties in understanding this concept. This obstacle is not only faced by students (Mauludin et al., 2017; Saputro & Saputra, 2015) but also by teachers and prospective teachers. Research conducted by Andayani et al., (2022) found that the understanding of prospective elementary school teachers on this concept must be further developed because it is included in the low category. Media development in this study also needs to consider the diversity of Elementary School Teacher Education students at the Open University. Students spread throughout Indonesia is a challenge in itself to develop interactive media based on technology and facilitate students in a more optimal learning process.

2 METHODOLOGY

The research method used in this study is the mixed method. Qualitative data were obtained from the Forum Group Discussion (FGD), and distributing questionnaires to experts to find out whether the developed media was appropriate or not to be used in the learning process. In addition, the quantitative approach was obtained by distributing a statement consisting of 10 indicators consisting of 12 questions developed Fadillah, (2018) dan Fatimatuzzahro et al., (2021) which can be seen in Table 1.

Table 1. Indicators and statement for Respondents.

No	Indicator	Question
1	attractiveness	The images of the organs of the digestive system presented to AR media are fascinating
		The choice of colors used in AR media regarding the digestive system is more interesting than the visualization in the module.
2	Benefit	Digestive system AR media helps me to study digestive system material
3	Enjoyment	I enjoy studying the digestive system using AR Media
4	understanding	After using Media AR, I understand more about the digestive system material
5	Material convenience	After using AR media, it is easier for me to understand the digestive system material
6	Development	I think the visualization development of the digestive system AR Media has been good
7	Practicality	Digestive system AR media makes digestive system material more practical to study
8	media convenience	I can easily apply the provided digestive organs AR Media
9	Material clarity	Explanation of material in digestive AR media is clearer and easier to understand
10	Legibility	The images of the digestive system organs presented in AR media of the digestive organs are in accordance with the images in the module
		I can easily read the writing in the digestive system AR Media

The FGDs conducted in this study were two experts in the field of Learning Media and Content from the human digestive system. As for the number of respondents regarding their responses regarding the media developed, 658 students were students in the Elementary School Teacher Education Study program at UT. Data analysis was carried out by presenting the data obtained and entering the value entered into the interpretation of the percentage of the results of the instrument being distributed.

This interpretation is an interpretation developed by Rahayu et al., (2022) which can be seen in Table 2.

Tabel 2. Interpretation of Value or Percentage of Respondent

Range	Category
80 – 100	Very Good
70 – 79	Good
60 – 69	Enough
40 – 59	Less
30 – 39	Very Less

3   FINDINGS AND DISCUSSION

The results of this study were divided into the effects of two main discussions, there are judgement from the experts and student respondents.

3.1 Expert Review Results Regarding the AR Media that was developed

This initial section will discuss the assessment results given to the two experts. Giving to these two experts was carried out directly when demonstrating the use of the developed AR media. After conducting experiments on the AR Media.

Table 3. Media Expert Review Results

No	Indicator	Results	Category
1	Attractiveness	100.00%	Very Good
2	Enjoyment	80.00%	Very Good
3	Development	100.00%	Very Good
4	Practicality	80.00%	Very Good
5	media convenience	60.00%	Enough
6	Legibility	100%	Very Good
	Average	86,67%	Very Good

Based on the results of expert reviews with media experts, it is known that overall video shows in AR media have an average percentage of 86.67% in the very good category. Only one indicator is in

a good category, namely the convenience of the media. Based on the results of interviews with media experts, it is felt that the media convenience indicator has not achieved a very good category because the AR media developed has not been able to reach PGSD students who are in frontier, outermost, and lagging areas. The results of the material expert's review of the material concept in the digestive system video shown in AR media are shown in Table 4.

Table 4. Material Expert Review Results

No	Indicator	Result	Category
1	Benefit	100%	Very Good
2	Understanding	80%	Very Good
3	Material Facilities	100%	Very Good
4	Material Clarity	80%	Very Good
	Average	90%	Very Good

From the results of the expert review of the material, it can be seen that, in general, the concepts used in the development of this media are very good, especially in terms of the indicators of the benefits and convenience of the material. This shows that the concept of the media being developed is following the concept it should be. The expert suggested adding Indonesian and scientific terms to adapt to the language generally used, such as the duodenum, jejunum, and other terms. So that later, students become accustomed to using biological terms that are generally used in explaining something.

3.2 Results of Student Responses regarding the developed AR Media

This second part will discuss how students respond to AR Media which was developed and includes ten indicators, namely Interesting, Benefits, Enjoyment, Understanding, Ease of Material, Development, Practicality, Ease of Material, Clarity of Material, and Readability. The results of what has been given to these respondents can be seen in Table 5.

Table 5. Respondent Response Results

No	Indicator	Result	Category
1	attractiveness	92,68%	Very Good
2	Manfaat	93,86%	Very Good

No	Indicator	Result	Category
3	Benefit	93,80%	Very Good
4	Enjoyment	93,00%	Very Good
5	understanding	93,07%	Very Good
6	Material convenience	91,70%	Very Good
7	Development	93,53%	Very Good
8	Practicality	91,13%	Very Good
9	media convenience	93,01%	Very Good
10	Material clarity	92,00%	Very Good
	Average	92,78%	Very Good

Table 5 shows that respondents generally responded positively to the AR media developed in this study. The majority, starting from attractiveness and readability, are all in the Very Good category, with an average score of 92.78%. This result shows that the use of AR learning media on the digestive system can help students to increase their understanding.

Based on the results of this study, it can be concluded that AR technology in the field of education can help achieve learning goals, as evidenced by the many studies conducted (López-Faican & Jaen, 2020). Users can learn from AR media and interact with them in real-time, making the learning process more exciting and enjoyable (Afnan et al., 2021). Wang et al., (2018) Explained that through this, AR media can present abstract learning in a real environment.

AR media is also suitable for education from elementary to secondary schools, but AR media is very convenient and adequate for various levels of education (Johnson et al., 2016). In line with this opinion, Garzón et al., (2020) stated that AR media has proven effective in teaching and learning. Many researchers have identified trends, opportunities, challenges, and the impact of this technology on education. However, what needs to be noted is the need for a pedagogical approach in the development of AR to be used so that the results provided are more optimal and beneficial for users of the AR media. Currently, AR media offers a new way to manipulate how students can interact with concepts more accurately. Through AR media, users can more optimally control the concepts they are studying in a clearer and more interactive manner (Kesim & Ozarslan, 2012). In addition,

using AR media can increase the effectiveness and attractiveness of students' learning processes and experiences (Carbonell Carrera & Bermejo Asensio, 2017).

4 CONCLUSION

The AR media of the human digestive system developed in this study is suitable for use in the learning process because it is based on studies from learning media experts and content experts. In addition, the average response from respondents related to the AR media that was developed received a very good value which could mean that this AR media was effective in learning the concept of the digestive system.

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ANALYSIS OF THE USE OF LEARNING MANAGEMENT SYSTEM (LMS) IN IMPLEMENTING THE TUTORIAL WEBINAR FROM THE TUTOR AND STUDENT SIDE

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Abstract

The occurrence of the Covid-19 pandemic in early 2020 caused a change in the implementation of tutorials at the Open University (UT). To prevent the transmission of Covid-19, the tutorials that were previously held face-to-face were replaced with the implementation of webinar tutorials (Tuweb). To support the implementation of Tuweb, the LMS (Learning Management System) application is used. The use of the LMS application in implementing Tuweb requires special adaptation and preparation for students and tutors. Tutors and students must learn how to use the LMS in implementing Tuweb and providing the supporting tools. This paper will analyze the use of LMS in implementing Tuweb from the perspective of students and tutors. This research is a descriptive qualitative research that aims to interpret the phenomenon under study. This research was conducted at UPBJJ UT Gorontalo in 2022. Sampling was carried out by purposive sampling of tutors and students participating in tuweb. In addition, a literature study was also carried out by studying reports on the implementation of tutorials at UPBJJ, as well as various literature related to the use of LMS in the learning process. The results of the study show that LMS can help students and tutors in implementing Tuweb because it can be accessed anytime and anywhere. Besides that, the administration of Tuweb implementation is also managed at the LMS. However, there are still some students who have not been able to take part in Tuweb and make the most of their LMS due to limited devices and not optimal internet networks in their area.

Keywords: LMS, Students and Tutors, Webinar Tutorials

1 INTRODUCTION

In providing world-quality higher education services for all levels of society through the implementation of the Open and Distance Education (PTJJ) program, the Open University (UT) implements the Distance Learning System (SBJJ). With this SBJJ, it will help students who are diverse and scattered, even to rural areas to get the opportunity to get an education at a tertiary institution.

With SBJJ, students are expected to be able to study independently. In order to assist the student learning process, UT provides academic study assistance services in the form of tutorials. UT offers several types of tutorials that students can take part in, namely face-to-face tutorials, online tutorials, radio tutorials, and webinar tutorials.

Tutorial Webinar (Tuweb) will be held at UT starting in 2020. The background for organizing Tuweb is the Covid-19 pandemic that has hit Indonesia and other countries in the world. In order to limit

interactions to reduce the risk of transmission of Covid-19, which is highly contagious from one person to another, face-to-face tutorials for undergraduate programs are replaced with synchronous tutorials, which use web technology (Tuweb) in their delivery. Tuweb is bidirectional and multiuser.

In Tuweb allows interaction between tutors and students at the same time, even in the network. To support and increase the effectiveness of Tuweb implementation, during the 2020.2 registration period the Learning Management System (LMS) was started.

LMS is a software application for the online learning process (Dwi Nila Andrian, 2022). According to Hanum (Hanum, 2013) Learning Management System is software used to create web-based online lecture materials and manage learning outcomes and their results. LMS also has features that can meet all needs in terms of learning. Meanwhile, according to Trivedy ((Niken Ayu Larasati, 2019)) the Learning Management System (LMS) is an integrated and comprehensive system and can be used in an e-learning platform. E-learning is the utilization and use of technology and the web to create learning experiences (Haris Pamugar, 2014).

The LMS at UT was developed using Moodle. Moodle is open source and web based software. Moodle is different from other applications because there is a discussion and chat menu. This menu allows tutors and students to interact. The advantages of LMS using Moodle include that the material is packaged in each meeting so that it is in the form of small units, there are animations that can help explain the material being discussed, supplemented by videos about the material being studied so that it is more interactive (Hamdi, 20013). Currently, Moodle in the form of an application can also be installed on Android devices.

The Tuweb service and the use of the LMS application are new to UT tutors and students. Students and tutors will be introduced to features in the LMS including tutor greetings, tutorial materials, discussions, tutorial assignments, assignment assessments and student attendance lists. This requires adaptation and the ability to accept technology from implementing Tuweb and using LMS.

In implementing Tuweb, technology is not just a tool that can increase the value of human life. Technology has aspects that are not just hardware, but also cultural, organizational and technical (Pacey, 2005). To accept a technology requires several stages including knowledge, persuasion, decision, application, and the confirmation stage (Rogers, 2003).

To explain user behavior towards technology, the UTAUT (Unifield Theories of Acceptance and Use of Technology) model is used. This model analyzes behavioral intentions and behavior to use technology (use behavior) is influenced by performance expectations, effort expectation, social influence and supporting conditions (facilitating conditions) (Windra Irawan, Nur Asiah, 2018).

UT students who are spread across various regions with varying conditions and ages will experience different responses when introduced or confronted with new technology, in this case the LMS in implementing Tuweb. Likewise with tutors. In this regard, this study will analyze the use of LMS in implementing Tuweb from the side of students and tutors using the UTAUT model.

2   METHODOLOGY

This research is a descriptive qualitative research that aims to interpret the phenomenon under study. This research was conducted at UPBJJ UT Gorontalo in 2022. Sampling of data sources was carried out by purposive sampling of 5 tuweb tutors and 5 tuweb participant students from various Pokjar. To collect the information and data needed in this study, the researchers conducted interviews, document analysis, and studied literature related to the use of LMS in implementing Tuweb.

3   RESULTS AND DISCUSSION

The use of LMS in implementing Tuweb at UT is carried out for 8 sessions or 8 weeks. In each session, tutors must greet students, include tutorial materials and discussions. At the 3rd, 5th, 7th meeting, the tutor added tutorial assignments. Tutors provide assessments and responses to student discussions and assignments at LMS. Tutors check student attendance in the attendance list feature for each Tuweb session. LMS can manage learning outcomes and outcomes. Because it is presented in the form of e-learning, students can access the LMS anytime and anywhere. Student activity and participation in imp

Table 1. Results of Interviews Related to The Use of LMS in Students

Items	Student
Performance Expectancy	Ani Mananggu: using LMS in Tuweb is important for the smooth running of my lectures Melisa (Bolsel student): Mastering LMS is important for students Rosnawati Napu (Bolmut): Mastering is important for the smooth running of lectures at UT Nelvi Kamaru (Bolsel): must be able to master LMS for smooth lectures at UT

	Friska Abidin (Wonosari): Mastering LMS is important for the smooth running of Tuweb
Effort Expectancy	Ani Mananggu: I can open the LMS, but it's hard to send assignments Melisa (Bolsel student): Able to use LMS Rosnawati Napu (Bolmut): I can use the LMS smoothly Nelvi Kamaru: Able to use LMS Friska Abidin: Able to use LMS on Tuweb and often helps friends with assignments.
Social Influence	Ani Mananggu: The tutor encouraged me to be able to use the LMS Melisa (Bolsel student): Tutors and officers at UPBJJ help use the LMS Rosnawati Napu (Bolmut): UPBJJ and friends encouraged them to use LMS Nelvi Kamaru: Tutors and officers at UPBJJ encourage using LMS Friska Abidin: Tutors and officers at UPBJJ encourage using LMS on Tuweb and often help friends to submit assignments
Facilitating Condition	Ani Mananggu: I use a cellphone, it's hard for me to send assignments because the internet connection is not good Melisa (student of Bolsel): I use a cell phone in Tuweb, the internet network in my place is weak, and the WIFI in our village is not working Rosnawati Napu (Bolmut):I use a cell phone for Tuweb implementation, the network is good so the Tuweb runs smoothly Nelvi Kamaru: I use my cellphone to do Tuweb, and the network in my area often drops Friska Abidin: I have a cell phone and laptop for doing Tuweb. I often help friends to submit assignments

Research Data for 2022

Table 2. Results of interviews related to the use of LMS in tutors

Items	Tutor
Performance Expectancy	Mastin Coboyo, M.Pd: Mastering the LMS is important for the smooth running of the Webinar Fitriana Pakaya S.Pd. Tutors must be able to use the LMS in implementing Tuweb Julina Lawenga, S.Pd: Tutors are important for mastering LMS for the smooth implementation of Tuweb Agustini, M.Pd: Mastering LMS is important for the smooth implementation of Tuweb Ishak Kahar, M.Pd, Dr: Mastering LMS is important for the smooth implementation of Tuwe

Effort Expectancy	Mastin Coboyo, M.Pd: I can and fluently use the features in the LMS Fitriana Pakaya M.Pd: I can and fluently use the features in the LMS Julina Lawenga, S.Pd: I can already use the LMS Agustini: I can and fluently use the LMS Ishak Kahar, M.Pd, Dr: I can already use LMS
Social Influence	Mastin Coboyo, M.Pd: UPBJJ and student demands make me able and fluent in using features in LMS Fitriana Pakaya M.Pd: UPBJJ and student demands made me able to use it fluently at LMS Julina Lawenga, S.Pd: The demands of the task make me have to be able to use the LMS Agustini: The demands of assignments and students make me have to be able to use the LMS Ishak Kahar, M.Pd, Dr: The demands of the assignment made me have to be able to use the LMS
Facilitating Condition	Mastin Coboyo, M.Pd: has good facilities for using LMS and implementing Tuweb Fitriana Pakaya M.Pd: has the facility to use LMS and implement Tuweb Julina Lawenga, S.Pd: has the facilities to implement Tuweb Agustini: has the facilities to implement Tuweb Ishak Kahar, M.Pd, Dr: has the facilities to implement Tuweb

Research Data for 2022

3.1 Analysis of the Use of LMS in Implementing Tuweb from the Student and Tutor Sides

3.1.1 Performance Expectancy

According to students, mastery of LMS for implementing Tuweb is important for the smooth running of Education at UT. Meanwhile, according to the tutor, mastery of LMS is important for the smooth implementation of tasks in guiding students in implementing Tuweb. Tutors must be able to manage the class and be able to answer when asked by students. Socialization about LMS and its use in implementing Tuweb for students, was carried out during Student Study Orientation, and Distance Learning Skills Training (PKBJJ) activities. Each semester is also explained in clinical learning activities. Socialization about LMS and its use in the implementation of Tuweb for tutors is carried out during the tutoring of tutors. Apart from that, UPBJJ also provides consultation for tutors about using the LMS. Furthermore, tutors can already use the LMS in carrying out the Webinar.

3.1.2   Effort Expectancy

Most students are already fluent in using LMS in implementing Tuweb. Only a small proportion are still adapting to accept technology in using LMS. Of all the features in the LMS, it is the assignment submission feature that students often complain about. This is because students find it difficult to follow the steps to upload tutorial assignments. Besides that, due to advanced age and limited facilities, it is also difficult for students to use LMS. Meanwhile, almost all tutors have been able to open their LMS during the webinar. For new tutors, some come to UPBJJ again to consult how to open features in the LMS.

3.1.3   Social Influence

Acceptance of technology for someone can be influenced by other people. The use of LMS in implementing Tuweb by students was influenced by UPBJJ, tutors and friends. Likewise for tutors, the demands of UPBJJ and students make tutors have to master LMS in implementing Tuweb. Tutors must also be able to guide students in implementing Tuweb.

3.1.4   Facilitating Conditions

For the smooth implementation of Tuweb, UT students and tutors must have good equipment. This device is an Android, laptop and is supported by the availability of data or WIFI, as well as a good internet network. From the results of interviews with students, some students are in areas where the internet network is not good, there are even areas where there is no internet network at all. For this problem, students must find a place that has an internet network for implementing Tuweb. In addition, from the findings during Tuweb monitoring, there were students who had to join Tuweb with other students because they did not have the equipment. Likewise for sending assignments, students hitch a ride with friends who have laptops. In addition, there are areas where the electricity does not turn on all day long, this condition will certainly disrupt the smooth running of Tuweb.

4   CONCLUSION

The results of the study show that LMS can help students and tutors in implementing Tuweb because there are learning materials that can be accessed by students anytime and anywhere. Tuweb implementation administration can also be managed by tutors at LMS. Tutors and students can use the LMS in implementing Tuweb, it's just that there are still some students who experience problems in sending Tuweb assignments. Besides that, there are still some students who have not been able to

take part in Tuweb optimally due to limited devices and not yet optimal internet networks in their area.

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IMPLEMENTATION OF HIGHER EDUCATION INNOVATION POLICY

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Abstract

Innovation policy is a reference for higher education to implement innovation programs. implementation barriers determine the success and failure of innovation policies, strengthening not only on the resilience of socialization but consistent implementation is decisive. Data shows that from 3249 higher education that fill out 684 new innovation forms administratively, the realization aspect of innovation is an important form that has not yet become the concern of important stakeholders. The obstacles to the implementation of innovation do not depend on higher education only, but the commitment and consistency of the government, the business world and the industrial world, as well as public awareness. The need for strengthening and joint commitment of all components to realize higher education as innovation in development.

Keywords: policy implementation, innovation, universities.

1   INTRODUCTION

Innovation is a must for universities in developing various products of the tri darmarma of higher education for the benefit of the community. This innovation is one of the mandates in implementing Law Number (UU) 17 of 2007 concerning the National Long-Term Development Plan 2005 – 2025, "Realizing an independent, developed, just, and prosperous Indonesian society with a solid economic structure based on competitive advantages".

This law is followed up with the Regulation of the Minister of Research and Higher Education (Permenristekdikti) Number 24 of 2019 concerning Higher Education Innovation Management. The Permenristekdikti is a guide for universities in implementing innovation management. Data from universities in Indonesia shows that there are 123 state universities (higher education) and 3126 private universities (HIGHER EDUCATIONS) spread across 14 L2Dikti areas. The existence of the university is expected to implement and become an innovator in innovation in its universities.

Higher education innovation performance indicators are on the Outcome criteria in higher education ranking indicators and weights. Data shows that the percentage of higher education innovation shows 5% in 2018, 12.5% in 2019 and 30% in 2020, with details of higher education innovation performance data in 2019 (1) registering an 885 account, (2) filling in form 568, and (3) not filling in form 317. In 2020 (1) registered account 925, (2) filled in form 684, and (3) did not fill in form

241 (Data source: link https://simanis.ristekbrin.go.id). Account registration and form replenishment have increased, but the filling of forms has decreased.

2 METHODLOGY

This study uses a descriftive qualitative approach, which is to describe systematically, factually and accurately related to the implementation of the State University Innovation policy, with classification and data collection on 3 state universities representing the status of work units, namely work units, Financial Managers of Public Service Agencies (PK BLU), and State Universities of Legal Entities (HIGHER EDUCATIONN-BH).

IMPLEMENTATION OF HIGHER EDUCATION INNOVATION

Article 15, Permenristekdikti Number 24 of 2019, states that when this Ministerial Regulation comes into force the implementation of Innovation Management that has been implemented by universities, the implementation of accreditation, and the ranking of universities must adjust to this Ministerial Regulation no later than 2 years after this Ministerial Regulation is established. Innovation policies in their implementation must be supported by evaluations to maintain programs and activities in accordance with policy objectives. For this reason, it is necessary to evaluate formative evaluation in evaluating how far a program is being implemented and what conditions can increase the success of the implementation Palumbo (1937).

Mazmanian (1983) states; The process of effective policy implementation must involve parties from outside the government, this is to maintain the implementation of innovation policies running effectively. Tangkilisan (2003), the implementation of each policy is a dynamic process with the interaction of various variables, namely including bureaucratic structure, problems and prospects, attitudes of implementors, communication and resources. Monitoring the implementation of innovation policies to generate feedback serves to facilitate and increase the success of more oHigher Educationimal implementation.

The process of implementing innovation policies, filling in innovation performance measurements is one of the indicators in the assessment of Higher Education ranking clustering to be used as a tool to monitor the implementation of innovation policies. This activity is carried out to ensure that all Higher Education leaders, especially HIGHER EDUCATIONN, are consistent with the assessment

and are able to carry out sustainable innovation programs in a measurable manner, in filling out the innovation performance form which is carried out by self-assessment.

The implementation of the higher education innovation policy is in accordance with Permenristekdikti Number 24 of 2019 in the HIGHER EDUCATION Strategic Plan (Renstra) institution policy which encourages the development of innovation in the master plan (in addition to incentives to lecturers) which aims to encourage innovation development. The implementation of the innovation policy has been socialized to all universities in Indonesia, Saefullah (2007), said that "the first step in implementing the policy is to socialize so that the relevant policies are known, understood, and acceHigher Educationed by all relevant parties". Persuasive intensive socialization is expected to be more quickly realized policy implementation in each program or activity.

The stages of implementing the Higher Education innovation policy in assessing the performance of higher education innovation are as follows:

a. Socialitation: Set up invitation materials, coordinate with L2Dikti for information distribution, and coordinating with universities regarding social media

b. form filling: Prepare brief guidance materials for accounts, Serving college questions and answers related to the content of filling out forms, dan up date information on simanis web

c. Validation: Prepare materials for the Validation Team Personnel List, Prepare Validation Team Facility Materials and Validation of Higher Education Innovation Performance Form Data

The implementation of the innovation policy in filling wholesale there are still errors in filling in data on SIMLITABMAS (Research and Community Service System) and not filling in because there is no institution that handles innovation. Hariani (2019) said that one of the obstacles in policy implementation is that evaluators are often faced with the problem of not being available enough data and the latest information related to the implementation of fund policies which results in evaluation activities being hampered.

1. RESOURCES DRIVE INNOVATION

Policy requires specific elaboration by public administrators in implementing action programs to remain targeted, Grindle(1983) argues, that resource factors have an influence in the policy

implementation process. The tangible form of the policy implementation process contains several supporting components of human resources policy, funding sources, and supporting resources. Organizational commitment is very important in supporting innovation policies, not only the commitment of the HIGHER EDUCATION leadership, but all staff are needed and become one of the determinants of policy success. Commitment to provide innovation policy support in encouraging innovation of Higher Education. This commitment can be realized by allocating a budget for innovation based on superior product prototypes (Polman allocates IDR 140,000,000.00 per year).

2. BARRIERS TO INNOVATION POLICY IMPLEMENTATION

Some of the obstacles in the implementation of innovation policies are related to the stages of commercialization of industrial products that have been produced by each Higher Education, user distrust of products from domestic research and the difficulty of universities to carry out mass production of innovative products, which requires the involvement of the business world and industry from the beginning, as well as the intervention of policymakers.

Commercialization is in intellectual property rights (HKI), by instilling an organizational culture that focuses on innovation through Problem Solvers, industrial problems are still difficult to obtain HKI, both in terms of time and process. The process of managing patents at a Higher Education still requires a long period of time.

3. HIGHER EDUCATION INNOVATION IMPLEMENTATION SOLUTIONS

Strengthening the organization of innovation management that has the function of encouraging innovation in universities, to realize the objectives of the Higher Education Innovation policy, as a stakeholder to see the vision for the future, what will be done in the future. Pannen (2016) said: "The involvement of universities as a framework for strengthening national innovation has not been able to play a big role in producing what kind of innovation is expected. Most of the innovation creation process in universities stops at the research stage so that there is a vacuum between universities and the industrial world for the next stage of innovation development. This indicates that the implementation of Tridharma so far has not been able to encourage a surge in the number of higher education. Tridharma's innovation results. The biggest factor is that there are still many universities that have not been able to manage the running of the innovation process strategically and systematically".

The mobility of human resources in science and technology will bring a harmonious relationship with industry will provide insight into the needs of the industry in terms of research and qualifications of Human Resources (HR) needed. The government continues to facilitate the approach between universities and the business and industrial world. The business world and industry must be encouraged to see, produce, and commercialize innovative product products from higher education research. The business and industrial world must also be encouraged to invite universities to develop their commercial products and ask universities to conduct research on the development of business and industrial products where universities are part of the Research and Development of the business and industrial world. Another proposal is to change Higher Education Innovation Management to Higher Education Innovation Management and the Business and Industrial World which is in line with government regulations or laws on it.

Strengthening communication forums between Higher Education Innovation Management stakeholders from academics, businesses, government and communities. In addition, innovations that are not disseminated will be in vain, so it is necessary to plan the procurement of funds and their role for users. Another proposal is related to the patent management process in higher education where a clear period of time and a process of acceleration is needed and support for the commercialization of these patents is needed.

Commitment of Intellectual Property Rights (HKI) between Universities and Industry, considering that innovation is widely carried out referring to demand (job order) as a Problem Solver for Industrial problems. In addition, the resulting innovation products can be categorized as intellectual property. Therefore, the government needs to provide legal protection for the resulting innovative products to minimize the occurrence of intellectual property violations, it is hoped that this innovation policy can be a bridge. The existence of HKI protection for innovative products produced by universities makes creators or researchers feel safe on legal certainty which also has a psychological impact. In addition, the existence of HKI regulations on innovative products can increase the enthusiasm of researchers to continue to innovate.

3 CONCLUSION

a. The implementation of the Permenristekdikti Innovation Policy No. 24 of 2019 has been implemented by higher education, which is reflected in the increase in the productivity of

innovation performance in the amount of research, inventions, innovation products, and policies in strengthening innovation management institutions.

b. Higher Educationimization of the implementation of social policies in universities is carried out massively and controlled to all students and students.

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NEW STUDENTS' PERCEPTION OF THE IMPLEMENTATION OF DISTANCE LEARNING SKILLS TRAINING (PKBJJ) UNIVERSITAS TERBUKA MAKASSAR

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Abstract

Long-Distance Learning Skills Training (PKBJJ) intend to preparing the students to posses the ability to read effectively and utilize UT's online service for studying purpose. PKBJJ is a mandatory for all new students from Diploma, Bachelor to Magister. PKBJJ are attended by new students after they participate in the New Student Study Orientation (OSMB) activities. However, if new students do not take part in OSMB and PKBJJ activities according to the schedule set by the UPBJJ-UT, they must take part in these activities at the Learning Clinic based on the schedule prepared by the UPBJJ. Students who take part in PKBJJ thoroughly will receive a training certificate which when they graduate, it will become part of the Diploma Companion Certificate (SKPI). This research aims to make a scientific contribution for long distance learning skills training (PKBJJ) using descriptive variables. To obtain valid data, this study used a questionnaire on new students at the Universitas Terbuka UPBJJ-Makassar for the 2019.2 registration period , thera are 328 of them. Respondents for this study were obtained when PKBJJ activities were taking place in several regions, which is: Pangkep-Maros, Sidrap-Pinrang, Bone-Wajo, Tana Toraja-North Toraja, and Luwu Raya. The data processing techniques were implemented on this research are the frequency method, tables, and statistical data. This research succeeded in finding that in the process of long distance learning skills training the following indicators are required: The relevance of activities to needs in the amount of 4. 166 ; b) Implementation of interactive training in the amount of 4,000; c) Respondents' assessment of PKBJJ training materials in the amount of 4,410; d) Respondents' assessment of the instructor's capability in the amount of 4,318; and e) The preperation of all staff from UT in the amount of 4,230; and f) Student responses to facilities and consumption in the amount of 4,395. By using the six PKBJJ indicators, this study showed results that all classified in the good category, but the highest respondents' ratings in that category were on training material which was considered very important to be known by new UT students. So overall the perception of new students who took part in the 2019.2 PKBJJ training at UPBJJ-UT Makassar obtained an average score of $\geq 4,000$ which is classified as very good. The results of implementing PKBJJ and it succeed in run the training and long distance learning skills will have the effect of significantly increasing student interest and learning achievement.

Key Words: distance learning, skills, new students, training, perception

1   INTRODUCTION

Universitas Terbuka (UT) is one of the state tertiary institutions which has the characteristics of providing distance education. The learning process that takes place at UT requires students to study independently, but that does not mean students are left in their own confusion, but UT will equip students so that they can study independently. The services provided by UT aim to help students study independently and manage their learning process by understanding and exploring course material through various modes. Independent learning in many ways is determined by the student's ability to manage time and study effectively. Effective independent learning can only be done if

students have self-discipline, initiative, and strong motivation to learn. Independent learning can be done alone or in groups, both in study groups and in tutorial groups. Students are also required to be able to manage their time efficiently, so they can study regularly based on a self-determined study schedule. Therefore, in order for UT students to achieve optimal results, students must have the ability and skills to study independently. To foster self-discipline, study motivation, and strong skills in students, adequate information and training is needed, one of which is the Distance Learning Skills Training (PKBJJ) held by Universitas Terbuka's Distance Learning Program Unit office (UPBJJ-UT). .

This is reinforced by the circular letter of the Deputy Chancellor for Academic Affairs No. 2762/UN31/PP/2018 dated 16 January 2018 and No. 9656/UN31/PP/2018 dated 28 February 2018, that every UPBJJ-UT is required to organize an EKBM (Student Learning Readiness Education) including PKBM (Independent Learning Skills Training), and new students are required to take part in these activities so that they can have understanding, readiness, and learning resilience that can support their success in studying at UT. However, starting in 2019, ECBM has changed to Student Learning Skills Education which includes 3 activities: (1) New Student Study Orientation (OSMB); (2) Distance Learning Training (PKBJJ); and (3) Learning Clinic. Even in the UT Implementation System, 2022/2023 it is stated that starting in 2018, after participating in the New Student Study Orientation (OSMB) activities, new students are required to take part in PKBJJ. For new students who do not take part in OSMB and PKBJJ activities together at the place and time determined by the UPBJJ-UT, they will then reschedule these activities for the following semester or at another time and opportunity. Thus the PKBJJ training for UT students absolutely must be attended by both new and on-going students.

Furthermore, in the UT Implementation System, 2022/2023 it is stated that PKBJJ activities must be attended by all new students both at home and abroad, and new students at the Diploma, Bachelor, Masters and Doctoral levels. PKBJJ aims to equip students with understanding and effective learning skills in the distance education system at UT so that they have readiness, confidence, and independence in completing their studies effectively and with good results. In PKBJJ new UT students are trained to have insight, attitudes, and independent skills in learning starting from how to plan study time, apply effective learning strategies through reading quickly and effectively, and

record reading results so as to produce good notes as a result of the recording. In addition, at PKBJJ new students are trained to operate and utilize computers, the internet, and learning resources needed for learning purposes, especially through online learning resources and services provided by UT. This is also conveyed in the Guidelines for the Implementation of Successful Distance Learning Support Services (LPKBJJ), 2021 that PKBJJ equips students with knowledge, learning experience, and independent study skills which consist of managing study time, implementing reading strategies and recording reading results, utilizing UT services online and various learning resources, as well as tips for success in following Online Tutorials (Tuton).

Based on the results of monitoring/supervision of the implementation of PKBM in 2018, it shows that all UPBJJ-UT have enthusiastically tried and worked hard to be able to carry out PKBM activities properly. Student participants in PKBM generally showed a very positive response. PKBM activities were attended with great enthusiasm and enthusiasm. For them, PKBM is very useful to be able to study well at UT. Not even a few "ongoing" students also want to be invited to take part in the training (Circular of the Vice Chancellor for Academic Affairs, 2019). However, for the results of PKBJJ training for new students at UT-Makassar in the 2019.2 period, it is necessary to evaluate its implementation and capture the perceptions of new students regarding the implementation of PKBJJ at UPBJJ-UT Makassar in the 2019.2 period.

Perception (from the Latin perceptio, percipio) is the event of compiling, recognizing, and interpreting sensory information so that it can provide an overview and understanding of the environment. According to O'Brien & Daniel, (2014), that perception is a central issue in epistemology (a branch of philosophy about the foundations and limits of knowledge), the theory of knowledge. Meanwhile, according to Mc. Shane, at.al. (2000), that perception is the process of receiving information and understanding of the environment including establishing information to form its categorization and interpretation. The point of perception is related to how a person receives information and adapts to his environment. This means that there is an interpretation in understanding the information that can increase the knowledge that receives it or there is a selection of stimuli captured by the five senses. This will later affect the behavior of each individual who receives the information. In the Big Indonesian Dictionary, perception is a direct response (acceptance) of something, a person's process of knowing several things through his five senses. Based on these

opinions, it can be concluded that perception is the process of entering experiences about objects and events in the form of messages or information into the human brain which then forms thinking processes. In addition, the nature of likes and dislikes, likes and dislikes towards an object will give rise to an image in the formation of perception. Because of the responses or perceptions of students who have participated in PKBJJ training in 2019.2, their perceptions need to be captured so that they can find out about the implementation of PKBJJ which has an impact on adding insight in completing their studies at UT in a timely manner.

2   METHODOLOGY

This research is an ex-post facto research, namely research that only reveals existing data without giving treatment to the subjects being conducted (Sugiyono, 2014). In this study, the independent variables cannot be controlled by the researcher because the events have already taken place or these variables basically cannot be manipulated.

This research was conducted in September 2019 in 5 Rayons which included: Pangkep-Maros, Sidrap-Pinrang, Bone-Wajo, Tana Toraja-Toraja Utara, and Luwu Raya. The selection of the location was based on the formation of a rayon representing the working group as the place for the implementation of the PKBJJ at UPBJJ-UT Makassar. The sample for this study was 328 of 1,277 new students for the 2019.2 term who were spread across all districts in UPBJJ-UT Makassar.

The approach used in this research is descriptive quantitative. This research requires quantitative data by distributing questionnaires to PKBJJ participants and then the data is processed quantitatively using non-parametric statistics which are processed by calculating the average using the execl program. The results of the data processing are described using tables and figures.

Data collection was carried out by distributing questionnaires from PKBJJ participants to respondents with several indicator statements, namely: (1) relevance of activities to needs; (2) implementation of PKBJJ training; (3) PKBJJ training materials; (4) instructor's ability; (5) committee readiness; and (6) facilities and consumption.

The data collection technique used in this research is a questionnaire equipped with 5 score answer choices with a weighting of 1 – 5. This is done to avoid the tendency to choose a neutral value (Mulyatiningsih, 2014). The scoring guidelines used in this study can be seen in table 1 below.

Table. 1. Rating Scale Weighting

Choice of Answers	Weight Rating
Very Good (VG)	5
Good (G)	4
Enough (E)	3
Less (L)	2
Very Less (VL)	1

To provide a description of the data in this study, a descriptive analysis test was used. According to Sugiyono (2017) the descriptive analysis test aims to analyze data by describing or describing the collected data as it is, without intending to make general conclusions or generalizations. The descriptive analysis includes the number of subjects in the group, the mean score of the questionnaire, the standard deviation of the questionnaire score, variance, maximum score and minimum score. The level of perception and student satisfaction is determined based on the average score of the questionnaire after categorizing the levels, namely: very good, good, enough, and less.

The average value formula used is:

Index (average) = (Questionnaire Answer Score: Sample Score)

Categorization based on the average score level is determined based on Table 2 below:

Table 2. Interval Average Score Category

Index (Average)	Category
4,0 – 5,0	Very Good
3,0 – 3,9	Good
2,0 – 2,9	Enough
1,0 – 1,9	Less

3   RESULTS AND DISCUSSION

3.1   Research Result

The results of data processing on the level of perception of new students as many as 382 respondents to the implementation of PKBJJ at UPBJJ-UT Makassar for the 2019.2 period which were processed with the Excel program based on table 2, can be presented as table 3 below.

Table 3. Average Score of the Questionnaire Results

Indicator	Average Score	Category
Relevance of activities to needs	4.166	Very Good
Implementation of interactive training	4.000	Very Good
Respondents' assessment to the PKBJJ training material	4.410	Very Good
Respondents' assessment to the instructor's ability	4.318	Very Good
Committee readiness	4.230	Very Good
Student responses to facilities and consumption	4.395	Very Good

Based on the results of data processing, the average questionnaire score for the level of perception of new students regarding the implementation of PKBJJ at UPBJJ-UT Makassar for the 2019.2 period was all in the very good category regarding the statement indicators: (1) relevance of activities to needs; (2) implementation of PKBJJ training; (3) PKBJJ training materials; (4) instructor's ability; (5) committee readiness; and (6) facilities and consumption. The highest score was obtained on indicator 3 or the statement of PKBJJ training materials with an average score of 4,410, and the lowest score was on the indicator for implementing PKBJJ training with an average score of 4,000.

3.2 Discussion

The results of data processing on the perceptions of new students in the 2019.2 PKBJJ implementation at the Makassar UPBJJ-UT as shown in table 3, it can be seen that the average score for all categories is very good. One of the highest scores submitted by students on the research instrument was in the statement "PKBJJ Training Materials". The development of information and

communication technology in the current era has a major influence on the teaching and learning process. Since the existence of internet technology, almost everything has become possible in the world of education, including the implementation of PKBJJ training. Through the internet network in PKBJJ activities, they are trained to operate and utilize computers, the internet, and learning resources needed for learning purposes, especially through online learning resources and services provided by UT. Students immediately practice accessing virtual reading rooms, online smart teacher portals, and activating online tutorials that can connect with other students, as well as with course tutors. This was also conveyed by Brindley, at.al. (2004) that through new technology, in this case the internet network which has a big impact where student support is conceptualized and practiced. Through the internet network, students can directly connect with other students as well as with various other supporters, such as their instructors, librarians, registrars, and academic advisors.

The next highest score is found in the statement item "Respondent's assessment of the instructor's ability". The instructors for the PKBJJ training are lecturers from the UPBJJ-UT who have attended training and equalized perceptions. One of the requirements in the implementation of PKBJJ, instructors who will deliver training materials must master the material, and have UT insight and can become other academic consultants. This is in accordance with what is stated in the Guidelines for the Implementation of Successful Distance Learning Support Services, 2021 that PKBJJ instructors are lecturers (UT lecturers and UT lecturers outside who are tutors with very good performance) or educators who have attended training and have passed the instructor training. So UT tutors can also become instructors who can facilitate student learning processes, manage learning activities, resource persons who provide facts and empirical evidence in their field of knowledge, and guide students in understanding the material in tutorial activities. According to Akhter and Ali (2016) that tutors are indispensable for the smooth running of distance education programs. Even no institution which has ideal planning, effective study materials, good rankings in distance education institutions can work towards achieving its goals without having dedicated, qualified and trained tutors.

4 CONCLUSION

Based on the results of research on the perceptions of new students regarding the implementation of PKBJJ as many as 328 people against 6 instrument questionnaire items which were processed with the execl program at UPBJJ-UT Makassar during the 2019.2 registration period, the average results were obtained in the very good category. So overall the perception of new students who took part in

the 2019.2 PKBJJ training at UPBJJ-UT Makassar obtained an average score of ≥ 4,000 which is classified as very good.

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DEVELOPING A VIRTUAL LABORATORY ON MANAGEMENT AND ENTREPRENEURSHIP COURSE TO ENHANCE DISTANCE LEARNERS' KNOWLEDGE AND SKILLS

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Abstract

This present study aims to elaborate and the use of virtual laboratories as media to deliver the course content of management and entrepreneurial substances to enhance the knowledge and syllabus of Universitas Terbuka students. The study involved several experts that include subject matter experts instructional designers ICT developers and writers. Research and development method was used in this present study. The research and development method consists of systematic and systemic steps including 1). Identity instructional goal, 2). Product instructional analysis, 3). Analysis Learner and context, 4). Write performance objectives, 5) develop instructional strategies, 6). Develop instructional material, 7). product formative evaluation, 8). Revise instruction. This multiyear research scheme resulted in the design of a virtual laboratory on management and entrepreneurial courses that was validated by experts.

Keywords: distant learner, entrepreneurship, management, virtual laboratory

1   INTRODUCTION

One of the main characteristics of conducting a distance learning program is using the media and technology. Those are used to deliver course content to students who are located separated from the instructor. The advancement of computer technology and networks provides a wide selection of instructional media to convey course substances learned by distant learners. The use of media as learning resources has to provide meaningful learning experiences for students to develop their competencies.

Universitas Terbuka (UT), one of the Indonesian higher education institutions that implement an open and distant education system, uses various media as learning resources so that the students can learn effectively. In the digital network technology era, the use of e-learning is considered one of the alternatives that can be used to deliver course content.

The term e-learning is defined as learning activities that occur through electronic devices that offer some potential benefits to support students' learning process. Many distance learning institutions in the world use various types of e-learning to support their student's learning process to gain required

competencies. UT must find appropriate types of e-learning that can enhance the student's knowledge and skills.

One of the e-learning types that is selected by UT is a virtual laboratory. This kind of e-learning is considered instructional media that can enhance the skills of students in practicing certain competencies. This present article will elaborate on the use of the virtual laboratory to enhance the skills and abilities of the management study program.

The use of virtual laboratories can be viewed as the solution to solve the problem of the lack of real laboratory resources. To use the virtual laboratory effectively for students of the management study program, UT must conduct a research and development program on using virtual laboratories.

Research problems

This present study - Developing Virtual Laboratory on Management Courses to Enhance Distance Learners' Skills - will explore the following research questions.

1. How to develop a virtual laboratory on management courses to increase the knowledge and skills of students in management study programs?
2. Is the use of a virtual laboratory can enhance students' knowledge and skills in management courses?

Research objectives

This study is aimed to develop the prototype of the virtual laboratory for management and entrepreneurship course that can facilitate distance learners to enhance their knowledge and skills on the subject. In addition, the study was also intended to get information concerning the effectiveness of using the virtual laboratory.

Literature Review

Open and distance learning

With the advancements in telecommunications technologies, distance learning programs rapidly expanded so distance education is now defined as "the acquisition of knowledge and skills through mediated information and instruction, encompassing all technologies and other forms of learning at a distance. (Solomon, 2016).

The separation of students and instructors is the main characteristic of distance learning. To bridge the learning process the use of media and technology is a must (Smaldino. et. al. 2018). Distance education can refer to any form of learning where individuals are not physically present in a traditional setting, such as a classroom. This form of learning offers many advantages over traditional learning, providing individuals with the ability to learn at their own pace and in their own space. In this sense, the media have an important role in the delivery use course substances or content to students.

Universitas Terbuka, the higher education institution that implemented open and distance learning, uses various types of media and technology to support its student's learning process. Media such as text-based, audio-based, video-based, and web or internet are used to enable the students to study and course substance.

Universitas Terbuka uses printed media as the main delivery system of course substances to students. The selection of the media is based on the availability to be used as learning materials. The use of printed media as learning material does not adequately support all course contents. Every medium has a specific character as a delivery system of the course content.

The practical courses offered to students required a specific type of media to be learned. The types of media for practical learning activities are required to support students of the economic faculty of Universitas Terbuka. A media with a certain attribute is necessary to support students learning process of management and entrepreneurial skills. Students need authentic learning experiences to master the skills of designing and developing a business model based on managerial and entrepreneurship. In this sense designing and developing a virtual lab is necessary to support students learning process to attain the learning goal – of developing a proper business model.

What is a virtual laboratory?

Virtual laboratories are interactive, digital simulations of learning activities that typically take place in physical laboratory settings. Virtual laboratories enable students to engage in lab-based learning exercises without the costs and limitations of a physical lab. The virtual laboratory can be an important element in institutional efforts to widen access to lab-based courses to more and different groups of students. A virtual laboratory is also defined as a computer-simulated environment in which

the conditions for experimentation typical of a conventional laboratory are recreated using generic or specific computer software. (Vergara, 2022).

Anderson (2020) noted that virtual labs are interactive online environments that support simulation-based learning. They let you create real-life simulations for conducting scientific experiments or engaging in other processes that may not be practical in physical classrooms.

Hurix (2022) noted several benefits of using the virtual laboratory to support the students' learning process that includes: 1) provides easy access to use new technology, 2) serves as a visual aid to teaching complex concepts, 3) ensures student safety, 4) engages learners, 5) offers instant feedback, and 6) allows learning flexibility, 7) affordable alternative to physical labs. In addition, Anderson (2020) also noted the benefits use of virtual laboratories as follows 1) Engaging with real-life simulations, 2) Explaining complex concepts, 3) Learning in a safe environment, 4) Eliminating ethical issues, 5) Unlimited time to learn, 6) Higher motivation and engagement, and 7) Better knowledge retention

A virtual laboratory is an on-screen simulator or calculator that helps test ideas and observe results. In these online activities, students use advanced technology and media to conduct a series of experiments that yield authentic results. Virtual laboratories or virtual labs for short are the best way for students to practice in a safe, online environment. By doing virtual science lab games and engineering simulation software, students can interact with elements, machines, and interfaces before or instead of trying them out in real life.

Operating a virtual laboratory for a student must feel like they are working with real authentic devices in a real authentic space. By doing virtual laboratory students will engage in authentic learning situations in order to achieve the required learning competencies.

2   METHODOLOGY

This present study used a research and development method that employed that includes the following systematic and systemic steps such as 1) identify instructional goals, 2) conduct an instructional analysis, 3) analyse learner characteristics and context, 4) write performance objectives, 5) write performance assessment, 6) determine instructional strategy, 7) develop instructional materials, 8) design and conduct a formative evaluation of instruction, 9) revise instruction, 10) design and conduct a summative evaluation of instruction. (Borg, Gall, and Gall, 2007). These steps

can be classified into three major phases – design, development, and analysis. The major phases of the study can be seen in figure 1.
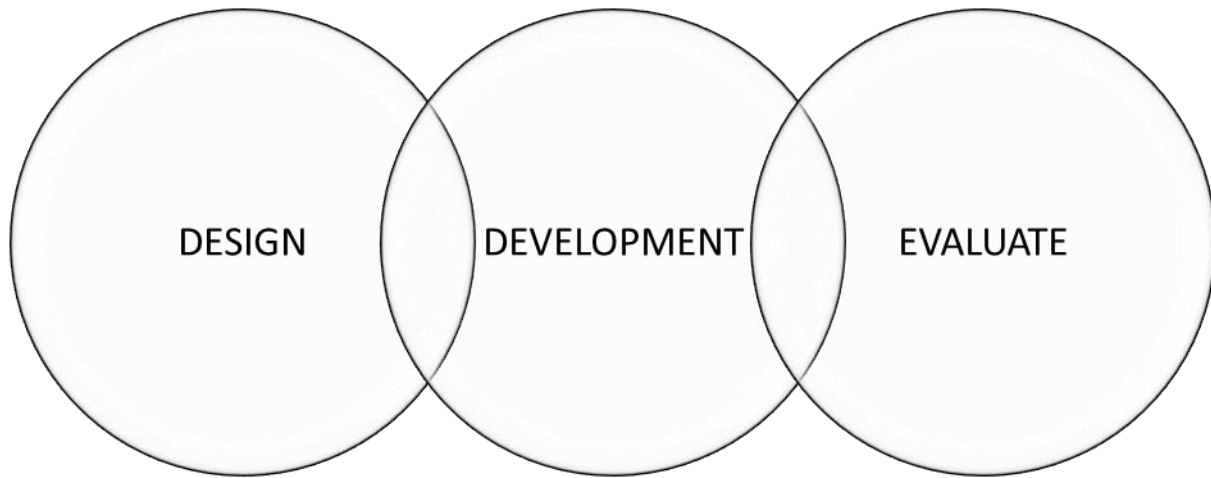
Figure 1. The major phases of the research and development model

Every phase of the study will produce some specific instructional output. The design phase, which consists of steps no 1 until step number 6, involved several experts such as a subject matter expert, an instructional designer, a media specialist, and an information and communication technology ICT expert in a series of focus group discussions.

The result of the design phase is a blueprint of the virtual laboratory program on management and entrepreneurship course for distant learners. the production and evaluation phases of the study will be conducted in the following years since this present study since this study was planned for a multi-year schema.

The output of the development phase of this present study is a draft of the virtual laboratory program on management and entrepreneurship course. The development of the program was based on the blueprint of a virtual laboratory program on management and entrepreneurship course that had already been done. The draft of the program will be formatively evaluated in the following phase of the study – the evaluation phase.

The evaluation phase will be conducted by implementing the three formative evaluation steps: one–to–one formative evaluation, small-group formative evaluation, and field-trial evaluation (Dick, Carey, and Carey, 2015). Every step of the formative evaluation will be followed by a revision

process to ensure that the virtual laboratory program on management and entrepreneurship course can be used effectively by the intended target audience.

3 FINDINGS AND DISCUSSION

This research and development study was planned to be held in three following phases 1) design, 2) development, and 3) evaluation. The three phases of the design will be run in three consecutive years. The design phase of the study, conducted in the first year, resulted the design or blueprint of the virtual laboratory program on management and enterpreneurship courses.

The goal of this present study is to create an effective and efficient virtual laboratory program that can facilitate students' learning process to practice management and entrepreneurship skills. The virtual laboratory program is necessary for students of Economics and Business of Universitas Terbuka to practice the simulation learning activities in implementing the knowledge and management skills.

The design phase of this study consists of some workshops and focus group discussions that involve some of the following experts such as 1) an instructional designer, subject matter experts, media and ICT specialists. These selected experts collaborated intensively to design the virtual laboratory program to be used by the students of Economics and Business program of Universitas Terbuka to practice the management and enterpreneurship skills.

The first step of the design phase was to determine the instructional goals of the program by analysing the course content and curriculum of the program. After completing the virtual laboratory program, the students will be able to design and develop a business plan that can be implemented in small scale business start-up that implement the principles and theory of management and entrepreneurship.

The following step in designing the virtual laboratory program was to conduct an instructional analysis process. This step was done by analyzing the previously stated instructional goals to be the sub-skills that must be attained by the students to master the instructional goals. In other words, the result of the instructional analysis process is the structure of the sub-competencies that students must learn to produce an entrepreneurial-based business model.

The result of goal analysis was used as a base for determining the substances and learning activities that students must do to master the stated instructional goals. The determined substances or learning

content that should be learned by students must be relevant to predetermined learning goals. the students must learn the substances of the program systematically to attain the learning goal - producing an entrepreneurial-based business model.

4   CONCLUSION

The role of media and technology is considered crucial in conducting distance learning systems. Media and technology are used as the delivery system to bridge the separation between instructors and students in the learning process. Universitas Terbuka, the higher education institution that implements open and distance learning systems uses printed media as the main learning resource learned by students. The use of the printed medium is not effective to deliver all types of course substances. Every medium has a specific attribute that can be used optimally to convey specific course substances.

In practicum courses, it is important for Universitas Terbuka to use the media and technology that enable students to practice and implement theories and principles taught in the courses. The use of a virtual laboratory offers the potential to facilitate students to develop the required knowledge and skills studied in courses. The use of a virtual laboratory enables the student to poses authentic learning experiences concerning the knowledge and skills learned in courses. The students will be able to practice knowledge and skills by using virtual laboratory.

ACKNOWLEDGEMENTS

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THE IMPLEMENTATION OF HEALTHY LIFE IN THE PERSPECTIVE OF REGENT REGULATION NUMBER 44 YEAR 2020 IN EFFORT FOR SUPERVISION AND PREVENTION OF COVID-19 IN SIDOARJO REGENCY

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Abstract

Regulations are a guide in coordinating individuals to create an orderly and conducive atmosphere in carrying out social activities in a state of law. Although the Sidoarjo Regency Regent Regulation Number 44 of 2020 has been established in an effort to control and prevent Covid-19 in Sidoarjo Regency. It is undeniable that the Corona Virus Disease (COVID-19) prevention regulations are not running effectively with the increasing number of confirmed cases of the pandemic. So that the question arises about the application of these regulations are carried out as they should.

The focus of the problems observed are: 1) How is the application of Regent Regulation No. 44 of 2020 in an effort to control and prevent Covid-19 in Sidorajo Regency? 2) What is the lifestyle of productive community activities, disciplines that hinder efforts to prevent Covid-19 in Sidorajo Regency? The purposes of this study are 1) To describe the application of a healthy lifestyle as an effort to prevent Covid-19. 2) To describe the pattern of life of productive community activities, discipline and obstacles in efforts to prevent pandemics.

The research used by the researcher is a qualitative approach, the type of juridical empirical, where the researcher describes the time of doing research. The researcher seeks to thoroughly examine the substance of the regulation on the application of a healthy, disciplined and productive lifestyle. The location of the research was carried out in the Sidoarjo Regency Government. In determining the informant, the researcher uses*purposive*. Data collection techniques carried out by researchers using interviews, observation, and documentation. Furthermore, data analysis uses data reduction, data presentation, and conclusions. Data validity using source and technique triangulation

The results of this study 1) the control and supervision of the regent Number 44 of 2020 article 7 paragraph 1 leads to controlling the adjustment of community activities in the household environment, educational institutions, work environment and public crowds. Because community control is the initial action to suppress the spread of covid through healthy living as a form of handling carried out by the Sidoarjo district government. That a healthy lifestyle in Sidoarjo Regency shows that the people do not implement healthy living activities productively as well as discipline that is not ideal during the Covid-19 pandemic, especially in using health protocols.

Keywords: *Supervision and Prevention, Lifestyle, and Covid-19*

1 INTRODUCTION

The emergence of the virus in the city of Wuhan, China at the end of 2019 then shocked the world. The SARS-CoV-2 virus, which causes a very severe disease, initially only infects thousands of Chinese citizens. After that, the virus began to come out and infect various neighboring countries, such as South Korea and Japan. The world is increasingly critical when the virus is increasingly

spreading with a wider reach, including Indonesia[1]. This type of virus likes to attack the body's weak immune system, resulting in decreased self-balance accompanied by a cold cough, fever, difficulty taking naps and shortness of breath. Even to death. The symptoms cannot be determined correctly because they can be divided into 2 corporations, there are humans without signs of symptoms and there are those who experience symptoms, both mild and severe.

The concept of the rule of law of Indonesia is formulated in Article 1 Paragraph (3) that Indonesia is a state of law. In a legal country, every assessment of every assessment of state action, whether in the scope of service, must be based on statutory norms or based on validity.[2]The point is that the state does not carry out government actions without the basis of authority. The administration of government affairs in dealing with natural and non-natural disasters must be guided by applicable laws. In the era of the covid-19 pandemic that is currently raging in Indonesia, it is an event that is detrimental to the people and the country of Indonesia, with the emergence of the Covid-19 pandemic, the Indonesian government is trying to deal with disasters against the Covid-19 pandemic. In the Big Indonesian Dictionary, disaster can be interpreted as something that causes or causes misery, loss, sufferers and can also be understood as a sequence of events that threatens someone's life.[3]In external regulations, considering Article 9 Paragraphs (1) and (2) of Law Number 6 of 2018 concerning health quarantine that the public or individuals are obliged to comply with health quarantine and the implementation of quarantine health must be followed by every person who is confirmed to have contracted the disease.[4]

Islamic leaders must be able to point out and solve problems that arise in their homes. Therefore, legal instruments are needed that regulate the realization of the public interest, become the basis for the leadership movement, and avoid damage values. According to Abdul Wahhab Khallaf, Siyasah al Syar'iyyah is "the authority of a leader in a country in regulating common interests for the sake of creating the common good and avoiding harm".[5]

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[1]Worldometers. "Coronavirus Pandemic" accessed on October 3, 2021, http://www.who.int/emergencies/diseases/novel-coronavirus-2019.

[2]Tutik Quarterly Point, Introduction to Indonesian State Administrative Law (Jakarta: librarian achievement, 2010), 155.

[3]Ministry of Education and Culture, Big Indonesian Dictionary (Jakarta: Balai Pustaka, 1994), 115.

[4]Law Number 6 of 2018 concerning Health Quarantine

[5]Rizal, LF "Siyasah Syariyah's Perspective on the State Emergency in Handling the Covid-19 Pandemic". ADLIYA: Journal of Law and Humanity, Vol. 14 No. 1, 2020, 41

The Indonesian government has formed a task force to accelerate the handling of the Corona Virus Disease 2019 (Covid-19) with the aim of facilitating coordination between institutions and the prevention and control of the impact of Covid-19. This policy focuses on the nature of the instructions and advice regarding what is allowed and not allowed by most people. In addition, the government consistently carries out movements that are monitored and responsive to the community in the hope of increasing public awareness about the dangers of Covid-19.[6]

The law was made as an achievement to achieve prosperity and justice. In its formation, legal products must be made based on the totality of rational reason so that the resulting product is in accordance with what is desired with an enforced motive. The regulations are stated in written form, in particular the laws and policies that apply in the framework of guidelines that are binding and coercive, and of course they need to be enforced even though they are complex, which are contrary to the rules that run in the local population. Therefore, criminal products that are bad and right are still considered valid legal guidelines if they no longer violate the rules of procedure in making laws.[7]

Improving people's welfare, equitable distribution of justice, respect for local culture and its potential and diversity, and democratization are the authorities in the implementation of regional autonomy. After that, this authority is given by the regional government to the region at large to exercise authority over the needs and interests of the people, as well as to develop every potential in the region. Because the government and provinces are only allowed to carry out autonomous activities to the extent stipulated by this regulation, efforts to limit the authority of the government and the authority of the province as an autonomous region. monitoring and evaluation of all aspects of government.[8]

After holding large social activities (PSBB) in several areas that are considered strong and the spread of Covid-19 has reduced, the government has significantly begun to issue policies on new life patterns or current behaviors as techniques or stages of restoring community activities through the implementation of fitness. This is of course the same as news quotes posted through information from Masduki content writers in particular, namely:[9]

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[6]Mahardhani, Ardhana Januar, and M. KP "Being Good Citizens During the Covid-19 Pandemic: A New Normality Perspective." JPK (Jurnal of Pancasila and Citizenship). Vol.5. No. July 2, 2020, 66.

[7]Sudiyana, Suswoto. Critical Study of Legal Positivism Theory in Achieving Substantive Justice. (QISTIE Scientific Journal of Law), Vol.11 No.1 May 2018, 2

[8]Deddy Supriyadi, Autonomy for Local Government Administration (Jakarta: PT Gramedia Pustaka Utama, 2004). 32

[9]Masduki, "Government Regarding Covid Handling" accessed on October 6, 2021, http; //www.news.detik.com.

a)   The government will issue a new custom program.

b)   The government will try to gradually improve the financial system.

c)   The government will consistently implement habitual behavior on new days to be healthy and avoid the spread of the virus.

After that Regulation of the Minister of Health of the Republic of Indonesia Number 9 of 2020 Section 2 About Guidelines for Prevention and Control of Covid-19.[10]In relation to article 2 above which tells the number of cases as well as in an area with a significant and rapid spread. In line with the Minister of Health Regulation, the President emphasized the increase in new customary areas or variations of the latest behavior on the orders of the President of the Republic of Indonesia Number 6 of 2020 concerning Field Implementation and regulations for protocol enforcement in the prevention and control of 2019 Corona Virus disorders.[11]So the government here gives a mandate to agencies related to handling Covid-19 to the Governor and the Regent/Mayor to take on their duties and functions in carrying out their respective authorities in ensuring legal certainty as well as efforts to increase the effectiveness of preventing the corona virus in the territory of Indonesia.

Likewise, the Sidoarjo Regency Regional Regulation Number 12 of 2013 concerning the Implementation of Disaster Management.[12]As explained in Article 1 Paragraph (5) and Paragraph (6) overall, it is concluded that a disaster event is a series of phenomena that threaten and disrupt the lives and livelihoods of many people caused by natural factors or non-natural factors or human factors, resulting in human casualties, environmental damage, loss of property, as well as psychological impacts as well as the implementation of disaster management which is partly in a series of efforts that include the determination of development policies that pose a risk of disaster, disaster prevention activities, emergency response, and rehabilitation.[13]

Sidoarjo Regency is a district in East Java with confirmed cases of Covid-19 as of October 19, 2020, ranks second with the most positive Covid-19 confirmations in East Java. Follow-up activities as the implementation of Presidential Instruction Number 6 of 2020, one of which instructs Governors, Regents and Mayors to establish regulations on the application of discipline and law enforcement of

[10]Regulation of the Minister of Health of Indonesia Number 9 of 2020 concerning Guidelines for Large-Scale Social Restrictions in the Context of Accelerating Handling of Corona Virus Disease 2019

[11]Presidential Instruction Number 6 of 2020 concerning Discipline Improvement and Law Enforcement of Health Protocols in the Prevention and Control of Corona Virus Disease 2019.

[12]Sidoarjo Regency Regional Regulation Number 12 of 2013 concerning Disaster Management Operators.

[13]Sidoarjo Regency Regulation Number 12 of 2013 Article 1 concerning the Implementation of Disaster Management

health protocols. On June 10, 2020, the Regent of Sidoarjo made a policy regarding the implementation of a healthy, disciplined and productive lifestyle in the midst of the Covid-19 pandemic by issuing Regent Regulation Number 44 of 2020 concerning the implementation of a healthy, disciplined and productive lifestyle in the midst of a pandemic. Covid-19 as an effort to control and prevent Covid-19.

Since the ratification of Regent's Regulation Number 44 of 2020 concerning the application of discipline and law enforcement of health protocols in preventing and controlling the transmission of the 2019 corona virus disease, it turns out that there are still many people who do not comply with the Regent's regulations regarding articles 4 and 5 regarding the lifestyle of the people during the transition period in Sidoarjo Regency.

2   METHODOLOGY

This research is a juridical empirical type because it assesses it as a social phenomenon that occurs. This study uses a qualitative approach which will produce descriptive data analysis. This research is located in the government of Sidoarjo district. Data collection techniques in this study using observation, interviews and documentation.

3   FINDINGS AND DISCUSSION

3.1   The Implementation of Regent's regulation No. 44 of 2020 in an effort to control and prevent Covid-19 in Sidoarjo Regency

Monitoring and supervision carried out by the Sidoarjo district government establishes a cooperative relationship with the regional disaster management agency and the Sidoarjo district health office, the role of the health office in monitoring efforts to help monitor and provide direction to the people of Sidoarjo district in implementing the covid prevention health protocol as referred to in article 7 paragraph 1 prevention of Covid which is applied to the household environment, educational institutions, work environment and public crowds. The following are some adjustments to community activities carried out by Sidoarjo district health in accordance with the direction of the regent's regulation no. 44 years 2020.

In the family and household environment, every individual in their activities is obliged to implement the healthy living community movement (Germas) through the implementation of health protocols by washing hands with running water and soap or using hand sanitizer before and after doing

activities outside the home, using masks when going out of the house. , routinely cleaning items used in general by using disinfectants, limiting activities outside the house only for important and urgent activities, maintaining personal health and not doing activities outside the home when feeling unwell, limiting activities outside the house for those who have a risk high exposure to Covid-19,perform physical restrictions (physical distancing) within a range of at least 1 meter between people in interacting groups, limit themselves not to be in crowds of people, avoid personal tools simultaneously and protect themselves for the use of goods in public facilities.

Furthermore, the implementation of adjustments to the school environment of educational institutions, administrators or persons in charge of educational institutions conduct teaching and learning activities that provide education and implement health protocols in school and madrasa areas with the following provisions:

a. Use masks and face shields
b. Take body temperature measurements for all students and education staff
c. Wash hands with running water and soap before and after doing activities.
d. Implement a safe distance between students and education staff
e. Cleaning the area of a school or other educational institution

In carrying out the responsibilities of educational institutions, use the capacity of the number of students at most 50% of the maximum number of study groups and install banners containing the obligation to use masks in the school environment, maintain distance, and wash hands with clean running water, not forgetting to use soap.

Application to the work environment, as a supervisor or person in charge is obliged to educate and implement health protocols by requiring workers to wear masks, strive for a clean and hygienic work environment, for example, by doing regular cleaning using cleaners and disinfectants, applying body temperature checks before entering the workplace, providing facilities wash hands with running water and soap, maintain a distance in all work activities as well as setting the distance between one worker and another worker, which is approximately 1 meter in work activities.

Furthermore, the application of healthy living in the environment in public crowds. The general crowd is often defined as a group of groups who carry out activities outside the home by moving places with quite a lot of members. Application to the crowd environment (entertainment areas and

public facilities), as a leader or person in charge is obliged to educate and implement health protocols by requiring visitors to wear masks, except from entertainment venues, swimming pools and karaoke places, administrators who are also in charge of entertainment venues and public facilities holding mandatory activities to comply with regulations such as limiting the number of visitors to a maximum of 50% of the capacity of entertainment venues and public facilities, providing hand washing facilities with running water using soap,

This is very relevant to the theory explained by Rusli Ruthan that, According to him, a healthy lifestyle in every action that affects opportunities directly or in a large community becomes more efficient in minimizing the spread of disease.[14]

Based on the above opinion, it can be concluded that a healthy lifestyle is related to a person's efforts to minimize the spread of unwanted disease, one of which is by applying it to several groups so that it becomes efficient.

The form of supervision effort from the Sidoarjo district government in dealing with the COVID-19 pandemic is not only through supervision from the health department but also assisted by monitoring from the disaster management agency by making an independent isolation place with a large capacity which was established in a service mall centered in Sidoarjo city. BPBD takes part in the distribution of health equipment such as masks and hand satitaizers taken from the health office for further distribution evenly in 18 sub-districts in Sidoarjo district.

3.2. How is the Life of Productive Community Activities, Discopline and Obstacles to Covid-19 Prevention Effort in Sidoarjo Regency

3. Results and Discussion

3.1 implementation of Regent's regulation no. 44 of 2020 in an effort to control and prevent Covid-19 in Sidoarjo Regency

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[14]Zaenuddin HM, Secrets of Healthy Living (Jakarta: Pustaka Inspira, 2014), 54

monitoring and supervision carried out by the Sidoarjo district government establishes a cooperative relationship with the regional disaster management agency and the Sidoarjo district health office, the role of the health office in monitoring efforts to help monitor and provide direction to the people of Sidoarjo district in implementing the covid prevention health protocol as referred to in article 7 paragraph 1 prevention of Covid which is applied to the household environment, educational institutions, work environment and public crowds. The following are some adjustments to community activities carried out by Sidoarjo district health in accordance with the direction of the regent's regulation no. 44 years 2020.

In the family and household environment, every individual in their activities is obliged to implement the healthy living community movement (Germas) through the implementation of health protocols by washing hands with running water and soap or using hand sanitizer before and after doing activities outside the home, using masks when going out of the house. , routinely cleaning items used in general by using disinfectants, limiting activities outside the house only for important and urgent activities, maintaining personal health and not doing activities outside the home when feeling unwell, limiting activities outside the house for those who have a risk high exposure to Covid-19,perform physical restrictions (physical distancing) within a range of at least 1 meter between people in interacting groups, limit themselves not to be in crowds of people, avoid personal tools simultaneously and protect themselves for the use of goods in public facilities.

Furthermore, the implementation of adjustments to the school environment of educational institutions, administrators or persons in charge of educational institutions conduct teaching and learning activities that provide education and implement health protocols in school and madrasa areas with the following provisions:

a.   Use masks and face shields

b.   Take body temperature measurements for all students and education staff

c.   Wash hands with running water and soap before and after doing activities.

d.   Implement a safe distance between students and education staff

e.   Cleaning the area of a school or other educational institution

In carrying out the responsibilities of educational institutions, use the capacity of the number of students at most 50% of the maximum number of study groups and install banners containing the

obligation to use masks in the school environment, maintain distance, and wash hands with clean running water, not forgetting to use soap.

Application to the work environment, as a supervisor or person in charge is obliged to educate and implement health protocols by requiring workers to wear masks, strive for a clean and hygienic work environment, for example, by doing regular cleaning using cleaners and disinfectants, applying body temperature checks before entering the workplace, providing facilities wash hands with running water and soap, maintain a distance in all work activities as well as setting the distance between one worker and another worker, which is approximately 1 meter in work activities.

Furthermore, the application of healthy living in the environment in public crowds. The general crowd is often defined as a group of groups who carry out activities outside the home by moving places with quite a lot of members. Application to the crowd environment (entertainment areas and public facilities), as a leader or person in charge is obliged to educate and implement health protocols by requiring visitors to wear masks, except from entertainment venues, swimming pools and karaoke places, administrators who are also in charge of entertainment venues and public facilities holding mandatory activities to comply with regulations such as limiting the number of visitors to a maximum of 50% of the capacity of entertainment venues and public facilities, providing hand washing facilities with running water using soap,

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3.2 How is the life of productive community activities, discipline and obstacles to Covid-19 prevention efforts in Sidoarjo Regency.

A productive and disciplined life in maintaining a healthy lifestyle is not carried out by the people of Sidoarjo, it has been socialized in the form of direct participation from the Health Service team and evaluation in the form of data collection from the Sidoarjo district health office. According to Thomas Ghordon, self-discipline is behavior that is carried out consistently. Healthy living activities can start from getting each individual to practice a clean lifestyle such as washing hands, eating nutritious foods including: vegetables, fruit, milk, and exercising regularly in addition to disciplined and productive efforts in Perbub Number 44 of 2020 including:

1. Wearing a mask

The regent's regulation Number 44 of 2020 has arranged for people to wear masks to prevent the entry of the Covid-19 virus. Wearing a mask has been proven to be effective in preventing the transmission of the Covid-19 virus, but very few of the people of Sidoarjo actually comply with these regulations.

In fact, health protocols are increasingly happening in the midst of society, especially violations by not using masks, both on the street and at work. Only a small part of the community really applies the importance of using masks while most do not comply. There are also many people who behave as if obeying by carrying masks but using them is wrong, not in accordance with government regulations but to avoid being blocked by raids. So they use masks in an inappropriate way.

2. Wash your hands

Based on research studies, washing hands regularly using clean water and soap can reduce the risk of transmitting viruses, including respiratory infectious diseases, the corona virus by 37%. However, residents who diligently wash their hands with soap, especially in schools where offices, households and entertainment venues are located, are rarely done.

People rarely wash their hands, especially when they go outside. They only wash their hands in certain activities, such as eating without paying attention to objects or tools around them that they have touched. thus washing their hands for them is not in implementing a clean lifestyle in protecting themselves from the corona virus but only being considered dirty hands. This means that the people of Sidoarjo district are not good enough in implementing the health protocol to wash their hands diligently as regulated in the regent's regulation Number 44 of 2020

3. Keep your distance

Keeping a distance from other people is well aimed at significantly limiting the spread that was decided in the regent's regulation No. 44 of 2020. Emphasizing the need to maintain social distance is mostly violated and not implemented by most of the people of Sidoarjo and only very few Sidoarjo people are truly obedient on healthy patterns in the era of the Covid pandemic. This can be seen from people who walk a short distance or sit in crowded places without guidance or sitting rules from the responsible party in the form of a slogan prohibiting sitting together, so that it can potentially transmit the Corona virus.

4. Avoid crowds

The regent's regulation No. 44 of 2020 also emphasizes the importance of avoiding large crowds. but in fact many people congregate in shopping, public facilities or entertainment venues. from the results of the interview above that the compliance of the people of Sidoarjo to avoid crowds as stated in the regent's regulation Number 44 of 2020 is also relatively low. This phenomenon can be seen from the number of incidents of violations that are actually intentional by gathering people together in large numbers with the aim of holding a celebration. There are many other impacts that arise from the disobedience of the people of Sidoarjo, one of the impacts experienced is the occurrence of overload in the hospital and the number of medical officers who died.[16]

Based on data obtained from the Sidoarjo district BPBD that Sidoarjo occupies the number 2 position from the top after the city of Surabaya with the highest annual Covid cases in 2020 with details of positive patients as many as 6,977, patients recovering with a total of 6,191 and those who died 458. Analysis of the results of the analysis shows that The level of awareness of the Sidarjo community

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[16]Observation, at the Sidoarjo Regency Regent's Office, 10 July 2022.

in carrying out a healthy lifestyle for those who comply is 54% while those who do not comply are 46%.Internal factors inhibiting the implementation of the Sidoarjo regent's regulation Number 44 of 2020 include the lack of availability of human resources that are lacking and basic, one of which is seeing how many socialization programs have been carried out, in fact, in the chart data and also table 4.3 in the data analysis, it still shows that the number of COVID-19 increases is quite increasing. , the lack of firmness in providing sanctions in the form of confiscation of ID cards for 3 days only provides a temporary deterrent effect that may be repeated.[17]

This is relevant to the theory put forward by Notitie handhave milienreach that,

Monitor and implement the use of administrative, criminal or civil law instruments until the laws and regulations apply to the public and individuals.[18]

Thus, based on the above opinion, it can be concluded that law enforcement can be carried out in general and individuals can see from the laws and regulations that apply legally to the area. Meanwhile, the external factors that hinder the implementation of the regent's regulation number 44 of 2020 are cultural factors and attitudes in humans. According to Lawrence M. Freadmen, legal culture is defined as a legal system created by a group of people through attitudes, behavior and knowledge. Some of the daily patterns of the people of Sidoarjo think that maintaining a lifestyle is just a normal and ordinary thing without paying attention to the bad effects if it is repeated, especially during the Covid-19 pandemic.

The factor is the lack of public awareness of Sidoarjo Regency towards the application of preventing a healthy lifestyle in the spread of Corona Virus disease.

This statement is relevant to the theory put forward by Soerjono Soekanto regarding the effectiveness of the law. clearly seen from the benchmarks of the theory of legal effectiveness:

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[17]Observation, at the Sidoarjo Regency Regent's Office, 10 July 2022.

[18]Satjipto Rahardjo, Legal Studies, (Image Aditya Bakti: Bandung), 2012, 45

A law can be understood by all circles of society with public knowledge if there is a solution that can be relied on by law enforcement as a way out.[19]

As stated by Soerjono Soekanto, the handover of equal and fair rights to the community is aimed at obtaining a better life. The rule of law succeeds or fails in achieving its goals, it can be seen from the success of regulating the attitudes and behavior patterns of certain people so that it can be said that they are right with achieving their goals or not.

4   CONCLUSION

Communities in Sidoarjo Regency in an effort to inhibit Covid-19, namely the application of a healthy community lifestyle in several community environments, namely fostering PHBS in the household environment, PHBS in the educational environment, PHBS in the work sector and PHBS in the public with the application of healthy living habits by using running water, eating nutritious food.The pattern of people's lives in Sidoarjo Regency in the application to inhibit Covid-19 is that there is a productivity habit that most people work in the industrial and factory sectors with a busy schedule, besides that there is a lack of discipline in using health procedures while carrying out daily activities. The inhibiting factor in implementing a healthy lifestyle in Sidoarjo Regency is that there are still many people who do not apply a healthy lifestyle during the Covid-19 pandemic in 2020. The decline is influenced by factors that inhibit the level of awareness of the community's low discipline and productivity that is not ideal for their health.

ACKNOWLEDGEMENTS

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[19]Winarno Yudho and Heri Tjandrasari, "Effectiveness of Law in Society", Yudho: Journal of Law and Development, Vol. 17 No. 1, 1987, 57.

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Regent Regulation Number 44 of 2020, concerning the implementation of a healthy, disciplined, and productive lifestyle in the midst of the 2019 corona virus disease pandemic in an effort to monitor and prevent covid-19

Regional Regulation of Sidoarjo Regency Number 12 of 2013, concerning Disaster Management Operators

THE VIRTUAL REALITY OF THE AUTOMATED LIBRARY CIRCULATION SYSTEM AS A PRACTICUM LEARNING MEDIA

Widiyanto[1] and Majidah[2]

[1,2]*Universitas Terbuka (INDONESIA)*

Library circulation services have grown rapidly. At this time circulation services can be carried out independently, especially in borrowing and returning books. The circulation service uses RFID to detect books that are borrowed or available. But not many libraries have implemented this system, due to the high investment costs. To provide a real student experience, it is necessary to compile media that students can use to understand library services independently with the implementation of RFID, especially during a pandemic that causes students not to be able to practice directly in the library. This study aims to arrange virtual reality in library circulation with self-service as a learning medium. The system development method uses the SDLC method. From the results of reviews from media experts, library automation experts, and users, it is stated that virtual reality can be used as a learning medium, especially for Library Work Practice Courses, and several courses on library management. Users feel that virtual reality can provide a fairly real experience of implementing RFID in library circulation with self-service.

Keywords: automated library circulation system; virtual reality; practicum learning media; self service library

1   INTRODUCTION

Work practice is training held in the field or outside the classroom as learning activities and an integral part of the training program (Hamalik, 2001). Work practice is a learning system in an industry or agency relevant to students' competency skills for some time. Work practice provides an opportunity for students to hone the skills they already have. So that students could have sufficient capital and better preparation to enter the working environment. In addition, the choice of place for work practice also influences the skills that will be mastered. Work practice significantly impacts students' readiness to enter the working environment (Cahyaning et al., 2019).

Noting the positive impact of work practices, planning and placement of practical courses are expected could provide students with experience following the working environment. Getting a suitable place that meets students' competence requires cooperation with agencies or institutions. There are often obstacles to the student's placement. There is a limited number of agencies for work practices. Besides, workplace agencies sometimes have an inconducive working environment.

The Library Work Practice Course is one of the courses in the Library Science and Information Science Study Program. The Library Work Practice Course aims to improve prospective library

staff's quality by applying theory to the working environment. The Work Practice Course is expected to enhance the student experience. With such increased experience, students it expected to have improved abilities so that they are ready to enter the working environment as a librarian (Wahyuningsih et al., 2021).

Students frequently have difficulties finding a place for library work practice, especially during the COVID-19 pandemic when many agencies do not consent to work practice. In a way, using technology is an alternative to learning, including practical learning (Aji et al., 2020; Almeida & Simoes, 2019). However, there will be a gap between online and offline learning (Sari & Karawang, 2021) as academic problems cannot be communicated remotely, especially with practical courses (Hendaryati & Faridah, 2019).

Libraries have been experiencing developments in management and media use. Library automation makes library management easier. Technologies applied include Self Check-in/out, Shelf Management, Anti-Theft Detection, DropBox, Tagging, check-in/out Service, Automated storage and retrieval system. This technology has not been widely implemented in Indonesian libraries because of the high equipment cost. The limited number of libraries with automation technology results in smaller opportunities for work practice on library automation technology. Hence, alternatives are needed so students can still practice using the library automation technology.

Virtual reality is one of the technologies that can be used to experience real life. It can provide experiences that resemble the original environment. This technology can strengthen people's understanding; for example, humans can enter cyberspace through professional equipment and interact with things in cyberspace. Some high-end devices can create realistic environments in virtual scenes using sound, light, electricity, and other technologies and directly affect sight, hearing, taste, touch, and more, providing an immersive experience (Fang, 2021). The virtual reality technology environment can give a more direct and intuitive experience to deepen the user's impression, improve information identification, and reduce cognitive user load.

Virtual reality technology has high user adaptability. When people enter the "virtual world", they do not passively receive the scene provided by the virtual world. They can choose the set they want. For example, the VR Web Library positioning system developed by the library can display the bookshelves inside the library on the user's mobile device, and the user can move around the virtual library on the mobile device (Fang, 2021).

Virtual reality-based simulators are essential to modern education (Roy et al., 2017). Users can perform activities in the virtual environment, such as activities in the real world. For example, students can read books in the library. So in the virtual environment, if the user enters the library room, the user can access and read the information needed through the information pop-up available in the VR application (Sudiarno & Maulana, 2021).

2 METHODOLOGY

Virtual reality design applies the System Development Life Cycle (SLDC) method. SLDC has six phases: initial investigation, system analysis, system design, system development, system implementation and system maintenance (Williams & Sawyer, 2007).
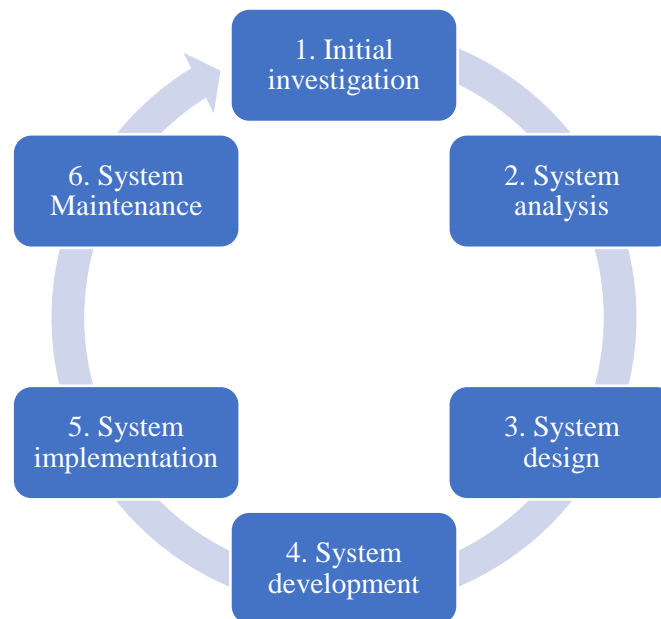
Figure 2. the System Development Life Cycle *(SLDC)*

SDLC phases

a. The initial investigation includes preliminary analysis, proposing alternative solutions, describing costs and benefits and submitting initial plans.
b. Systems analysis includes collecting data, analyzing data, and writing reports.
c. System design includes making initial designs, detailed designs, and writing reports.
d. System development includes software development, hardware acquisition and system testing.

e. System implementation includes converting to a new system and training users.

f. System maintenance aims to keep the system running by conducting periodic audits and evaluations.

Software testing is an essential part of the software development process. Software testing aims to ensure system quality is as expected. The most important aspects of choosing a test methodology are effectiveness and economy. The effectiveness means that the designed test uncovers the maximum number of errors in the software. Economic factors are related to the time and resources involved in testing (Shi, 2010).

One type of software testing is defect testing. Defect testing aims to identify the presence of latent defects in the software. This test differs from validation testing, which strives to show that the system has met its specifications. The system's flaws are identified by entering test data that cause deviations.

Functional testing or black-box testing is a testing approach whose tests are derived from program or component specifications. This test is only used to uncover software functionality. Testing is done by inputting test data into components or systems and examining the output. If the output is as expected, then the test is considered successful in finding errors in the software. The key in functional testing is the selection of input with a high probability of being a set member (I_e). Functional testing is depicted in Figure 2.
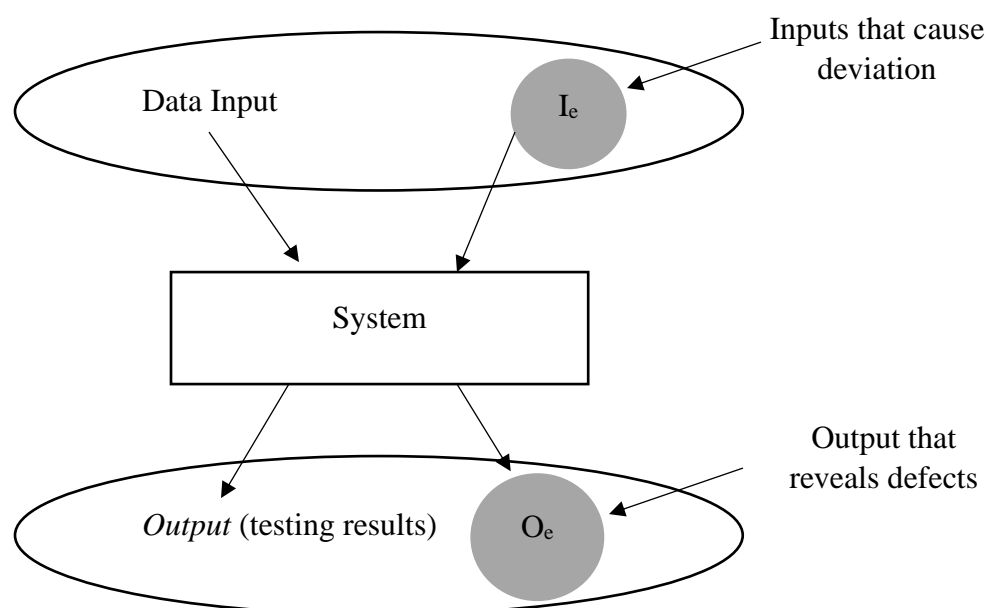
Figure 3. Functional testing

3   FINDINGS AND DISCUSSION

Virtual Reality Library Automation is designed to run in a browser. The programming language used is HTML5. The Virtual Reality Library Automation was prepared through the workflow stage of application development, 3D design using 3D Blender design software, DropBox UI Design and UI Self Check Design.

3.1   3D Desain

The 3D design used software, namely blender. At this stage, a 3D library design has been compiled, which includes the design of the building, bookshelf, drop box, self-check, reading table, service desk and computer equipment.
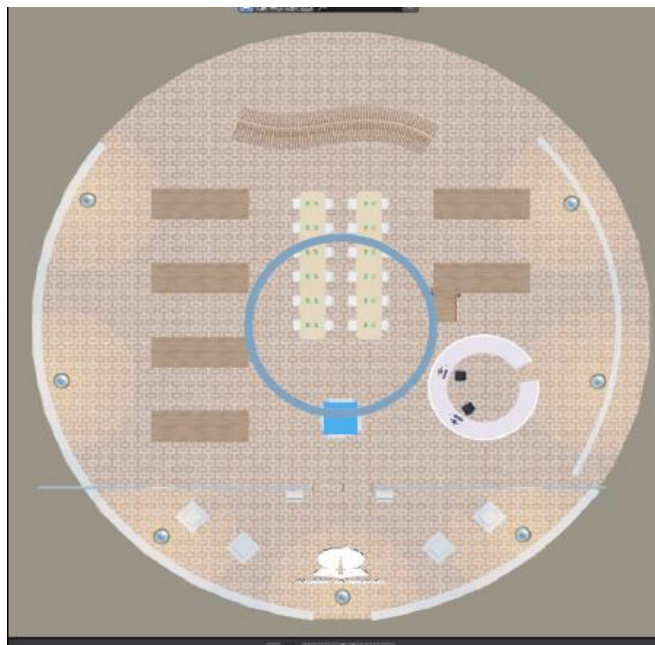
Figure 4. Top view
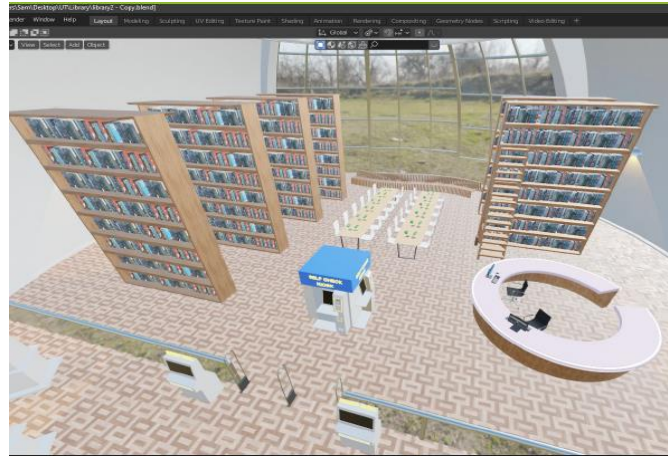
Figure 5. Side view

Figure 6. Front view
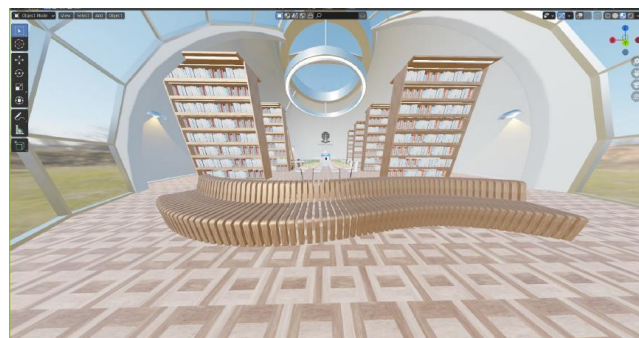
Figure 7. Back view

We received several inputs from FGDs with multimedia experts and librarians. The room design is still too empty. It needs to be equipped with various accessories, such as posters, adding library identity. Bookshelves' positions should not be aligned but follow the circle radius to improve the rendering results. It needs to add a sign like a library in general so that it will be easier for users to

find the position of a particular room. The glass divider needs to be redesigned not to reflect, showing outdoor shadows. Library room design requires standardization following library standards. DFD must first prepare the design of the library building, and the design needs to be more efficient to contain more library materials, including lighting.

3.2 UI Drop Box Design

The drop box UI design follows some of the designs in the cited library. The front page shows the library identity; the ID scanning menu will appear. At this stage, the user will put the ID Card to be scanned in the drop box. After being read by the device, the user ID will be read and visible on the Drop Box layer. Next, the Return Book, Extend Boo, Profile and History menus will appear.
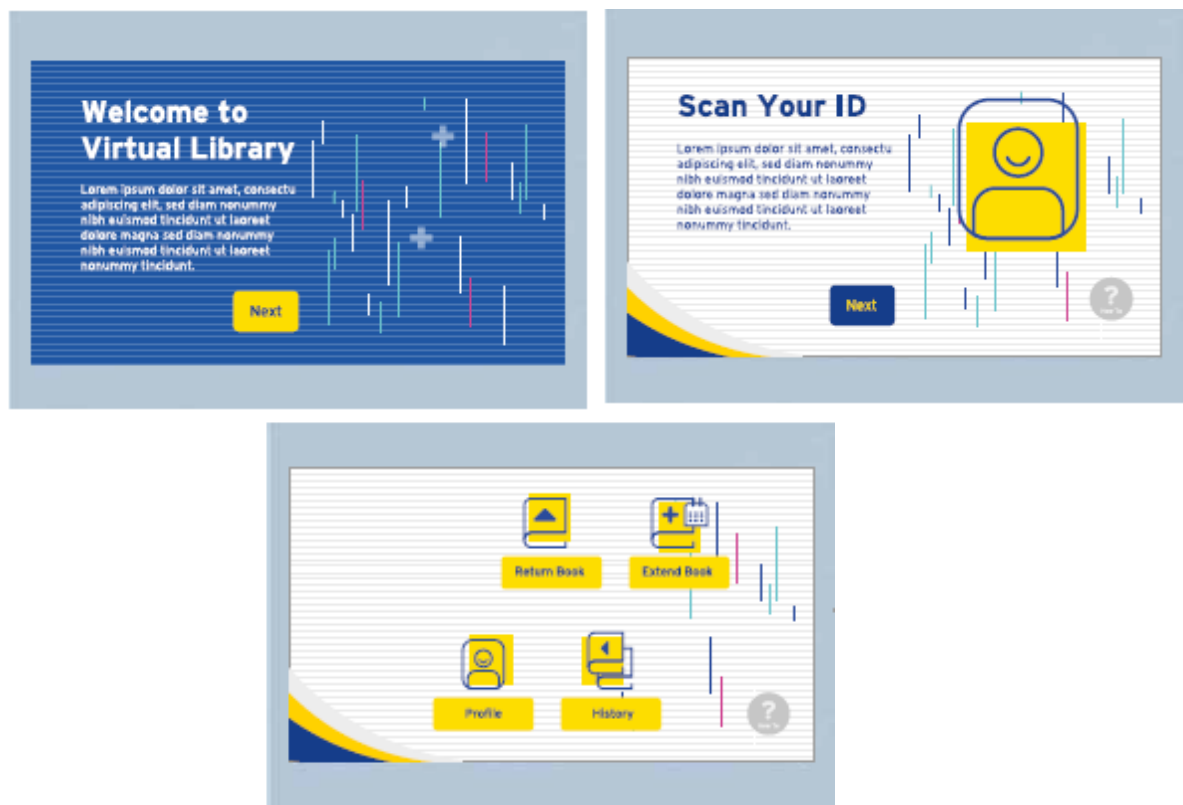
Figure 8. UI Menu Login Drop Box Design

After the user selects the return book, the user is asked to place the book to be returned. After the book is placed in the drop box booth, the book data will be read. Then an option will appear, "to print or not" a book return receipt. Then, the user will log out immediately after selecting the print receipt

option. If the borrowed book is not read or there is an error in scanning the book data, the screen will appear that the book data is not detected.
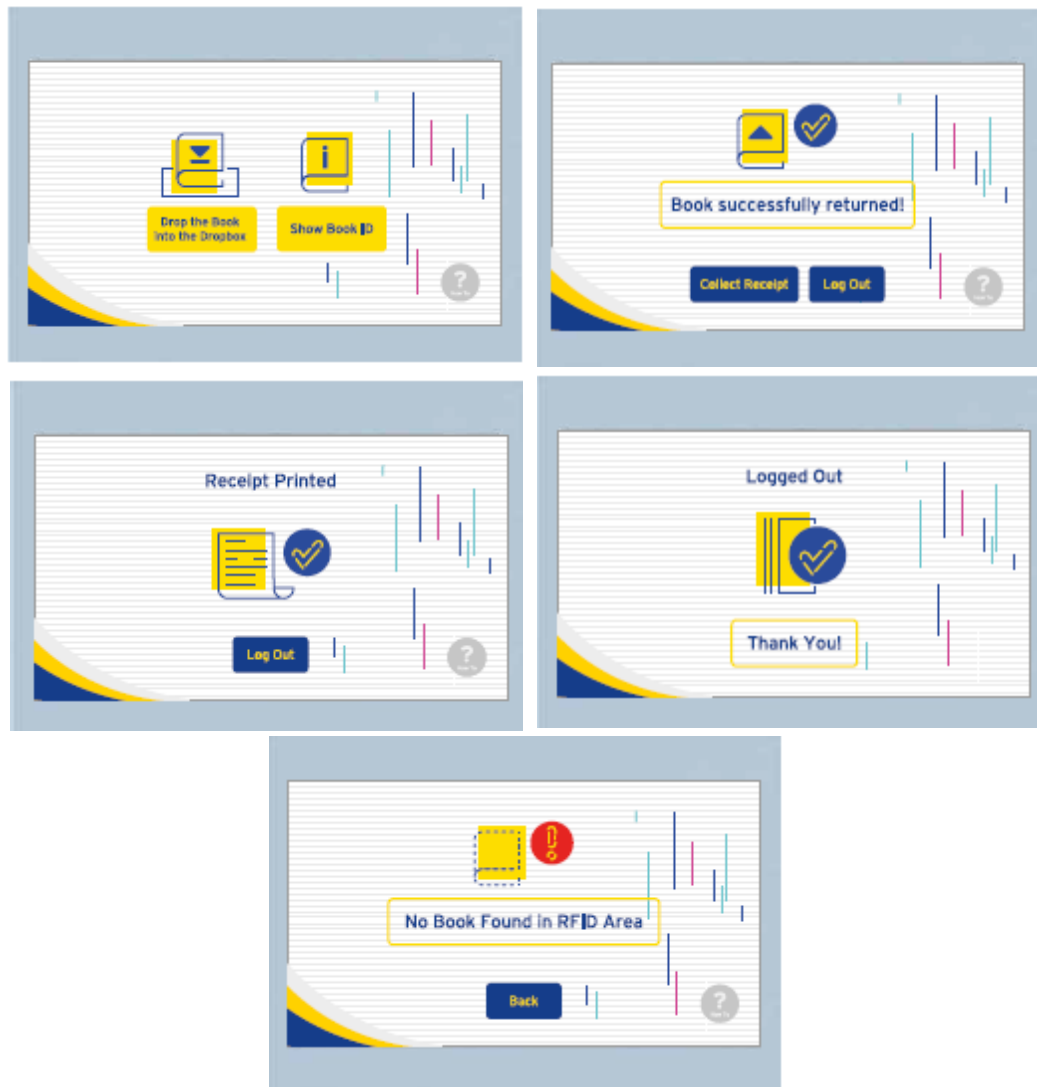
Figure 9. UI design for book return on Drop Box

The Extend Book menu is used to extend book lending. After selecting the menu, the user is asked to place the book in the drop box booth. After the book is entered, it will read the book data that will be extended the loan. After being extended, an option will appear to print or not print an extension receipt. After the user selects it, it will immediately log out of the system. Another menu is the user profile which contains user data, including data on library materials that have been borrowed, data on books borrowed, and fines.
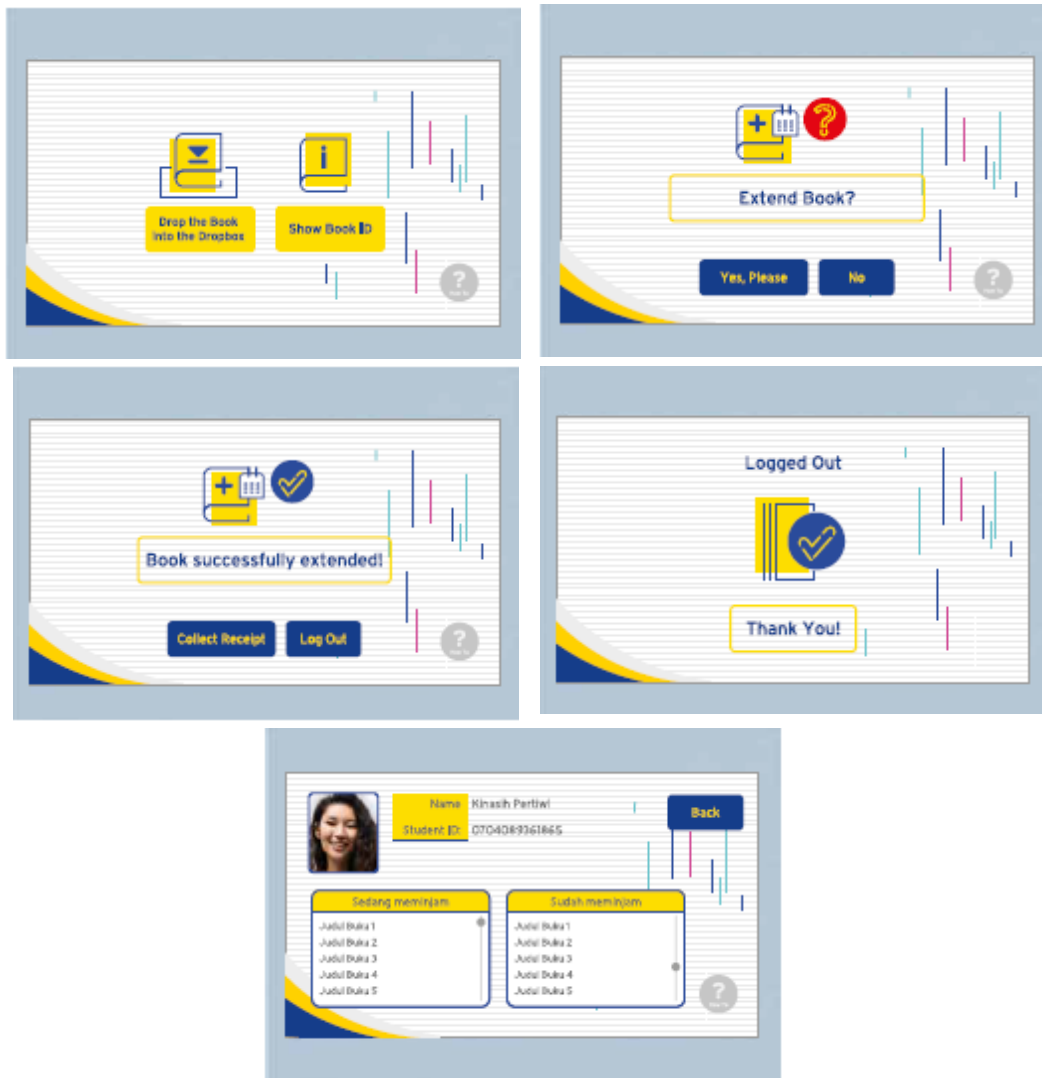
Figure 10. UI of a user profile on Drop Box

3.3 UI Design for Self Check

On the start page, the same as the drop box, the library identity will appear. Then an order will appear to place the ID card on the Self-Check device. After reading the user data, a loan menu and user profile will appear. If the loan menu is selected, there will be an order to place the book on self-check after putting the book on the device. The book data that will be borrowed will appear on the device screen, and the borrow menu will appear. After the book is in loan status, a receipt printing option will appear as proof of the loan, and a moment later, the user will log out of the system after selecting receipt printing.

Figure 11. Desain UI Self Check
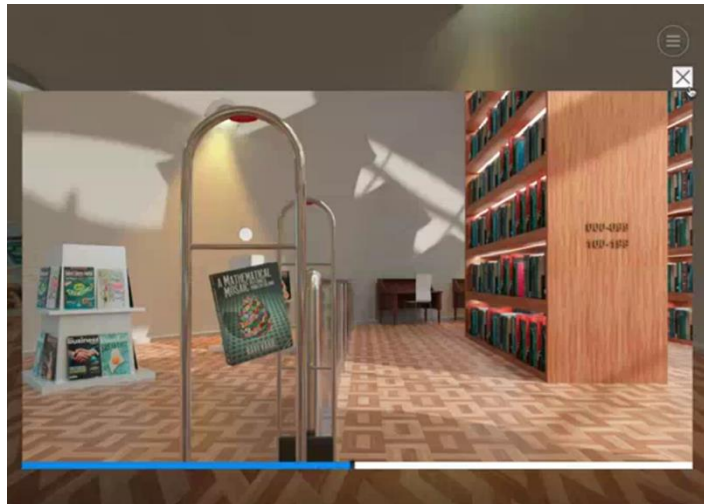
Figure 12. Animation pass through the security gate

3.4   Expert review results

The test results show that the system can run starting from the initial menu, entering the circulation room, searching the OPAC, searching and retrieving books on shelves, borrowing at self-service, leaving the circulation room, and returning books to the drop box. Deficiencies in the system include not enough information on how to use the system at the beginning, which may confuse users. When picking up a book on a shelf, the animation visualizes the same book and stops without guidance or the next steps. The animation should be closed immediately, or there are directions to take the following steps in the borrowing process. The visualization of printing loan and return receipts are not visible. It is necessary to improve the design by choosing more readable and attractive font types and sizes.

In borrowing and returning book design, user login is required, not only by scanning an ID card. In a bookshelf design, you should display the book cover, the synopsis, the number of books, and the classification number or book label. The reading part of the book is not very meaningful because it cannot be read. In the Self Borrowing and drop box sections, instructions are needed to make it easier for users to use the system, especially at the beginning of the system. ID cards should be designed like student cards to make them more real.

Room design can be improved by adding various ornaments like in an actual library, such as quotes, classification numbers, and directions. It is necessary to add the character of a librarian in the room,

such as in the circulation section and several other places, so that it does not look lonely and more natural.

3.5   User review results

Twenty-three library students carried out user testing as respondents from several regions in Indonesia, such as Bogor, Kupang, Purwokerto, Denpasar, Samarinda, Palangkaraya Bandung, Bogor, Banda Aceh, Surakarta, Jakarta, Surabaya, Kediri, Medan and Yogyakarta. The students in different batches have taken lectures in semesters 3, 5, 7, 9 and 13.

The results reported seven respondents stated that the VR Library Automated Circulation System material was very suitable with the objectives of the Library Work Practice. There 12 respondents stated it was suitable, two said it was less suitable, and two said it was not.
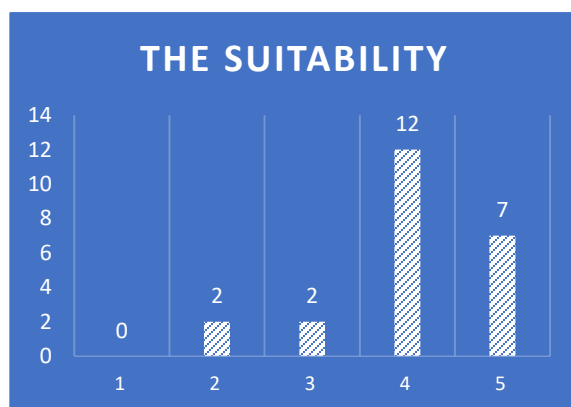
Figure 13. Respondents' assessment of the suitability of VR Library Automated Circulation System material to the Library Work Practice objectives

Regarding application interactivity, seven respondents said it was very interactive, 12 respondents said it was interactive, three respondents said it was less interactive, and one respondent said it was not interactive.
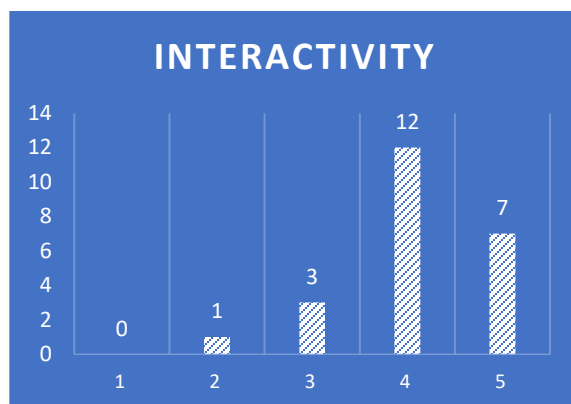
Figure 14. Respondents' assessment of VR Library Automated Circulation System interactivity

User testing stated that 13 respondents felt this application could be used anywhere and anytime, 6 users agreed that this application could be used anywhere and anytime. Meanwhile, 3 students felt that the application could not be used anywhere and anytime and one person strongly disagreed.
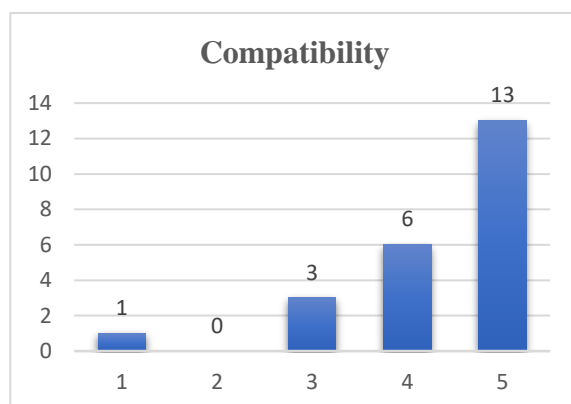
Figure 15. Compatibility

4   CONCLUSION

From the results of expert and user reviews, it can be concluded that the Virtual Reality Automatic Library Circulation System can be used as a practicum medium. This Virtual Reality can provide a user experience about the self-service on the circulation library process that implements RFID. Need some improvements in terms of design, user manual, and interactivity factor so that users can get a more real experience in the circulation of libraries that implement RFID, especially in self-service.

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KNOWLEDGE MANAGEMENT IN OPEN AND DISTANCE HIGHER EDUCATION: STUDENTS' PERSPECTIVE

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Abstract

Knowledge based economy become powerful to maximizing the value of organization. Open and distance learning higher education gives wider opportunity for the society with any kind of limitation such as economic, demographic, and geographic to pursue higher education. Indonesia Open University (UT) has utilized technology in learning process and other supporting activities. In learning process, there are learning assistance service mode: online tutorial and webinar tutorial, that can be chosen according to student needs. The purpose of this study is to analyze how the integration of technology affects knowledge management among student in UT. This is a qualitative study. Interview and forum group discussion is conducted with students from four faculty and explored the critical factors in determining technology using for learning activities. Thematic analysis is used in analysing the responses. Online tutorial and webinar tutorial has accommodated the knowledge creation process. Some factor that become the key factor determining technology use in knowledge management are the features, learning content, interaction, and infrastructure.

Keywords: Knowledge Management, Open and Distance Learning Education

1 INTRODUCTION

Knowledge is powerful. Nowadays utilization of natural resources is not enough to make the nation prosperous. The combination between knowledge based economy and natural resources-based economy can add value to our natural resources. Knowledge management is needed, so that the knowledge we need can be developed and applied to manage organizational resources so that they are able to manage Indonesia's natural resources(Tjakraatmadja & Kristinawati, 2017). Knowledge management is series of process to create, extract, transform, store, disseminate, use tacit and explicit knowledge, between individual or group, to produce the new knowledge for maximizing the value of organization in achieving its goal (Gao et al., 2017).

Since 1984, Indonesia Open University (UT) has role in accelerating number of higher education graduate by open the access of higher education to those who has limitation economically, geographically, and demographically. It is also important for higher education to implement knowledge management to contribute to increasing the quality of human resources in Indonesia. (Tjakraatmadja & Kristinawati, 2017) explained the knowledge flow cycle in higher education that come from education, research, and community services that utilized knowledge assets from the teacher and students (Pinto, 2014).

Technology affected knowledge management process in higher education (Alshehri & Cumming, 2020; Sopandi et al., 2016; Veer Ramjeawon & Rowley, 2017; Yuniarsih & Amartiwi, 2019) Technology is important to increase academic activities and performance of teachers and students (Ally & Prieto-Blázquez, 2014). UT as a cyber university has aware of it so that UT has developed technology for supporting the learning process. Technology has leverage access to reach the unreachable.

This study will analyze how the integration of technology affects knowledge management among student in UT. The focus of this study limited to the use of technology in knowledge management. Because as cyber university UT has 346,584 students as of 22 May 2022. To answer that question, we are using SECI Model of (Nonaka et al., 2000).The knowledge creation of this model is a dynamic process and continuously between tacit and explicit knowledge to produce new knowledge that can enhance the knowledge of individual and organization. Tacit knowledge is the knowledge in each individual that need to be transformed to produce innovation. While explicit knowledge is knowledge that has been written (Tjakraatmadja & Kristinawati, 2017). There are socialization, externalization, combination, and internalization that show the knowledge creation of tacit-to-tacit knowledge, tacit to explicit knowledge, explicit to explicit knowledge, and explicit to tacit knowledge (Nonaka et al., 2000).

2 METHODOLOGY

The research is conducted using qualitative study. Informants were selected by purposive sampling and snowball, whoever use online tutorial or webinar tutorial. To get the data, we use interview and forum group discussion (FGD) to 43 UT's students from 3 different Distance Learning Program unit (UPBJJ). A semi-structured interview was arranged as a guidance but can arose while interview/FGD. The result of the interview/FGD was transcript verbatim, coding, creating codes into potential sub-theme, defining theme, and write into sentences (Alshahrani, 2018).

3 FINDINGS AND DISCUSSION

3.1 Informant Demographic

The interview and forum discussion were conducted in October 2022 through offline and online meeting. The informants came from 3 Distance Learning Program Unit (UPBJJ) which is the top 10 UPBJJ with the largest number of students. There are 45 informants from 4 faculties in UT: Faculty of Teacher Training (FKIP), Faculty of Law, Social, and Political Sciences (FHISIP), Faculty of

Science and Technology (FST), and Faculty of Economics (FEKON). The semester of informants is varied, with 74% of informants have learned more than 2 semesters. While by occupation, 82% of informants have been worked as private employee, teacher, civil servants, and entrepreneur. The informant age between 20-25 years old dominated. Most of informants are female. The details can be seen on Table 2.

Table 2. Informant Demographic

Measures	Frequency	%
Gender		
Male	17	40%
Female	26	60%
Age		
Below 20	5	12%
20-25	25	58%
26-30	5	12%
31-35	4	9%
>35	4	9%
Occupation		
Civil Servants	4	9%
Entrepreneur	2	5%
Private Employee	20	47%
Teacher	9	21%
Unemployed	10	23%
Faculty		
FEKON	12	28%
FHISIP	11	26%
FKIP	9	21%
FST	11	26%
Semester		
1-2	11	26%
3-4	15	35%
5-6	6	14%
≥ 7	11	26%

3.2 The effects of technology to knowledge management

According to the interview, students choose UT because of the flexibility (77%) and affordability (30%). Students in UT can choose learning assistance mode if they need. Related to utilization of technology, there are webinar tutorial and online tutorial. From semester to semester, student might

change those learning assistance mode. So based on our interview and FGD, one student can experience online tutorial and webinar tutorial. This research will analyse the utilization of technology in knowledge management using theory knowledge creation of Nonaka SECI Model.

3.2.1 Online tutorial

Online tutorial is a web-based tutorial that can be choose by students. In online tutorial there are several sessions for delivering the material, discussion, assignment, and quiz. In the beginning, students are given tutorial activity plan and introductory forum to get to know each other with tutors and students. The interview has conducted, 31 out of 43 has experienced online tutorial. Most of the students (13 out of 31), choose online tutorial because of the flexibility to be accessed anytime and anywhere while they are working too.

> KM40: *"Because it is very innovative. We can learn anytime while working. Tutor is very helpful in directing on discussion and assignment. Tutor and other students also motivated me to do the discussion and assignment"*

The features in online tutorial are easy to use. The students found no trouble in using it. The material and questions in the online tutorial also help them to learn. Moreover, if there are video provided on it.

> KM44: *"I am more interested to learn from video than reading"*

> KM27: *"I agree with KM09, learn with video is easier"*

Online tutorial is also had two weeks to access the material and discussion. It is really help them in learning the subject.

To access the online tutorial, the students access using mobile phone and laptop. But student also read the subject book to more understand the material because when using mobile phone, it is too small to read. Besides that, student also confused when there is something to ask regarding the material/discussion/assignment/quiz. They use the message feature or directly mail to the tutor, but the tutors respond long. It also sometimes happens when tutor gives the grades that takes long time. Students also have difficulty if they want to discuss with friends in online tutorial class. Because the students come from many cities that different. From the system and infrastructure, student also found that their absent has not recorded, system can not be accessed, and from the internet network.

Regardless their difficulty, it also provokes students to find out the answer on their on through the books, internet, and discuss with limited friend through group chat.

From the informants respond, the shape of knowledge creation in online tutorial can be described on Figure 16**Error! Reference source not found.**.
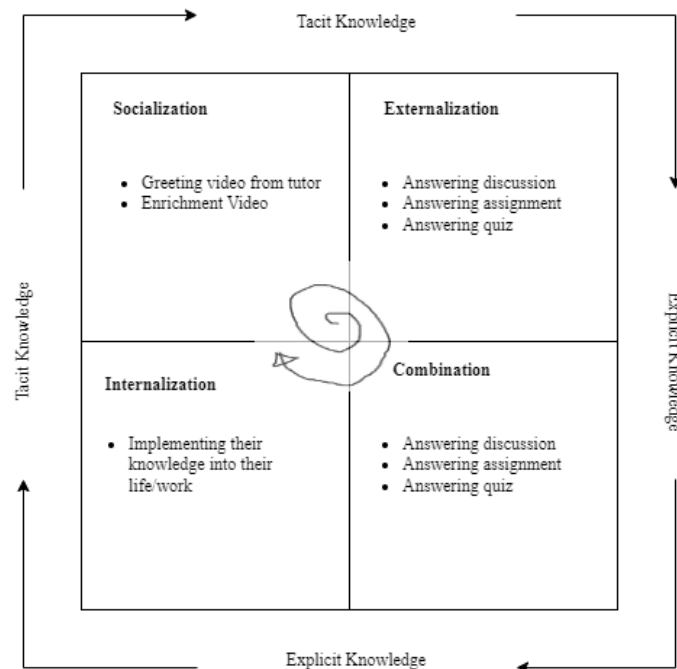
Figure 16. SECI Model - Online tutorial (Authors' Analysis)

From the model in Figure 16 online tutorial has accommodated the knowledge management process. From the analysis, we also found the key factor determining technology use especially in online tutorial: the features, learning content, interaction, and infrastructure. It is same with the previous study of (Alshehri & Cumming, 2020). The features on online tutorial help them to externalize and combine their knowledge to answer discussion, assignment and quiz. Through learning content provided, they also learn and actively seeking an alternative if they don't understand. The interaction and infrastructure also become a key factor. The asynchronous mode of online tutorial become a barrier on internalize the learning content. The weak signal of the students and system down also become the barrier in knowledge management process.

3.2.2 *Webinar tutorial*

Webinar tutorial is a face-to-face tutorial mode by utilizing web seminar facilities through the Internet network which is carried out synchronously (real time/at the same time). The learning method in

webinar tutorial similar with face-to-face which more efficient in cost and time. Students in webinar tutorial also using Learning Management System (LMS) that providing learning plan and learning material as well as for recording their attendance, submitting the assignment and discussing.

Based on the interview and FGD, students choose webinar tutorial because there is direct interaction between tutor-students and students-students in learning delivery. When they found difficulty, they can ask in their group chat. There are also group assignment so the interaction to share the knowledge is happened. The update of knowledge also easily delivers when the tutorial by tutor. The learning process in webinar tutorial is also effective because learning material and task are systematically store in LMS. Similar with online tutorial, it is an advantage when they can learn anywhere.

KM04: "The learning material delivery in webinar tutorial is easier to understand than online tutorial. Because I can discuss with the tutor and other students directly"

Despite of the strengths, some students also found difficulties such as: internet connection and cost for internet quota. They also found task not updated on Learning Management System.
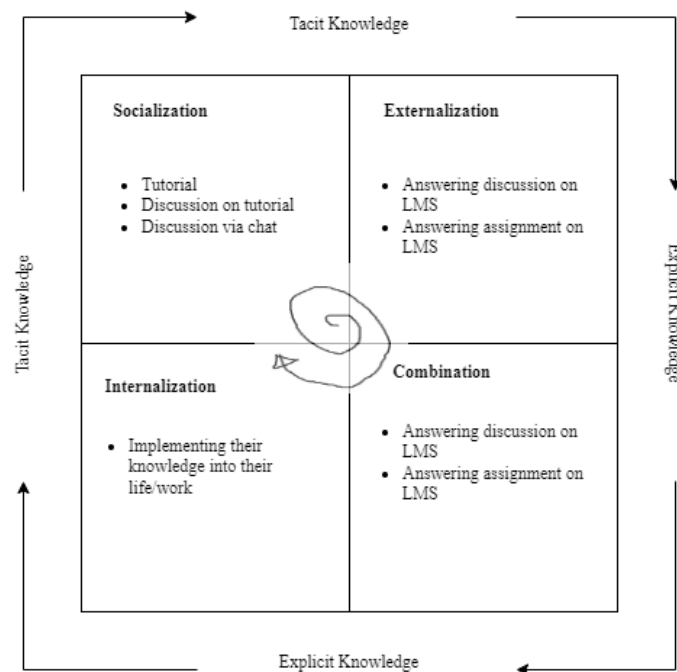
Figure 17. SECI Model - Webinar tutorial (Authors' Analysis)

From the model in Figure 17 webinar tutorial also has accommodated the knowledge management process. From the analysis, we also found the key factor determining technology use especially in

webinar tutorial similar with online tutorial: the features, learning content, interaction, and infrastructure. It is same with the previous study of (Alshehri & Cumming, 2020). The highlight knowledge management process that different with online tutorial is the socialization process is really enhancing the knowledge of students.

4   CONCLUSION

The use of technology has been utilized by UT through providing learning mode assistance mode: online tutorial and webinar tutorial. Both of learning mode also has accommodated the knowledge management process. Related to SECI Model, online tutorial has more emphasis on externalization and combination. While webinar tutorial has more emphasis on socialization. But, both learning assistance mode has create the dynamic knowledge creation. Some factor that become the key factor determining technology use in knowledge management are the features, learning content, interaction, and infrastructure. To improve the knowledge management process, it is important to consider the increasing of socialization in online tutorial, such as: connecting the notification of online tutorial to WhatsApp or creating virtual community.

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DIGITAL STUDENT CARD AS A PUBLIC SERVICE INNOVATION FOR OPEN UNIVERSITY STUDENTS IN THE REGIONS

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Abstract

Public services in the era of information technology, must be relevant to the needs of students, including services to open university students. The Open University, which has 39 service offices throughout Indonesia, requires an efficient and effective bureaucracy in managing its students. One of the obstacles for regional UT Palembang students is the distribution of student identity cards which must be ensured by students. In fact, geographical factors of the area and poor transportation facilities have caused distribution to depend heavily on the head of Kelompok Belajar and expedition services, all of which have the risk of not reaching students. In fact, student identity cards are a very important tool so that students can take the exam. This study discusses efforts to overcome the distribution of student identity cards, through digital student card innovation. How to design a digital student card application that can be a solution to these problems. The findings of this study are a digital student card application that can be accessed by students directly without being dependent on third parties.

Keywords: *public service, digital student card innovation*

1   INTRODUCTION

Student card is a card that serves as the identity of someone who is declared a student. UT Student Card is a UT student identity card. The Student Card must be carried at the time of taking the Exam Participant Identity Card (KTPU) and at the time of the exam. UT student cards are in accordance with the Circular Letter of the Vice Chancellor III of UT, starting in 2015.2 all use electronic student cards (KTM-e).

The KTM-e policy applies to students who were registered for the first time before 2013.1 (KTM-e Substitute), and for new students who registered 2014.2 (New KTM-e). The policy has been implemented since 2013.1 and is continuously being improved and refined. Like KTM-e at other universities, KTM-e for UT students apart from being a student identity card can also function as a debit card after being activated by students to one of UT's partner banks (BRI/BTN/Mandiri Bank). The KTM-e includes name, NIM, date of birth, photo, study program, UPBJJ, validity period of KTM-e and signature (optional) at the time of processing KTM-e must be signed after the KTM-e is received by students). The student's signature on the student card must match the signature on other formal documents (KTP/SIM/Ijazah).

In the process of making an e-KTM, students can send a photo/softcopy of a passport-sized photo to UPBJJ-UT (regional UT), and UPBJJ-UT will print and distribute the e-KTM to students. However, so that the photos listed on the KTM-e are the latest photos, starting in 2015.1 KTM-e can only be obtained by students by taking photos directly at UPBJJ-UT.

Procurement and distribution of KTM-e is part of the public service. Because the regional UT (UPBJJ) as an official agency has issued a policy so that students have an e-KTM. Therefore, UPBJJ must facilitate so that every student obtains his rights, in this case obtaining a KTM-e, moreover KTM-e is very necessary to take KTPU and exams.

The procurement and distribution of KTM-e, at UPBJJ Palembang, is carried out in the following stages

a) Procurement:

The KTM-e printing process begins with the procurement of physical cards and ribbon datacards proposed by the regional UPBJJ to Central UT. In this procurement process, it takes a relatively short time between the request process to the Central UT until it is accepted at UPBJJ. The printing process can only be done after the physical card and ribbon datacard are received at UPBJJ. The time required in the printing process of KTM-e is also not short, considering the relatively large number of UPBJJ new students, as well as the process of classifying student data per study group. So it affects the speed of completion of the KTM-e printing, until it reaches the students. There is no definite deadline in the procurement process for KTM-e to KTM-e at UPBJJ, but the time span required in the procurement process to printing KTM is approximately one semester, so this has an impact on students who need the KTM-e at the time of implementation. Final exams.

b) Distribution

In the process of distributing KTM-e, KTM-e that has been printed at UPBJJ can be directly taken by students themselves or can be represented through study groups. UPBJJ took anticipatory steps in an effort to accelerate the process of distributing KTM-e by making announcements or information to students and study groups related to the availability of KTM-e at the UPBJJ office. This distribution process is very dependent on the response or activity of students and study groups to be able to take the printed KTM-e. With the geographical conditions of students and study groups that

are quite far away, access is quite difficult to travel to the UPBJJ office, and students who have busy work, the KTM-e cannot be accepted by students quickly.

Formulation of the problem

The limitations of tools in the procurement of KTM-e and the distribution of KTM-e with a relatively long time and long distances, make students do not have KTM-e when they are needed to get services as students, such as during exams, students cannot show KTM-e with the reason that he has not been able to take his KTM-e at the UPBJJ office, where the KTM-e is used to identify the student's identity in conducting the Final Semester Examination. By not being able to show KTM-e during the Semester Final Exam, it will increase the potential for cheating (Jockey) in the exam process itself. With this background, the formulation of the problem that can be drawn is how to make it easier for students to have KTM-e quickly without time and distance constraints.

Research methods

This research is a qualitative research. Qualitative research was chosen because in this study it is able to present real phenomena according to conditions in the field. Data collection is done through literature study, and from the application. The data assessment is carried out by confirming the secondary data and the data from the application, then it is reviewed, the solution is designed so that it can provide recommendations for service improvement in the future.

Discussion

Public services are services provided by the government to meet all community needs, so that they can be distinguished from services provided by the private sector (Ratminto and Winarsih, Atik Septi, 2010). Public services provided by the regional UT (Palembang) in the context of providing and distributing KTM_e are services provided by the government, because UT is a state university.

Moenir defines public service as an effort made by a group or person or bureaucracy to provide assistance to the community in order to achieve certain goals (Hidayah, 2020). Referring to Moenir's opinion, the service provided by UT Palembang in distributing KTM_e to students is in order to carry out their duties as a bureaucracy so that the KTM_e obtained by students can be used as a means to recognize and identify UT students. According to Mahardhani (2021), public services have the aim

of satisfying the community, therefore excellent service is also needed in all aspects of existing services, including in the field of education.

E_government

E-Government is the use of information technology that can improve relations between the government and other parties (Fatmawati et al., 2016). According to UN ASPA (2000) e-government is the use of the internet and the World-Wide-Wide to provide information and government services to citizens. The World Bank (2012), defines e-government as the use of ICT by government institutions such as WAN, internet, mobile computing that has the ability to change public relations, business, and government-related parties. Referring to the various opinions of e-government, in terms of KTM_e, then KTM_e is a service provided by the Open University of Palembang by utilizing technological advances, for its students.

Innovation

According to Galbraith (1973); Schon (1967) in Prawira (2014) defined innovation as the process of using new technology into a product so that the product has added value. Innovation can be done on goods, services, or ideas that are accepted by someone as something new. To overcome the problem, Yanuar said that innovation is interpreted as a planned change by introducing technology and the use of new equipment within the scope of the agency (Said, 2007). Innovation has a meaning that is not only limited to building and updating, but can also be defined broadly, utilizing new ideas to create products, processes, and services (Susanto, 2010).

Referring to the opinion of Muluk (2008), it is said that there are 5 (five) types of innovation in public organizations (Mochammad, R., 2019), namely:

1) Product Innovation. This innovation stems from changes in the design and service products that differentiate them from previous products.
2) Process Innovation. This innovation refers to sustainable quality and the combination of changes, procedures, policies, and organization needed to innovate.
3) Service Method Innovation. This innovation is a new change in customer interactions or a new way of providing or providing a service.

4) Strategy or policy innovation. This innovation refers to the new vision, mission, goals, and strategies, and also concerns the actual reality that has emerged so that new strategies and policies are needed.

5) System Innovation. This type of innovation is a novelty in the context of interactions or relationships carried out with other actors in the context of changing organizational management.

Problems in the implementation of public services (Dwiyanto, Agus 2003):

1) Unresponsive. This condition occurs at almost all levels of service elements, starting at the level of service officers (front line) to the level of agency leaders. Responses to various complaints, aspirations, and expectations of the community are often slow or even completely ignored.

2) Less informative. Various information that should be conveyed to the public, is slow, or even does not reach the community.

3) Less accessible. Various service delivery units are located far from the reach of the community, making it difficult for those who need these services.

4) Lack of coordination. Various service units related to each other are very poorly coordinated. As a result, there is often overlapping or conflicting policies between one service agency and other related service agencies.

5) Bureaucratic. Services (especially licensing services), are generally carried out through a process consisting of various levels, so that the resolution of service problems becomes slow. This happens because the service staff to be able to solve problems is very small, while on the other hand the community is difficult to meet directly with service leaders, as a result, various service problems take a long time to be resolved.

6) Lack of willingness to listen to community complaints/suggestions/aspirations. In general, service personnel lack the desire to hear complaints/suggestions/aspirations from the community. As a result, the service is carried out as is, without any improvement from time to time.

7) Inefficient. The various requirements needed (especially in licensing services) are often irrelevant to the services provided.

KTM_e Digital

Cyber University is a generic term used by several universities that organize online programs, such as Seoul Cyber University, The Cyber University of Korea, and Thailand Cyber University. Prof. Ojat, the Chancellor of UT, in the UT Business Strategic Plan (RSB) 2016-2020 explained that to develop UT as a Cyber University, UT has set three development focuses: in 2018 the achievement indicators are meeting the need for quality services for students, in 2019 strengthening the introduction and acceptance community towards UT, and in 2020 become frontiers of education innovation, as a research and development center for innovations in various technology-based learning modes, and dissemination of innovation. The technology used in the development of Digital KTM is an Open University innovation to support the development of the Open University as a Cyber University as well as an effort to accelerate the increase in the gross enrollment rate (GER) of higher education and one of the efforts to meet the various educational needs of the community.

Public service is a milestone in an entity. Through good service, it will create a good image of the entity. KTM-e digital is a development in public services to students, so that students can fulfill their needs related to their identity as students. The development of digital KTM-e can be done by making a website-based application by UPBJJ officers who are connected to the barcode that is already on the student's physical KTM-e.

This application was created to make it easier for students to download/store KTM-e digitally without having to wait for the physical KTM-e card to finish the printing process. To access it, students only need to enter user information on the website/link provided by UPBJJ, such as NIM, date of birth. After successfully entering user information, students can then download the digital version of KTM-

e on their respective devices or computers by entering the access information that is only known by individual students.

In practice, students are required to bring their KTM-e during the Semester Final Exam, report or complain related to services to students. Through this digital version of KTM-e, exam officers and supervisors only need to scan the barcode on the student's digital KTM-e. Then information regarding the student itself will appear, ranging from photos, names, addresses, and unique data such as the name of the biological mother and other unique student data. If the information and student data are appropriate, then the student can take the Final Semester Examination, but if the data does not match, then the student should be suspected of being a jockey. With this application, it is hoped that all students can have KTM-e quickly so that time and energy efficiency is achieved in the process of printing and distributing KTM-e.

In addition to time and energy efficiency, the existence of this digital KTM-e is a step to support the UT Go Green movement. As a higher education institution, UPBJJ can support the UT Go Green movement by managing office activities more effectively and efficiently, using resources using the

principles of sustainable development. By no longer using physical cards for KTM-e, the use of materials containing plastic in an institution can also be reduced. In addition to the use of plastic, the use of ribbon datacards for printing KTM-e can also reduce the waste generated by UPBBJ. By implementing KTM-e Digital, UPBJJ supports institutions in realizing the function of national education, namely forming characters who care about the environment. Institutions and students can join hands to realize the function of national education. Caring for the environment is one of the manifestations of national education goals, namely being responsible for the environment.

Conclusion

The Open University's efforts to develop itself into a cyber university have encouraged the development of various innovations, technology-based learning modes, and the dissemination of innovations. KTM_e is a technology product to support the development of the Open University as a Cyber University. The development of KTM_e is evidence of public services carried out by UT.

However, technological developments must always be followed by improvement in service quality, so that in line with the needs of the community, excellent service is needed in all aspects of service, namely continuous innovation. So to overcome the problem of procurement and distribution of KTM_e (physical), is to make KTM_e Digital. KTM_e Digital is an excellent service that can solve KTM_e problems.

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THE STUDENT PERCEPTION ANALYSIS OF UNIVERSITAS TERBUKA MAKASSAR'S ONLINE LEARNING SERVICE: EVALUATING THE QUALITY OF ITS INNOVATIVE INTEGRATED WEBINAR TUTORIAL (TUWEB) & LEARNING MANAGEMENT SYSTEM (LMS)

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Abstract

This research aims to investigate Universitas Terbuka (UT) Makassar's student perceptions of its innovative online learning service (OLS) through an integrated webinar tutorial (Tuweb) using the synchronous *Microsoft Teams* application with an asynchronous learning management system (LMS). In this OLS, the Tuweb learning materials will be stored in LMS so students can review and relearn them. It has been carried out during the covid-19 pandemic in the online class of the Primary Teacher Education (PTE) study program, uniting students across Indonesia in its distance education program. Research on this OLS has been going on for three semesters, taking place in eight meetings over eight weeks of the course. The research approach used is quantitative using descriptive analysis. Its population includes Tuweb class of PTE study program's undergraduate students with 219 respondent samples using a random sampling technique. It used a Likert scale questionnaire and google form as a data collection technique. This research finds that student perceptions about such OLS model are dominantly in the excellent and good categories. In detail, based on 31 questions submitted to respondents, the student perceptions of the quality of such innovative OLS in good, excellent, poor and very bad categories consecutively are accounted for 41.94%, 58.06%, 0%, and 0%. These confirm that such an OLS model works very well for the students. It is a very innovative digital learning technology approach as it combines both synchronous and asynchronous learning approaches, giving student learning flexibility over different places and times. Furthermore, it gives students missing the synchronous Tuweb class a chance to catch up with Tuweb learning material as they can independently review and learn it asynchronously through LMS. This integrated online learning service is a significant innovation in assisting students to learn independently, enhance their learning module materials mastery, and improve their academic achievement.

Keywords: Perception, webinar tutorial, independent study

1 INTRDUCTION

Open University have undergone changes in guiding students to achieve success. Guidance and services are carried out digitally so that students can independently use print media and online mode applications to support their learning process. The Webinar Tutorial assistance service (Tuweb) and the Learning Management System (LMS) are one of the excellent features offered by the Open University to facilitate superior learning as an online study aid. Students' perceptions of understanding, appreciation of service procedures and the quality of learning aid services are very important to assist students in obtaining the competencies they want to achieve in each of the subject areas taught.

In the Digitalization Era, online learning Assistance Services have a very big impact on all lines. Higher education institutions are one of the parties that must improve and follow these changes. The use of the Webinar tutorial learning application (Tuweb) and the Management System Learning application (LMS) is one of the biggest breakthroughs provided by the Open University to keep up with these big changes. This application will of course be maximized by knowing how the perceptions of students, especially PGSD Undergraduate Program students as the focus of this research on the services utilization. Knowing whether this service helps support student learning processes that are independent, flexible in use and can be accessed anytime and anywhere by utilizing spare time so that the main tasks as elementary school teachers can go hand in hand.

These perceptions of course directed towards the online learning model with the ability of students to accept, adapt, and regulate online learning activities from various corners. The perceptions possessed by students can form impressions and experiences of everyday life. The quality of Tuweb services combined with LMS and the accuracy of student perceptions have a major influence on the response to provide excellent service in an online learning system that is takes place in a scheduled synchronous manner by using the class link. The combination with the asynchronous LMS application helps learning to run completely. A new learning environment that involves setting, interpreting and adapting so that students will get the same psychological experience as face-to-face tutorials (TTM).

2   METHODOLOGY

This research use qualitatif method with description analysis. The data analysis method used is the percentage of each answer. After the collected data is analyzed, then will be interpreted captured conclusion. The population of this research were 661 PGSD undergraduate students who joined the online class following the Webinar tutorial (Tuweb) and Learning System Management (LMS). Data collection was carried out using a probability sampling technique with a total target. Questionnaires were sent to students through Google form link to their cell phone numbers. The data collection uses a Likert scale and students who answered the questionnaire as much as 219 at the same time selected as samples.

3   FINDINGS AND DISCUSSION

Students' perceptions when viewed from the research indicators showed a very good results in the use of Webinar tutorials combined with LMS applications. A total of 219 students who filled out the questionnaire showed the dominance of positive answers related to service quality.   Student

perceptions regarding online learning assistance services through the Tuweb application combined with the LMS application can be described as follows: Tthere were (1) 127 students or 58.06% were in the very good category, (2) 92 students or 41.94% were in the good category, (3) While the categories were not good and very bad 0%. These indicates that the use of this application is effective for students because their answer choices are all well defined. No one student complained that the service was not good.

Tuweb results help the improvement of the student's mastery of the subject given in the module with a "very good" percentage in 59%, and then the "good" classification in 41%. Both Microsoft Teams application and LMS application are very feasible to use in providing online learning assistance services. This emphasizes the importance of using webinar tutorials and learning system management. These two applications have met student expectations very well to help support the successfull of independent learning.

Students almost do not experience significant obstacles in learning the material that is taught through Tuweb. The use of this application is very helpful in improving the mastery of the material presented by the tutors. The material is an important concept that the tutor chooses according to the competencies to be achieved during the eight meetings. According to Herminingsih, H. (2021). Students have a very good perception of using webinar tutorials and can adapt to online learning to help students improve their mastery of the material and improve their mastery of important concepts in the module. Stewart, W. H., & Lowenthal, P. R. (2022).

Monitoring the implementation of the Tuweb-LMS got monitoring 8 times and tutor evaluation 3 times at meetings 3, 5 and 7 to find out about implementation, achievement, and suitability of RAT & SAT for each subject based on assignments from UPBJJ-UT Makassar. The monitoring results show that the average attendance and participation rate of PGSD study program students is 95.03% (BLBA, UT Makassar 2022.1). The implications of online learning by utilizing Tuweb using the Teams application combined with the LMS application show very good perceptions of students.

The combination of two synchronous Learning Tutorial Webinar (Tuweb) applications and the asynchronous Learnig Management System (LMS) application shows a very good level of performance. This study assistance service provides an opportunity for students within 1 week to deepen one sub material through Tuweb whose core material is stored in the LMS through 8 material

initiations, 8 discussion activities and 3 course assignments. The learning assistance services help students explore key concepts more flexibly.

The LMS application as a learning service will further strengthen the understanding of important concepts of learning material through discussion activities. Then the coursework will increase the understanding of the subject matter (BMP) or modules. Synchronizing the two learning applications is able to encourage and build a conducive and enjoyable learning atmosphere so that students do not feel alone or feel isolated in the independent learning process. During the Covid-19 pandemic and post-Covid, this study assistance mode runs until the 2022 registration period.

The student's Mastery of the subject matter which contains the competencies that students will achieve is better from each module. The quality of online learning services has become the concern of UPBJJ-UT Makassar by continuing to monitor every learning activity and evaluate tutors regulary in 3 times during the semester. Rachmi, T., & Siregar, H. (2022). The implementation of the tutorial webinar activity at the Open University of Makassar has been carried out in a systematic and structured manner to ensure that the competency of the courses is achieved, tutorial activities are based on the Tutorial Activity Design and Tutorial Activity Unit (RAT-SAT), each tutor subject has informed at every tutorial meeting about the course material including competencies to be achieved.

In general, the very good perception of online learning is the answer obtained from the majority of students. based on geographic and demographic conditions in the working area of UPBJJ-UT Makassar, the level of utilization and student learning activities in Tuweb and LMS activities shows a very good level of participation. Students show enthusiasm and take advantage of online learning services at 99.03% (BLBA, 2021). Before entering class, students have prepared themselves well by previously studying the material and videos that have been provided in the application. According to Shearer, R. L., Aldemir, T., et al (2020). Online learning continues to evolve, with a pedagogical approach, innovating beyond replicating students' face-to-face experiences.

Next, students' perceptions of the feasibility of learning management systems (LMS) obtained the following data. The students answer were: Very good category (59.10%), and good category as much as 40,90%, while less good 0%, and very bad category 0%. Overall, students who participate in online learning services give a very good perception considering that online classes take place regularly and are structured according to the concept of learning assistance services. All learning activities are grouped based on online classes per course with participants between 20-40 students per class.

Learning through Learning system management (LMS), and Toturial webinar (TUWEB) is very in line with the learning character of distance education students (Open University) and based on student perceptions is in the very good category (62%), good category as much as (38%), less good 0%, and very poor category 0%.

The Open University as a distance education institution is very concerned in providing study assistance to improve independent study skills so that students can achieve maximum results. Participation in online learning activities contributes (50%) to the final grades of students. According to Hewindati, Y. T., & Belawati, T. (2020, July). Student participation in online tutorial activities affects students' final grades. Students' active participation is correlated with their final semester exam scores. The provision of online services is very influential on student achievement.

4 CONCLUSION

This research have some conclusion as follow:

1. Perceptions of the quality of student academic services are in the very good category (58.06%), and the good category is 41.94%, while 0% is not good, and the very bad category is 0%, out of 31 questions submitted to 219 respondents. These results emphasize the importance of using webinar tutorials and learning management systems. The online learning process runs very well and supports independent learning for undergraduate PGSD students Program.

2. The management tutorial webinar service (TUWEB) combined with the Learning Management System (LMS) really helps students improve their mastery of the material being taught (BMP) or material in modules..

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A RASCH ANALYSIS OF STUDENTS' MOTIVATION AND LEARNING STRATEGY IN DOMPET DHUAFA

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Abstract

This study aims at looking into the motivation and learning strategies of students of Leadership Enrichment and Acceleration Program (LEAP) Dompet Dhuafa through the administration of the Motivated Strategies for Learning Questionnaire (MSLQ), an 81-items, self-report instrument designed to measure students' motivational orientations and their use of different learning strategies. The MSLQ is divided into two broad categories which are a motivation section and a learning strategical section. The motivational orientation scale of this instrument is divided into six sub-scales namely intrinsic goal orientation, extrinsic goal orientation, task values, control of learning beliefs, self-efficacy for learning and performance, and test anxiety. The learning strategies scales are divided into nine sub-scales namely rehearsal, elaboration, organization, critical thinking, metacognitive self-regulation, time/study environmental management, effort regulation, peer learning, and help seeking. The questionnaire was administered to 24 students of LEAP class and the data analysis used the Rasch Measurement Model. The finding of this study is expected to be the subject of discussion in the development of learning design for the next LEAP in Dompet Dhuafa.

Keywords: Rasch, MSLQ, Motivational Orientation, Learning Strategy, LEAP

1   INTRODUCTION

Self-regulated learning has an important influence on one's learning success. Pintrich (Sadi & Uyar, 2013) defines self-regulated learning as the strategies that students use to regulate their cognition (the use of various cognitive and metacognitive strategies) as well as the use of resource management strategies which students use to manage and control their environment and also their learning. In the same context, Pintrich and Zimmerman (Lim & Yeo, 2021) state that the self-regulated learning (SRL) is defined as an active process where the learners set their own goals, make the use of learning strategies to plan, monitor, regulate, and appraise in terms of various aspects including cognitive or metacognitive, motivational, and behavioural to attain the target goals.

Self-regulated learning is a cyclical process, where in the student plans for a task, monitors their performance, and then reflects on the outcome. The cycle then repeats as the student uses the reflection to adjust and prepare for the next task. The process is not one-size-fits-all; it should be tailored for individual students and for specific learning tasks (Zimmerman, 2002). Pintrich (2004) explains the four phases in self-regulated learning strategy. Phase 1 involves planning and goal setting as well as activation of perceptions and knowledge of the task and context and the self in

relation to the task. Phase 2 concerns various monitoring processes that represent metacognitive awareness of different aspects of the self and task or context. Phase 3 involves efforts to control and regulate different aspects of the self or task and context. Finally, Phase 4 represents various kinds of reactions and reflections on the self and the task or context.

Self-regulation is not a mental ability or an academic performance skill; rather it is the self-directive process by which learners transform their mental abilities into academic skills (Zimmerman, 2002). Learners who have good self-regulation can be proactive in the learning process because they are aware of their strengths and weaknesses. They also have clear learning goals and a variety of strategies to achieve learning goals.

Self-regulation is important because the main function of education is to develop lifelong learning skills. After graduating from school or graduating from college, they have to learn many informal life skills. For example, in the world of work, they are challenged to continue to add and improve life skills in order to survive in the world of work.

Several research results show the importance of self-regulation in learning to build personal qualities. First, self-regulation in learning involves more than detailed knowledge of a skill, it involves self-awareness, self-motivation, and behavioral skills to apply knowledge. Second, self-regulation in learning is not singular. On the other hand, self-regulation requires a different process for each person in carrying out their learning tasks. Third, the quality of self-motivation of independent learners depends on self-efficacy (Zimmerman, 2002)

Specifically, self-regulation of behavior involves the active control or the use of various resources that the students have available to them, such as time, environment, and effort, whereas self-regulation of motivation involves controlling and changing motivational beliefs, such as efficacy and goal orientation (Was et al., 2010, p. 3). Bartels & Jackson, 2009; Bouffard-Bouchard, Parent, & Larivee, 1991; Dembo, 2000; Middleton & Midgley, 1997; Paulsen & Gentry, 1995; Pintrich & Schunk, 2002; Schunk & Ertmer, 2000; Schunk, 1990, 1994, 2001; Zimmerman, 2000; Wolters, Yu, & Pintrich, 1996 (Was et al., 2010) state that the impact of self-regulation on academic achievement has been investigated in conjunction with motivational variables, such as self-efficacy, achievement goal orientation, and learning strategies.

Duncan TG & McKeachie WJ (2005) state that the motivation and learning strategies are not static traits of the learner, but rather that "motivation is dynamic and contextually bound and that learning strategies can be learned and brought under the control of the student". Based on this framework, the Motivated Strategies for Learning Questionnaires (MSLQ) was developed using a social-cognitive view of motivation and self-regulated learning. In this model, students' motivation is directly linked to their ability to self-regulate their learning activities, where self-regulated learning is defined as being metacognitively, motivationally, and behaviourally active in one's own learning process and in achieving one's own goals (Was et al., 2010).

In this study, we will identify the motivational profiles and learning strategies of participants in The Leadership Enrichment and Acceleration Program (LEAP). LEAP participants are employees of Dompet Dhuafa (DD) at the head office, branches, and organ. The LEAP program has the following objectives: 1). prepare a cadre of leaders at the middle management level; 2). improve the ability of employees at the supervisor level to be able to carry out their roles as leaders of program executors as well as prepare themselves to fill higher managerial positions. The LEAP program begins with a competency assessment or profiling process, in class learning, and a final project. This program runs from August 25, 2021 to March 17, 2022. The materials studied by LEAP participants include: 1) leadership quality, 2) program design, 3) business model canvasing, 4) grooming and table manners, 5) personal branding , 6) project management, 7) project monitoring and evaluation, 8) managing team, 9) customer focus mindset, 10) writing communication.

This study attempted to provide a clearer understanding of the aspects of motivation and learning strategy in the context of self-regulated learning strategy through student of LEAP responses to questionnaire items and differences response in their demographic profiles. To pursue that, a quantitative method using questionnaires for data collection was adopted wherein the Rasch Model approach and Winsteps version 3.73 software were to assess issues related to the motivational orientation and the learning strategy.

2   METHODOLOGY

This study employed a quantitative approach where a survey was conducted to understand the aspects of motivation and learning strategy. The following sub-sections describe the details of the survey.

2.1   Participants

Twenty-four employees of Dompet Dhuafa are participants in this study. Data was collected from employees who had studied in the Leadership Enrichment and Acceleration Program held from 25 August 2021 until 17 March 2022. The demographic profile of participants is shown in Table 1.

Table 1. Demographic Data of Students of LEAP

Demographic		Frequency	Percentage (%)
Gender	Male	12	50
	Female	12	50
Age	< 30 years old	14	58.3
	30 – 40 years old	10	41,7

Table 1. Demographic Data of Students of LEAP

Demographic		Frequency	Percentage (%)
Department	Fundraising	7	29.2
	Program	10	41.7
	Brand Activation	1	4.2
	Communication	2	8.3
	Operational	4	16.6
Entity	DD Head office	13	54.2
	DD Branch	9	37.5
	Organ	2	8.3
Length of Service	< 5 years	13	54.2
	5 – 10 years	10	41.2
	> 10 years	1	4,6
Job Position	Manager	4	16.7
	Supervisor	7	29.2
	Officer	13	54,1

2.2 Instrument

A questionnaire survey was conducted to get a clearer and better understanding of the respondents' level of motivational orientation and learning strategies. In this study, ordinal type data was collected from the questionnaire. This study was based on the Motivated Strategies for Learning Questionnaire (MSLQ) that has two dimensions: motivational orientation and learning strategies.

The questionnaire was adapted from Pintrich et.al (Artino, 2010). Responses to the items were based on a five-point Likert rating scale (1=strongly disagree to 5=strongly agree). Demographic profile

information such as job position, length of service, workplace entity, and workplace department were used in this study to find differences in how LEAP students responded to the item.

2.3 Measurement Model and Data Analysis

The appropriate analysis for this type of data uses a Rasch Model rating scale, where the ordinal data is counted as frequencies then is locked as odd probability. After that, the probability is converted into equal-interval-type data using a logarithm (Sumintono & Widhiarso, 2014).The logarithm function is used to produce measurements with the same equal-interval scale. Then a measurement model is calibrated by the process of conjoint-measurement to determine the relationship between the item difficulty level and person ability using the same unit-scale called a logit (logarithm odd unit) (Rusland et al., 2020).

Bond & Fox, 2015; Engelhard, 2013; Sondergeld & Johnson, 2014 (Rusland et al., 2020) state that the Rasch Model rating scale is particularly suitable for measuring latent traits in assessing human opinions, perceptions, and attitudes With the Rasch analysis, the results can explain item difficulty levels with accurate and precise measurement (item calibration), detecting item fit, identifying item bias (differential item functioning [DIF]), as well as measuring the respondent motivational and learning strategies level (Linacre, 2013). Further, respondent analysis using this measurement model provides better and more accurate results that will be more helpful in obtaining the consistency of responses to the questionnaire (person-fit statistics).

Table 2. Summary Person and Item Statistics

	Person	**Item**
N	24	81
Measures Mean *SD* *SE*	1.15 0.61 0.13	0.00 0.90 0.10
Outfit Mean Square Mean *SD*	1.01 0.42	1,01 0.43
Strata	4.72	3.87
Reliability	0.92	0.88
Cronbach's Alpha	0.94	

Based on the information presented in table 2, we can see the interaction between person and item as a whole, person measure, person reliability value, and item reliability value. The person measure value is 1.15 logit. The average value that is more than logit 0.0 indicates the tendency of respondents who are more likely to agree with the statements on various items. Cronbach's Alpha value of 0.94 means that the interaction between person and item is very good. Person reliability value of 0.92 means that the consistency of the answers from respondents is very good and the value of item reliability 0.88 means that the quality of the items in the instrument is very good (Sumintono & Widhiarso, 2014).

Fisher Jr. (2007) states that the strata index (equal to or more than three) and reliability (more than 0.67) item and person statistics suggest very good reliability. The grouping of people and items can be seen from the separation value. The greater the value of separation, the quality of the instrument in the overall respondents and items is better because it can identify groups of respondents and the items are getting better. The strata value in the person aspect is 4.72, indicating that the value of the person and item strata separated is very good (Fisher Jr., 2007).

3 FINDINGS AND DISCUSSION

3.1 Item Difficulty, Person Level of Motivation and Learning Strategies, Differences between Respondents' Demographic Factors and MSLQ

The results of the study are described in the following sub-sections.

3.1.1 Item Difficulty

Table 3 classifies the items according to their item difficulty level or logit value of item (LVI). The classification of the items into four difficulty levels was done by dividing the distribution of the item logit scores based on mean and standard deviation values. There are 11 items (14%) in the category of very difficult to agree with by respondents (LVI > 0.90 logit); in the second category, which is difficult to agree (+0.90 ≥ LVI > 0.00), there are 32 items (40%); in the next category which is easy to agree with by respondents (0.00 ≥ LVI ≥ −0.90) there are also 24 items (30%); and lastly 14 items (16%) fall into the category very easy to agree with by the respondents (LVI < −0.90 logit).

Table 3. The Motivated Strategies for Learning Questionnaire Item

Difficulty Level	Dimension	
	Motivational Orientation	**Learning Strategies**
Very Difficult	N3, N19	N60, N37, N52, N49, N57, N58, N40, N65, N79
Difficult	N5, N6, N7, N8, N28, N25, N15	N34, N68, N80, N43, N50, N61, N33, N36, N45, N53, N44, N47, N54, N67, N59, N77, N35, N71, N75, N62, N76, N46, N56, N66, N69
Easy	N14, N29, N9, N2, N30, N12, N16, N26, N31, N20, N24	N63, N64, N72, N78, N55, N70, N39, N48, N73, N38, N41, N51, N42
Very Easy	N17, N22, N13, N21, N27, N18, N1, N4, N10, N23, N11	N32, N74, N81

As shown in the table 3, the motivational orientation dimension tends to be easily conducted by the student of LEAP DD, where 22 (N14, N29, N9, N2, N30, N12, N16, N26, N31, N20, N24, N17, N22, N13, N21, N27, N18, N1, N4, N10, N23, N11) out of 31 items fall into easy and very easy to agree with category. In contrast, the learning strategies dimension tends toward not being easy to agree thirty-four (N60, N37, N52, N49, N57, N58, N40, N65, N79, N34, N68, N80, N43, N50, N61, N33, N36, N45, N53, N44, N47, N54, N67, N59, N77, N35, N71, N75, N62, N76, N46, N56, N66, N69) out of 50 items fall into the difficult and very difficult to agree with categories. This indicates that LEAP DD participants agree more easily with statements about motivational orientation than learning strategies.

```
♠TABLE 1.2 C:\Users\DIVISI PENDIDIKAN DD\Desktop\ ZOU093WS.TXT  Nov 11 13:09 2022
INPUT: 24 Person  81 Item  REPORTED: 24 Person  81 Item  5 CATS    WINSTEPS 3.73
--------------------------------------------------------------------------------

    Person - MAP - Item
        <more>|<rare>
   3        +
            |
            |
            |
        X T|
        X  |  N60
   2        +  N3
      XXX S|T N19
            |  N37
            |  N52
   XXXXXXX  |
        X M|  N49   N57   N58
   1    XX  +  N40   N65   N79
     XXXXX  |S N34   N68   N80
        X  |  N33   N36   N43   N5    N50   N61
        S|  N44   N45   N47   N53   N54   N6    N67   N7
        X  |  N28   N59   N77   N8
        X  |  N15   N25   N35   N62   N71   N75   N76
   0        T+M N46   N56   N63   N64   N66   N69   N72   N78
            |  N14   N29   N39   N48   N55   N70   N73
        X  |  N38   N41   N9
            |  N2    N30   N51
            |  N12   N16   N20   N26   N31
            |S N24   N42
  -1        +  N17   N22   N32   N74
            |  N13
            |  N21   N27
            |  N1    N18   N4    N81
            |  N10
            |T
  -2        +  N23
            |  N11
            |
            |
            |
            |
  -3        +
        <less>|<frequ>
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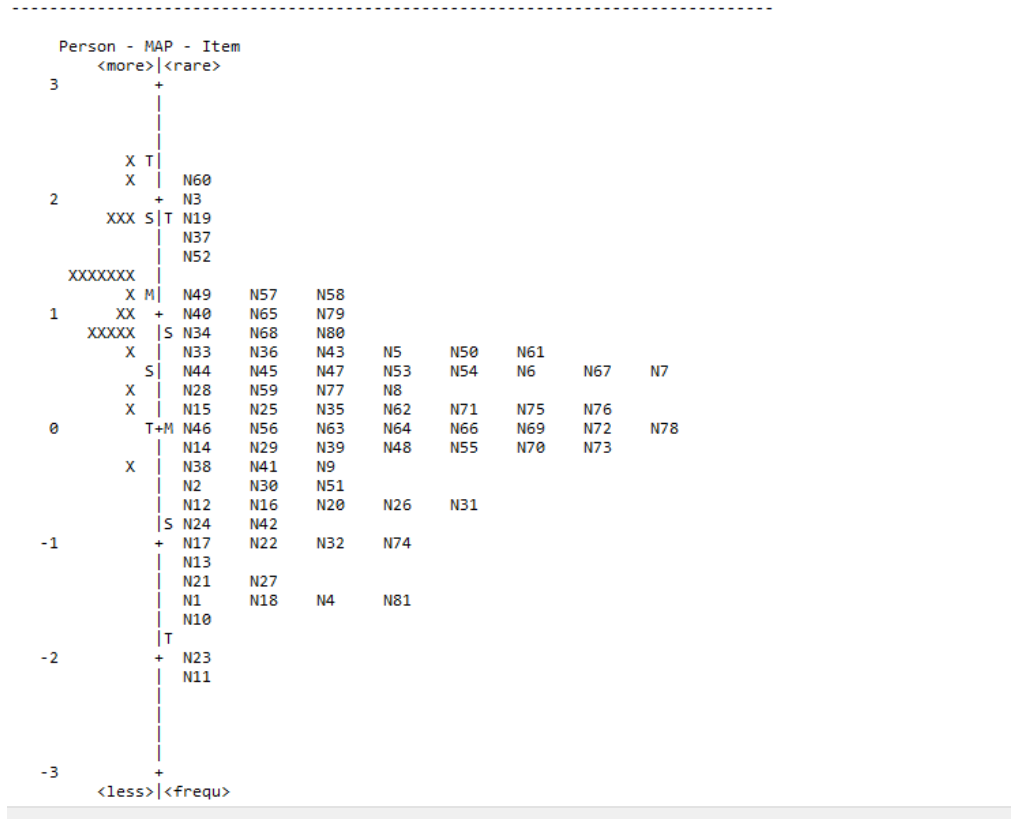
Figure 1. Item-Person Map of MSLQ

Figure 1 is an item-person map of the study resulted from Winstep software where 24 respondents answered 81 MSLQ items. The right side of the map shows each item's level of difficulty, ranging from easy to agree with by the respondents in the bottom right (logit score -- 2.14 for item N11) to the hardest one to agree with on the top right (logit score +2.60 for N60). The items work well and are capable of separating student LEAP DD participation levels for motivational orientation and learning strategies, with a unidimensional raw variance index of 36.4%.

3.1.2 Person Level of Motivation and Learning Strategies

Based on the figure 2, the right side of the map shows everyone's difficulty level, from the one that respondents easily agree with in the top right (logit score - 2.40 for item 11PD) to the hardest to agree on in the bottom right (logit score -0.28 for 24LD).

```
16-702WS - Notepad
File  Edit  Format  View  Help
TABLE 16.3 C:\Users\DIVISI PENDIDIKAN DD\Desktop ZOU702WS.TXT  Nov 12 11:08 2022
INPUT: 24 Person  81 Item  REPORTED: 24 Person  81 Item  5 CATS    WINSTEPS 3.73
--------------------------------------------------------------------------------

          Item - MAP - Person
             <rare>|<more>
     3          +
                |
                |
                |
                |T 11PD
             X  |  13LC
     2       X  +
             X T|S 14LC  15PC  23PD
             X  |
             X  |
                |  01LC  04PD  06PD  09LC  10LC  17PD  18PD
           XXX  |M 20LC
     1     XXX  +  02LD  08LD
           XXX S|  03PD  07PC  12PO  19PD  21LD
         XXXXXX |  05PC
       XXXXXXXX |S
           XXXX |  16LD
         XXXXXXX|  22PD
     0 XXXXXXXX M+T
         XXXXXXX|
           XXX  |  24LD
           XXX  |
         XXXXX  |
            XX S|
    -1     XXXX +
             X  |
            XX  |
           XXXX |
             X  |
              T|
    -2       X  +
             X  |
                |
                |
                |
                |
    -3          +
            <frequ>|<less>
```

Figure 2. Item-Person Map of MSLQ

3.1.3   Differences between Respondents' Demographic Factors and MSLQ

Detection of bias on items in Rasch Analysis Model is reflected in the functionality of differential items (Differential Item Functioning). It is necessary to find out whether the items given have a bias in a certain category of respondents or not. The bias in the item can be known based on the probability value of the item being below 5% (Sumintono & Widhiarso, 2014).

Based on the students of LEAP DD responses, three items were identified as having significant differences based on gender. The graph in figure 3 shows that male student tended to more easily with item N4 (*I thought that I could use what was learned in the LEAP DD class in the work activities of the institution*), N34 (*when studying learning sessions in a LEAP DD class, I often try to explain the material to other LEAP DD participants*), N65 (*I have a special and fixed place to study (not changing positions) during the LEAP DD learning class via zoom meeting*). Interestingly, item N19

(*I felt uncomfortable and felt confused when facing the exam on the LEAP DD program*) was easier to agree for female student than male student of LEAP DD.
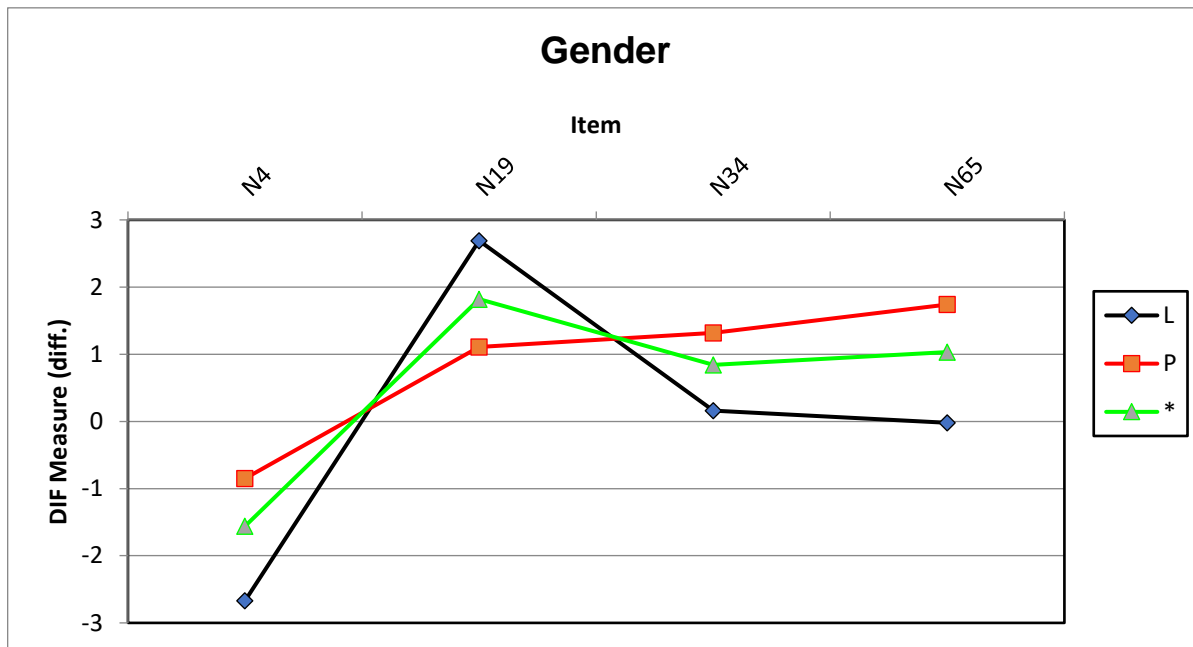
Figure 3. Person DIF Plot Based Gender

The DIF analysis based on entity of DD showed unique responses (Figure 4). The graph in figure 4 shows that student of LEAP DD from DD head office and organ tended to more easily agree with item N19 (*I felt uncomfortable and felt confused when facing the exam on the LEAP DD program*) than the student of LEAP DD from DD branch. Interestingly, item N23 (*In my opinion, the materials in the LEAP DD learning class are useful*) was easier to agree the student of LEAP DD from DD branch and organ than the student of LEAP DD from DD head office.
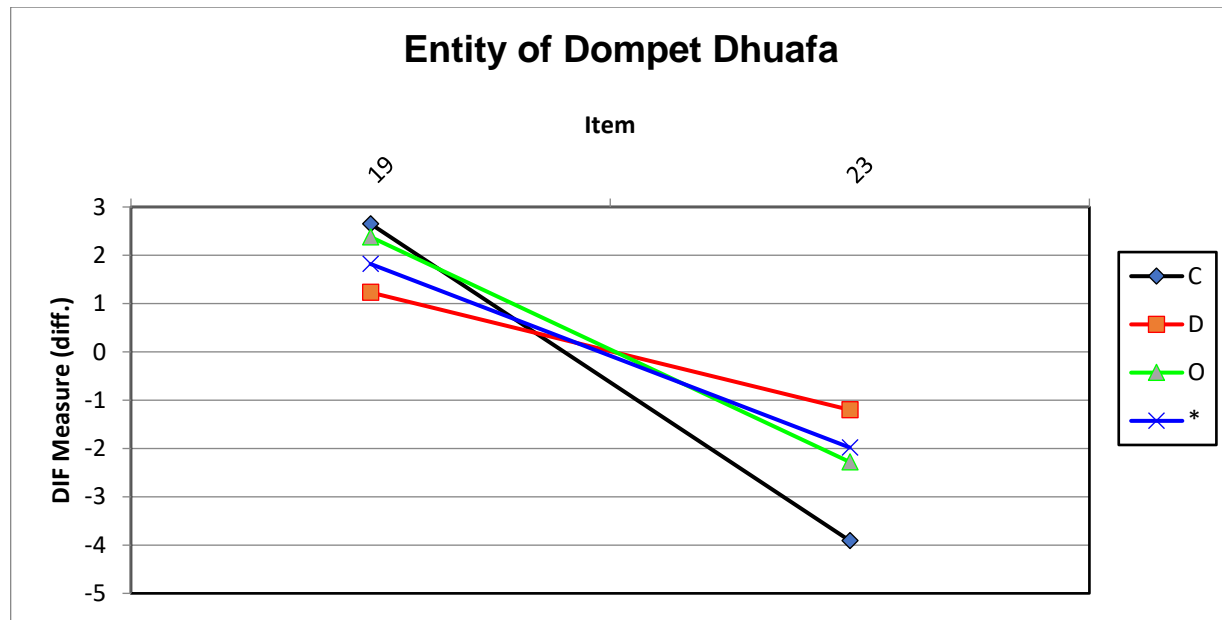
Figure 4. Person DIF Plot Based Entity of Dompet Dhuafa

Since the late 1970's, fostering life-long learning became an important educational goal in many countries worldwide (Rogiers A. et al., 2019). Helping students to develop effective ways learning how to learn is a major goal of our educational system that will only increase in importance in the future. (Weinstein & Mayer, n.d.) argues that good teaching includes teaching students how to leam, how to remember, how to think, and how to motivate themselves. Learning is viewed as an active process that occurs within the learner and which can be influenced by the learner. Consequently, control of the learning process in the learner-centered classrooms shifted from the teachers to the learners. Thus, in such classrooms, the role of teachers shifts from classroom lecturer who presents information to students to "facilitators" of the learning process, learners solely taking up the responsibility to understand their learning environment and control over "how" and "when" they should learn a given academic task.

Based on the analysis of Rasch Model, it can be identified that the perceptions of motivation and learning strategies of LEAP DD students vary. In the cognitive and metacognitive components of the self-regulation theory, Zimmerman (Kwarikunda et al., 2022) stresses that for improved learning, learners must use a variety of individual tactics and skills. Dompet Dhuafa needs to design learning that can facilitate the learning process for the gender differences in using cognitive learning strategy.

Several studies have indicated reasonable gender differences. Prior research has suggested that there are stable gender differences in learning strategy use (Meece JL & Jones MG, 1996; Wolters CA & Pintrich PR, 1998). In the same context of the study, the girls show higher levels of cognitive strategy use (Wolters CA & Pintrich PR, 1998). The Organisation for Economic Cooperation and Development (2010) has the results of a study that the girls are more knowledgeable than boys about the various effective strategies. In his research, Rogiers A. et al., (2019) found that girls tend to utilize more learning strategies than boys. On the contrary, in other studies (Niemivirta M, 1997) boys were found to use more memorization strategies than girls. Specifically, Niemivirta M. (1997) concluded that boys are rote learners since they outperformed girls when using rote learning strategies.

The learning design in the next LEAP DD class should focus on training students' self-regulation skills. Because, self-regulated students are autonomously motivated, study out of curiosity for inherent enjoyment, satisfaction, and personal interest with a sense of psychological freedom and perceived internal locus of causality (Manganelli S et al., 2019). No strategy is dominant or works equally for all individual learners for a given task. This implies that while some cognitive and metacognitive learning strategies are useful for some students, the same or similar learning strategies may not be equally useful to other students (Dowson M & McInerney DM, 1998).

4   CONCLUSION

This study investigated student of LEAP DD responses to questionnaire item and differences between their demographic profiles through analyses the Motivated Strategies and Learning Questionnaire. The study found that the motivational orientation dimension (intrinsic goal orientation, extrinsic goal orientation, task value, control of learning beliefs, self-efficacy for learning and performance, test anxiety) tends to be easily conducted by the student of LEAP DD, where 22 out of 31 items fall into easy and very easy to agree with category. In contrast, the learning strategies dimension tends toward not being easy to agree, 34 out of 50 items fall into the difficult and very difficult to agree with learning strategies dimension (rehearsal, elaboration, organization, critical thinking, metacognitive self-regulation, time/study environmental management, effort regulation, peer learning, help seeking).

The study also found that item N60 (when there's a difficult task, I give up or I just work on the easy part) is the most difficult statement for respondents to agree with. Instead, item N11 (*the most*

important thing for me right now is to improve my still standard abilities so that I can improve my abilities after following LEAP DD) is the easiest item for LEAP DD participants to approve.

ACKNOWLEDGEMENTS

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APPLICATION OF THE TRIPLE HELIX CONCEPT FOR SME NETWORK DEVELOPMENT AS AN EFFORT TO BUILD COMMUNITY ECONOMIC INDEPENDENCE

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Abstract

SMEs or small and medium enterprises are a type of business on a small scale that does not have branches. SMEs are a type of business that is resilient to the storm of economic downturn. This can be seen from the decline in economic growth some time ago until now this type of business has the most stable growth. With the large number of SMEs at the village, sub-district, district, city and even provincial levels, it is very significant to help the sluggish economy. If likened to a network, the network members are in the form of sub-systems whose units are small in number and very productive. However, if SMEs are not assisted by regulations from the government and universities as centers of thought in various fields, especially regarding business management, these small and medium enterprises will be difficult to develop. Study-based research on the application of the triple helix concept for the development of small and medium-sized enterprises (SMEs) networks as an effort to build community economic independence is based on the Triple helix theory which is an interaction between academia, industry or business and government which was developed in the 1990s by Etzkowitz and Leydesdorff This concept has become a general strategy used by the government in developing policy innovations. The purpose of this study-based research is to describe the development of a network of SMEs to build economic independence. With data sources obtained from various documents related to the application of the triple helix, it is found that the Triple Helix needs to be applied as an effort to develop SMEs which can ultimately help economic independence in the community.

Key word : small and medium enterprices, entrepenuer education, life along education

1   INTRODUCTION

The current product of higher education is students who can compete in the era of the Industrial revolution 4.0 where competition in finding jobs is replaced by companies that need employees who have multi-functional competencies so that the jobs that are now in demand are jobs that require multi-disciplinary education graduates who synergize with the field of industry, practice and the government part when combined can realize development construction in the national scope which the next stage can explore the potential - the potential of natural resources, human resources that can ultimately compete in the global market

Today's global development where social media as one of the elements in an effort to attract buyers has been dominated by a marketing system that is easily accessible to many people, especially advertising designs that display popularity – luxury. Meanwhile, products from SMEs from self-employed businesses and home handicraft products have become backward due to conventional marketing activities. For example, home handicraft products are only sold in markets – traditional markets, basar activities in a regional scope. Another element in increasing product buyers is product design, for SMEs product design can be estimated not a priority in their sales, even though with an attractive, unique product design is a way to increase sales. This product design can involve universities as thinkers because universities are institutions that have a vision of developing various kinds of sciences. For this reason, there is a need for a role from the University that can nurture entrepreneurs and the handicraft industry and home industry to be able to develop because we know that the development of handicrafts and home industry is in great demand by foreign people. The university as a service university that focuses and is oriented towards community service and the application of science and technology and art is expected to bridge to solve community problems and advance the welfare of the nation, through community programs (community service, engage, empowerment, etc.). Cooperation or Collaborasi is something that is done by one organization with another in building or improving the state of its organization to achieve certain benefits and goals for both parties.

The beginning of the formation of the Triple Helix model was because the university experienced two revolutions. The first revolution occurred when universities, which had only acted as educational or teaching institutions (teaching universities), changed by taking on a new role of conducting research (research university). Research conducted by universities consists of developing knowledge as well as research ordered by for-profit organizations. In subsequent developments the university served research that was useful for the welfare of society.

2 METODOLOGI

Library Research: Literature studies are related to theoretical studies and other references related to values, cultures, and norms that develop in the social situation under study. Library Research is carried out by reading, studying and recording materials from various literature, such as books, journals, laws

3 FINDINGS AND DISCUSSION

3.1 Triple Helix Concept

Triple Helix is a concept where institutions as new scientific institutions become locomotives to help developing countries with direct assistance by business people or entrepreneurs with the government where there is synergy between Government, Universities and Industry. With this Triple position the Government as a policy maker, the University as a center for research development and industry as a provider of community service needs to achieve common goals. By producing educated and qualified human resources to act directly in the field with an adequate level of professional expertise. The triple helix strategy is to be able to prepare goals and planning that can build collaboration between organizations and the government as well as strategic alliances with multi-organizational networks. For academics, they can produce academic research products from adaptive learning products that are conceptual and pragmatic that can be disseminated and implemented for people's lives. Academic products from the results of this research can be in the form of financial formulations, product designs, marketing systems that are easy to do and their impact on product sales is high. Through the development of information technology, various SME businesses can be transformed more modern, in terms of material processing, better product design, a simple but optimally functioning financial system, to marketing that can be done online that is able to reach buyers not only locally but also abroad.

3.2 Government Contribution

From the government side, the bureaucratic system, permits that have a long line and require a long time with the aim of prospering the community can be simplified. With the realization of one-stop bureaucratic services, this effort will make it easier for the community to develop business startups that have been carried out. With the registration of a home industry business legally in the local government, the coaching process carried out by the local government on SMEs will be easier and more targeted, because SMEs have been organized. With the collaboration of small and medium-sized enterprises, the government and universities will be able to realize modern SMEs with professional governance. Thethree of them are getting more and more fused. So between the government, universities and industry there can be collaboration in the fields of:

1. Resource Collaboration, Collegiality, and Cohesive Participation
2. Innovation and continues improvement

3. Sustainability and inclusive learning

4. Trigger academician in research and community services excellences

5. High Impact on Open and Distance Education

6. Good university governance in service stake holders

With this collaboration, it is hoped that cooperation between the government which can be a University stake holder as well as an industry that can also become a *stake holder* from the University will join forces to realize the existence of a *culture cratifity* by making something that *makes it different.*

3.3   The University Contribution

The University as an educational institution whose vision is as an institution for the development of various types of science, plays a role in improving the welfare of society. The university conducts a lot of research based on the development of a science, orders from various industries such as pharmaceuticals for drug research, product design for interior design, transportation, and other developments related to industrial goals. Along with the changes that occur, universities play a role in improving the welfare of the community. With reference to universities having the obligation of TriDharma Perguruan Tinggi, the role of universities serving the community must be realized in real terms, namely helping SMEs from various sides, for example the financial management system, marketing, product design, acceleration to get business licenses to fee grants.

The Tridharma of Higher Education, hereinafter referred to as Tridharma, is the obligation of universities to organize education, research, and community service.   The functions of higher education according to Law Number 12 of 2012 concerning Higher Education are:

develop the ability and shape the character and civilization of a dignified nation in order to educate the nation's life;

develop an innovative, responsive, creative, skilled, competitive, and cooperative Academic Community through the implementation of the Tridharma; and

develop Science and Technology by paying attention to and applying the value of the Humanities.

The objectives of higher education according to Law Number 12 of 2012 concerning Higher Education are:

the development of students' potential to become human beings who have faith and piety in God Almighty and have a noble, healthy, knowledgeable, capable, creative, independent, skilled, competent, and cultured character for the benefit of the nation;

the production of graduates who master the branches of Science and / or Technology to meet national interests and increase the nation's competitiveness;

the production of Science and Technology through research that pays attention to and applies the value of the Humanities to benefit the progress of the nation, as well as the progress of civilization and the welfare of mankind; and

the realization of reasoning-based Community Service and research work that is useful in advancing general welfare and educating the nation's life.

With the basis of the higher education law, especially the purpose of higher education at the end that community service has the intention of promoting general welfare is an obligation of universities, the participation of universities can improve community welfare according to the characteristics of the college.

3.4 Entrepreneurs and Small and Medium Enterprises Network

Universities are developing not only in their ability to generate scientific knowledge, but also in the direction of other forms of assistance that have strategic relevance for industry and entrepreneurship. Government and Universities come to play different roles, but complement each other. On the other hand, industry, and entrepreneurship also develop, requires support from the regulatory side, namely the government and universities as research institutions needed by industry, SMEs, as well as by the government. Why are entrepreneurs needed?, the role of entrepreneurs is needed because with this entrepreneur, there will be job vacancies that are evenly distributed from urban areas to villages. Strart -Up is a business that is mostly located in urban areas, because this type of business uses technology in its business operations. What about small and medium-sized enterprises (SMEs)?, this type of business grows like mushrooms in the rainy season, many standing everywhere, in urban areas to villages. And the advantages that this SME business has can create job vacancies for the surrounding population. The following is the distribution of micro-enterprises in Indonesia

(https://databoks.katadata.co.id/datapublish/2022/03/23/ada-421-juta-industri-mikro-kecil-di-indonesia-di-wilayah-mana-terbanyak)
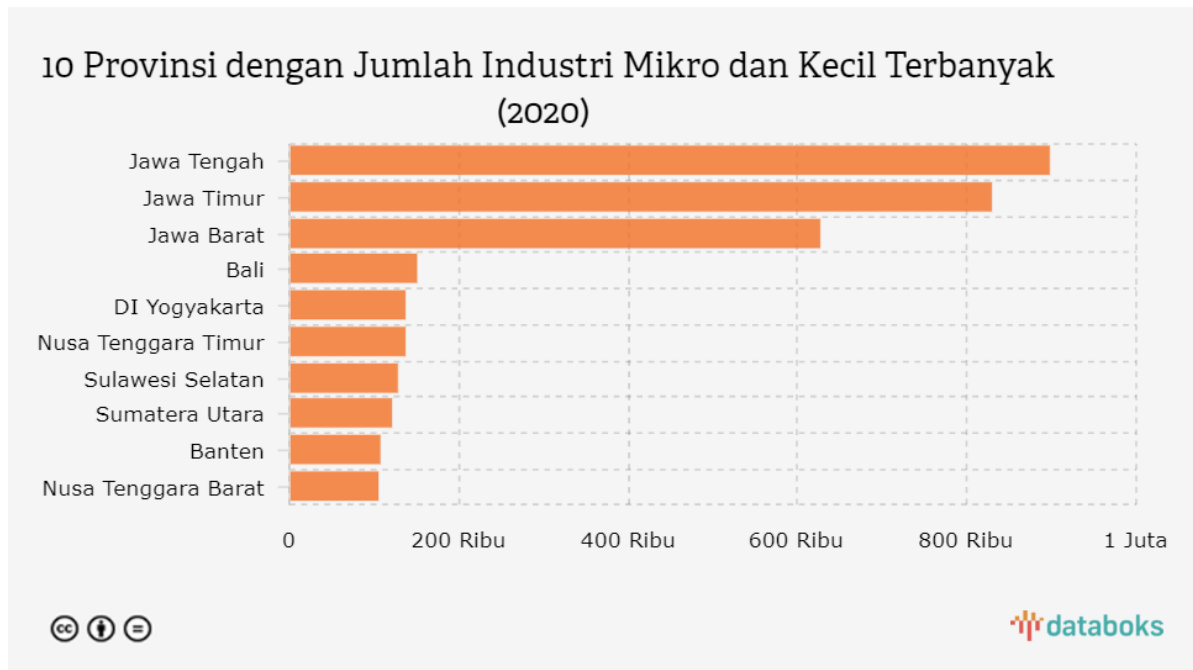
With this data, micro-businesses need to be further improved in terms of the quality of their management. And universities by doing clusters of these micro-entrepreneurs can take a role, what areas can be helped. Because with a large number of micro-businesses it consists of culinary, textile, handicraft, computer, automotive, optical and other businesses.

With the current network of small and medium-sized businesses, it is easier for universities to take a role in improving the welfare of the community.

4   CONCLUSION

The college is developing not only in its ability to generate scientific knowledge, but also in the direction of delivery of goods, services and other forms of assistance that can have strategic relevance for industry and entrepreneurship. Governments and universities come with different roles in the same goal. With the collaboration of the three small and medium entrepreneurs, the government and universities, it is hoped that they will be able to improve the welfare of their communities.

With the number of universities that exist and reach thousands, as well as small and medium-sized enterprises whose numbers are also large, the synergy realized is expected to encourage significant

economic growth. Because it is proven that at a time when the world economy is experiencing problems in the small business sector and this is the most resistant to the decline of the world economy.

However, to maintain this sector, it needs regulatory support from the government in the form of access to aid funds, technical guidance related to these small and medium-sized enterprises.

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CONTRIBUTION OF THE STUDENT SERVICE CENTER TO THE SUSTAINABILITY OF STUDIES OF DISTANCE EDUCATION

(Qualitative Study on Perceptions of Administrators of UT Service Centers and Study Groups)

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Abstract

One of the vulnerabilities of study for Open Distance Learning (ODL) students is stopping halfway or dropping out. This happens because most students do not have the readiness to study independently without proper assistance. In addition, students at ODL are mostly people who are already working so they often don't care about the schedule of the lecture process. This article aims to identify the variables that cause obstacles in the continuity of distance student studies and the solutions that have been carried out by student service centers and study groups. The research design is descriptive and qualitative with in-depth interviews as a data collection technique. The informants are administrators of Universitas Terbuka (UT) service centers and study groups in Purwokerto, Samarinda, Jakarta and Surakarta. Data collection was carried out from May-August 2022. The results showed that although students could study independently, assistance from individuals or institutions was still very much needed. Assistance is provided in terms of admissions, scheduling, academics, and administering exams. This article also provides recommendations that can improve the role of student service centers and study groups to help students complete their studies faster and on time.

Keywords: sustainability; contribution; distance education; student service center, study group

1   INTRODUCTION

Distance higher education in Indonesia is now a mode of education that is in great demand by the public, especially during the COVID-19 pandemic. Almost all educational institutions at all levels carry out online education and are considered distance education. In this mode of education, the implementation of learning is carried out with the separation of the distance between teachers and students, and the implementation is carried out through media intermediaries such as: printed and non-printed teaching materials as well as electronic and digital (Darojat et al., 2019; Genc Kumtepe et al., 2018; Sembiring, 2022). Sembiring stated in his article that distance education is different from online learning. Distance education is a learning process designed systematically starting from the preparation, implementation, and evaluation of components related to education, including learning materials, learning assistance, and implementation of learning, test materials, and examination implementation to the judicial process. All these stages are designed in such a way that it becomes an accountable system. While online education is basically conventional education that is carried out

online. The planning and evaluation are carried out for face-to-face learning, but due to outbreak constraints, the implementation is carried out online (Gökbulut, 2020; Sariyatun et al., 2021; Sembiring, 2022). Based on this opinion, Universitas Terbuka (UT) is a university that provides distance education. As a university that implements a distance learning system, service support for students is an important thing. This service support includes infrastructure, availability, the competence of human resources, internet network availability, and service strategies in addition to providing facilities by institutions (Genc Kumtepe et al., 2018; Gil-Jaurena, 2014; Usun, 2004). The management of student services can be facilitated by the organizing institution or by partners, such as internet service providers, support from peers, and support from financial institutions (Dacanay et al., 2014; Morgan & Tam, 1999; TALAN, 2021). At UT Indonesia, student support services provided by partners are organized by study groups and UT service centers.

In distance education, students are required to have the ability to learn independently, meaning that they learn and manage their studies based on their own initiative. Most students choose UT as a place to study, are because they are already working, so they do not have enough time to attend lectures on campus. In addition, they are also constrained by distance (transportation, and costs) to come to campuses which are usually located in big cities. The obstacles faced by students are not only related to the content or lectures but include admissions, study assistance, obtaining study materials, the examination process, the judicial process until graduation, and obtaining a diploma or graduation certificate. These various obstacles allow the continuity of student studies to be somewhat hampered, due to various things, such as: forgetting admissions, forgetting schedules, tutorials, forgetting exam schedules, and not having time to take teaching materials. These various obstacles pose a challenge for UT as the organizer of ODL to help students and find solutions. One of them is by providing learning assistance services that are managed by the community, namely by giving permission to form study groups or UT Service Centers. These two institutions play an active role in helping students from admission to graduation and obtaining a bachelor's degree at UT. This article will discuss the management of UT service centers and study groups based on the perceptions and expectations of the administrators. Therefore, this article will discuss the role of student service institutions in the sustainability of student studies.

Study groups (in Indonesian called: **Pokjar**) are UT students who form groups to build commitment and mutual agreement to help each other and support smooth and successful learning at UT. Study

groups can use their own facilities and or the facilities of other parties. This study group can be in the form of 1) an independent study group formed on the initiative of a student and chaired by one of the students; 2) study groups formed and managed by the regional UT to help provide services to a group of students and coordinated by one study group administrator. This study group has obligations, such as conducting promotions, recruiting students, facilitating learning services (such as distributing teaching materials and providing tutorial rooms), and assisting the admissions process until graduation and graduation. In addition to obligations. Study groups also have rights, such as: getting the latest information on UT policies, getting services, transportation to and from UT Regional, and being allowed to use UT attributes in their activities (Universitas Terbuka, 2021).

The UT Service Center (in Indonesian called **SALUT**) is a UT administrative and academic service center which is professionally managed by UT or a designated partner bound by a cooperation agreement. Currently, there are two kinds of UT service centers which are owned by UT and UT service centers which are owned by partners. Like, study groups, UT service centers have the obligation to: conduct promotions, recruit students, assist the admissions process, organize orientation for new student introductions, and assist in organizing study assistance and examinations, until graduation (Pandiangan et al., 2021). Regarding financing, study groups, and UT service centers have differences. Study group funding is obtained from service fees sourced from UT according to the category of the number of students who are members (Universitas Terbuka, 2021). Funding for UT service centers is independent, meaning that its management comes from funds collected from each student with a minimum amount that has been determined in UT rules (Pandiangan et al., 2021).

2   METHODOLOGY

This type of research is descriptive qualitative using a survey method with interviews as a data collection technique. The population is the administrators of study groups and UT service centers in UT regional Samarinda, Purwokerto, Jakarta, and Surakarta. The sample is the administrators of study groups and UT service centers in Pontianak, Tegal, Cilacap, Cibinong, and Grobogan. The number of respondents was 4 administrators of study groups and 4 administrators of UT service centers. Data collection was carried out in May-August 2022. The interview process was carried out face-to-face, where the interviewer met directly with the informant. The interview instrument generally contains 5 open-ended questions, namely: 1) What types of assistance are needed by students; 2) What are the problems that students most often complain about; 3) How do study groups

and UT service centers help provide solutions to student problems; 4) What is the graduation rate of students in the UT study groups and service centers that you lead? The data collected was then analyzed descriptively and qualitatively. The results of the interviews were transcribed and then processed for similarities and similarities to be analyzed and presented descriptively.

3   FINDINGS AND DISCUSSION

The results of the research that have been carried out are presented in the following qualitative descriptive manner.

3.1 Finding

The description of the research results is presented in two parts, namely the respondent's profile, and the interview results. There were 8 informants who were interviewed.

3.1.1   Profile respondents

Table 1 Profile of Respondents

No	Aspect and Indicators	Frequency	%
1.	Gender		
	Men	3	37
	Women	5	63
2.	Incorporated in		
	a. Service centers	4	50
	b. Study groups	4	50
3.	Age		
	a. < 17 years	0	0
	b. 17 – 25 years	0	0
	c. 26 – 35 years	2	25
	d. 36 – 50 years	2	25
	e. > 50 years	4	50
4.	Occupation		
	a. government employees	5	62
	b. Teacher	2	25
	c. Private employees	1	13
	d. Self-employed	0	0
	e. Other	0	0

The data in table 1 shows that administrators of study groups and UT student service centers are dominated by women. This condition, after being observed has no effect on their performance. In general, all of these administrators have a good commitment to sustainability and their duties and functions in service to students. One thing that is interesting is the age of the board which is dominated by the fifty and above range. After further deepening, it turns out that the management

who are over the age of 50 really focuses on the management after they retire from their jobs, namely as civil servants. As for work, most of the respondents are civil servants at the education office in the local area. This is very reasonable, considering that their work supports their work in the management of study groups and UT student service centers.

3.1.2   Interview results

The results of the interviews are grouped into four main points, namely as follows.

1) What types of assistance do students need?

    The findings obtained based on the results of the interviews are presented in the following description.

    "The needs of students that we serve the most is assistance in registering. This assistance is needed by students every semester, both new students and ongoing students. This happened-because all of them were already working people, so they often forgot and did not have time to register themselves."

    "In the study group that I manage, the most important need for students is to get information on the lecture process from registration to graduation. Therefore, we always provide information through various modes, such as WhatsApp Group, SMS Blast, the study group website, and announcements on the bulletin board in our office. Whatever announcements are made by the Open University, we will immediately send them and post them to students"

    "At the UT service center that I manage, the main need for students is to be accompanied while they are studying at UT. Each semester the needs are different, some need assistance in admissions and payment matters, some need guidance in the tutorial process, and some need information regarding time and schedule. In essence, all lecture processes from registration to graduation and graduation require assistance from the management."

2) What are the problems that students complain about the most?

Related to the problems that are most often conveyed by students, here are the results of the interviews:

a. Results of interviews with study group administrators.

Study group administrators have given the initials Respondents (R)1, R2, R3, and R4.

R1: "In my place, student problems that are handled the most are the registration process. In one semester there are about 300 students who come to ask for information and assistance related to the registration process. Problems faced, including forgetting to register and the schedule has been missed, forgetting the password on the http://sia.ut.ac.id application. They don't have enough money to register for courses."

R2: "The problems that students who are members of our study groups complain about the most are registration and exams, especially those which are conducted online. This is very understandable- because the students who are members are teachers of early childhood education and elementary schools. The obstacles they face are because they are technologically stumped. Therefore they need guidance to register for courses at the beginning of the semester through the http://sia.ut.ac.id application. Regarding their exams, they are constrained when taking online exams, especially during the COVID-19 pandemic. During the pandemic, all examinations are conducted online through the Home Examination (THE) application."

R3: "The problem that many students who are members of our study groups complain about is the use of various online applications. This application includes an online registration system, online exam system, online tutorial system, and online payment system. This obstacle is caused because most students do not have the ability to operate ICT well enough. Another problem that many complain about is the low value of learning outcomes obtained by students. One of the causes of non-graduates or low grades in courses is because they are late or fail to upload answers to the exams they have done."

R4: "Most of the complaints from our students are about the low-grade point average and do not meet the requirements for graduation. This makes students have to repeat the same courses but

still cannot pass. Another problem that he often complains about is the final grade he gets for the course. This was complained about because their tutorial scores were quite high but when the final grades came out, it turned out that they did not pass. This information related to grades is what we must often convey to students."

UT service center administrator is given the initials Respondent (R)5, R6, R7, and R8.

R5: The problems that are most often conveyed by students are about the internet network and schedules. They have difficulty with the low internet signal to access various processes, from registration and tutorials. Therefore, many of them come to the UT service center office, just to be able to access the applications provided by UT. Regarding the schedule, most of our students complain about forgetting the schedule. Even though the schedule is clearly displayed on the UT website, the UT Regional website, the UT service center website."

R6: "The most frequent student complaints are about grades, both the value of each course, the end of the semester grades, the passing grades, and the grades that do not come out at the end of the semester."

R7: "Students who come and make complaints, mostly about the registration process and the activation of online tutorials. These two things are related because, during registration, students must choose the type of tutorial service that they will participate in".

R8: "The complaints of our students are very diverse, although the number is not too many. In one semester, no more than 10 cases are complained of. The complaints include registration, application for credit transfer for courses, tutorials, exams, judiciary, and graduations."

3) How can study groups and UT service centers help provide solutions to student problems

The solutions offered by the UT study groups and service centers to these matters are illustrated in the answers of the following respondents.

"Student cases that can be solved at the UT service center that I manage, then we will guide students to solve them themselves by guiding them step by step individually. Usually, this kind of problem is related to access to the related App."

"Students who come with their cases need to be heard and responded to. That's what we do"

"For cases that can be resolved at the UT service center, we will help solve them by guiding them to solve them themselves, while for cases that cannot be resolved at the UT service center office, we will record them and we will forward them to UT Regional or UT Pusat in Jakarta"

4) What are the results of student graduation in the study groups and UT service centers that you lead?

Regarding student graduation, all respondents said that their student graduation was very good. This is illustrated by the number of students who are members of each semester, the number is always almost the same, which is around 800 students on average. This is illustrated by the following respondents' answers.

"Every semester, our students who graduate, about 200 people and the number of new students is around that too"

"Students who are members of our place, graduation tends to be balanced between those who pass and those who enter"

"Every semester, about 200-300 students graduate. Their grades are good, even some students are graduates with the highest GPAs in their class and get the title of the best graduates"

3.2 Discussion

3.2.1 *Type of assistance required by ODL students*

Based on the results of interviews, the needs of students in distance education are a) guidance on the registration and admission process, b) obtaining information related to the lecture process, such as

tutorial schedules, tutorial locations, tutorial times, and administration in tutorials; c) obtain information related to the implementation and results of the exam, such as the time and place of the exam, the mode of the exam (online exam or face-to-face exam, essay form or multiple choice); d) information on payment of tuition fees; e) information about the judiciary until graduation. These results are relevant to the opinion expressed by (Essel et al., 2018; Lohmann et al., 2021; Merritt et al., 2019) which states that the types of services that must be provided by student support services at ODL are in the form of up to date information that is submitted periodically to students, assistance in accessing the learning process, guidance in the process of administering exams and opening access to university websites and networks or the internet.

3.2.2   *Complaints of ODL students regarding lectures and learning*

The findings from interviews related to complaints that many ODL students convey regarding the lecture process are very diverse. The complaint covers all the processes that students have to go through while they are taking lectures at ODL, which include the registration process, lectures or tutorials or study aid services, learning materials and resources, exams, and graduation. country. These problems include a) the availability and delay of learning materials and the learning process (tutorials) (Pribadi & Hiariey, 2020); b) a weak internet network, so students have difficulty accessing online learning (Biasutti et al., 2019; Merritt et al., 2019); c) access constraints in the exam process, especially online exams. This obstacle is not related to the content of the course but rather to the accessibility of the online exam application. These constraints can cause stress and decrease student motivation (Essel et al., 2018; Zajacova et al., 2005).

3.2.3   *The solutions offered by the student service center to the problems faced by students.*

The solutions offered by the student service center generally include: a) listening to each student's complaints properly; b) calming students down individually in various ways, either with words or behavior; c) providing direct solutions, for example: guiding students to solve their own problems through access to related applications, d) recording and collecting student cases that cannot be resolved at UT service centers or study groups and then forwarding them to UT Regional or UT Pusat in Jakarta. This solution is in line with the basic concept of establishing a UT service center and study group at the Open University, which is to serve students from registration until they finish their studies. This service includes information, assistance and assistance individually or in groups (Pandiangan et al., 2021; UniversitasTerbuka, 2021).

3.2.4 Graduation rate of ODL students who are members of UT service centers and study groups

Based on the results of the study, it appears that the graduation rate of students who are members of the student service center (study group and UT service center) in each period shows a balanced quantity between graduation and incoming students. This shows that the services provided by the student service center play a very important role in the resilience of ODL students' studies. This means that student service centers are needed by students who choose to study at universities that implement the ODL system(Brown et al., 2013; Essel et al., 2018; Gil-Jaurena, 2014)

4 CONCLUSION

The conclusion that can be drawn from the results of this study is that student service centers called study groups and UT service centers are institutions that are needed by students. These needs include accessibility, resilience, and continuity of student studies starting from the registration process until they graduate and become undergraduates. The student service center is obliged to provide the services needed by students, although not all students who are members of it need these services continuously. The recommendation that can be submitted is that UT through its UPBJJ consistently maintains and supports the performance of study groups and UT service centers in their area so that the student lecture process runs smoothly.

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BUSINESS INCUBATOR DEVELOPMENT IN OPEN AND DISTANCE LEARNING HIGHER EDUCATION

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Abstract

The role of a business incubator is very crucial in higher education. Through business incubators, students who have businesses will be trainees to compete in global competition. The training can include technical skills, product marketing, and business development. This study aims to create a business incubator model in Open and Distance Learning (ODL) Higher Education. Data is collected through observation and literature review with the pentahelix element. The results of this research will contribute to the institution, academics, business, and industry as the basis for developing a business incubator model in ODL higher education.

Keywords: development, business incubator, distance learning, higher education.

1 INTRODUCTION

The development of technology and information is a challenge for business actors, both MSMEs and industry. The rapid competition, especially in terms of marketing in sales both offline and online, requires increasing production quality, good management, and marketing planning (Rosário & Raimundo, 2021). The business incubator was built to attract novice business people or start-ups to develop further and compete in the industry competition (Man et al., 2022). As agents of change, universities need to create business incubators that can double function, namely developing businesses in the community and universities (Redondo & Camarero, 2019). Business incubators in universities as business practice laboratories have three stages: pre-incubation, incubation, and post-incubation (Hillemane et al., 2019). There is a selection process for prospective incubator participants in the pre-incubation process. This selection process, among others, looks at the business focus factor, business legality, and business plan. An interview will be conducted for the next selection to ensure serious young business people can move forward to the next process. After going through the selection process in pre-incubation, the netted participants will be included in the business incubator. In this process, several activities include business development, forming relationships, business financing, and business focus (Huda & Rejito, 2020). These activities aim to develop entrepreneurs'

businesses to compete in global competition. After going through the process in a business incubator, this entrepreneur is expected to be able to build and develop his business.

Besides developing businesses in the community, business incubators in universities can also be used to create higher education businesses (Piterou & Birch, 2016). Through business incubators, universities can grow and have the advantage of supporting the operational costs of universities. The problem that arises in a business incubator is how the mechanism works. These mechanisms include building networks, marketing products more broadly, legal aspects, and allowing businesses to last a long time (Wonglimpiyarat, 2016). Research on business incubators is mostly conducted at face-to-face universities, but research on business incubators at Open and Distance Learning (ODL) universities is still rarely done. This study aims to create a business incubator model at universities and long distances to be the basis for further research or input for stakeholders.

2 METHODOLOGY

This study uses observation and literature to develop a business incubator model for ODL. The pentahelix concept in Figure 1 is used in research to see support from various parties: government, media, business, community, and academia. The pentahelix model is a reference in developing synergies between related elements in supporting the goal as optimally as possible. The pentahelix collaboration has an important role in supporting shared innovation goals and pentahelix contributing to an organization (Muhyi et al., 2017).
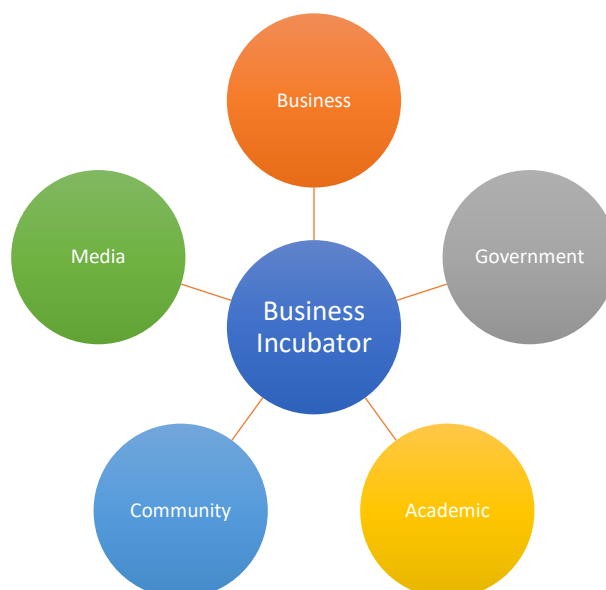
Figure 1. Pentahelix for business incubator

The application of pentahelix in business incubators in universities involves several elements that have an important role in developing ODL university business incubators. The pentahelix concept will be combined with the stages of forming a business incubator from various kinds of literature so that the results obtained in this study can lead to a business incubator model to support ODL higher education.

3   FINDINGS AND DISCUSSION

3.1   Pentahelix in Higher Education Business Incubator

The role of academics in business incubators is important from a scientific perspective. Academic experts in the business field can provide bright ideas for business development. Their business knowledge can be applied in a business incubator. They can invite students to practice business in business incubators at universities. The results of academic business research can be used in an incubator (Alpenidze et al., 2019). Academics can collaborate with students and business people in business development in business incubators. The business incubator is a place to develop business start-ups and is also used as a business practice laboratory for students and the community. Academics can become business consultants in business incubators.

Business actors have a role as business partners for business incubators. Business actors can be consultants or partners in business incubators. Entrepreneurs can become business partners for business incubators (Diedericks, 2015). For example, they can serve as a business incubator if they need human resources, raw materials, or marketing development. Investors are included in the scope of business actors. Investors can be invited to work together to develop the business. This collaboration between business incubators and business actors can be mutually beneficial.

The community has an important role as a network in business incubators. The community has a wide network and close ties of relationships. A business incubator can use this to develop its business (Bismala et al., 2020). This business development can be in the form of cooperation in procuring goods and services, human resource development, or product marketing development. Business incubators must have a strong network to develop their businesses freely. Many networks provide many choices for cooperation and opportunities to build their business. The community can reinforce business development.

The government has an important role in developing business incubators related to policies and regulations (Li et al., 2020). The legality of business incubators must be clear based on government policies and regulations. In addition to regulating the game's rules, the government also has a forum for business development, for example, in the Ministry of cooperatives and the Ministry of trade. Business incubators can be included in their programs. The Ministry has a lot of training courses for entrepreneurs that business incubators can take advantage of. The government also has a network with industry so that it can provide space for the development of business incubators. What needs to be considered from this government element is the change in policy on regulations in terms of business. This policy change must be anticipated immediately to reduce loss retention for growing businesses. Regulations on the legality of marketed products must be properly understood by business people so that marketing does not suffer losses due to customer complaints.

The media has a role in the development of business incubators. The media can provide a place for business people to promote and market their products. In the development of technology, media provides a lot of important information for business development. The media include mass media, TV, radio, and social media, including IG, Facebook, and Youtube. If all media are used as a means of promotion, the dissemination of information can be fast and massive. The impact of the media on marketing is very large because marketing targets can reach all ages and have a wide reach nationally and internationally. Online selling media such as Shopee, Tokopedia, Bukalapak, and others are very good for product marketing. Selling online has many advantages because you don't have to provide a place to sell and time all day long.

The five elements in the pentahelix are the drivers for the growth of the Business incubator. If these five elements function properly, the business incubator will develop well. To implement pentahelix in a business incubator, a strategy stage is needed so that the business incubator can develop and be sustainable.

3.2 Business Incubator Development Strategy in Higher Education

The business incubator development strategy at ODL institutions consists of five stages: (1) Establishment of a business incubator unit at ODL institutions; (2) Pre-incubation mechanism; (3) Incubation mechanism; (4) Post-incubation mechanism; and (5) Evaluation.

The establishment of a business incubator ODL begins with: (a) Forming a team for establishing a business incubator; (b) Creating a vision and mission; (c) Creating a roadmap; (d) Creating a business incubator application that contains the registration process (entrepreneur identity, business legality, and business plan), requirements to become a business incubator participant, create business development guide, and create a network of cooperation.

The pre-incubation mechanism includes a selection process for business start-ups, interviews, and business plans. The incubation mechanism includes coaching for business start-ups, mentoring, and business development. The incubation mechanism has several activities in the form of (a) access and capital assistance, (b) opening related networks that can help the development of the business, (c) development of marketing strategy, (d) assisting in accounting or financial management, (e) mentoring and business training, (f) company management and corporate culture, (g) to introduce and emphasize business ethics, (h) provide information about the related business industry in general, and (i) assist with regulatory matters. The post-incubation mechanism is expected to have networking and partnerships, adapt to global competition, and have competitive advantages, skills, and strong motivation to develop businesses. The next evaluation is related to the report on the development of the business incubator.

3.3 Business Incubator Model Application in ODL Higher Education

The application of the Business Incubator at ODL higher education is not much different from the business incubator applied to other institutions. What makes the difference is the involvement of students as participants in the business incubator. The selection process for incubation participants for ODL college students cannot all be done directly. Students who have business start-ups domiciled far from the city center must be facilitated by online selection. The incubation process will experience the same obstacles. To overcome this, it is necessary to sort out a business plan that does not have to be onsite but can be done through a third-party application.
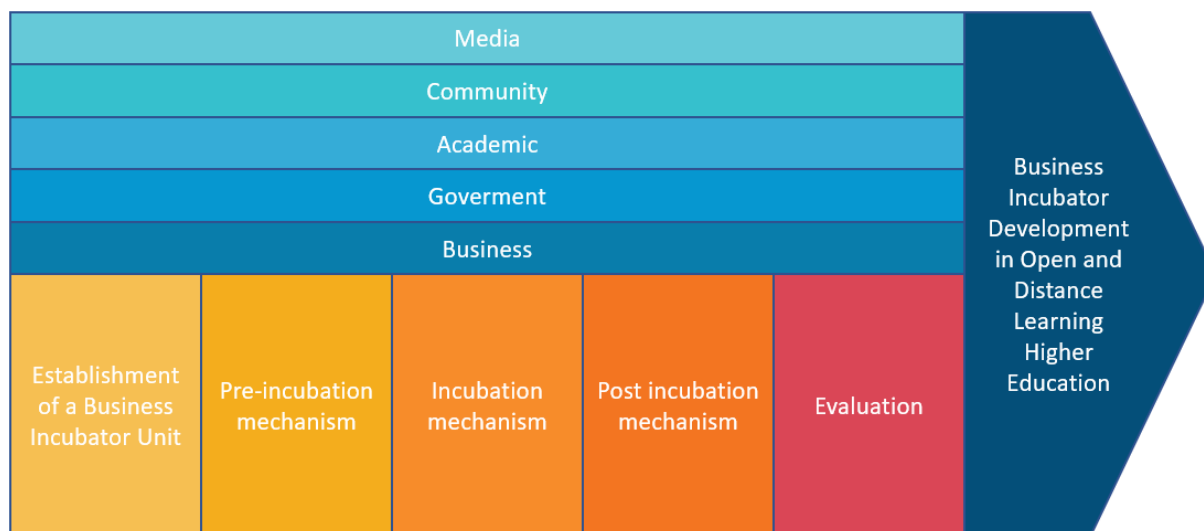
Figure 2. Business incubator model for open and distance learning

This research produces an incubator model that can be applied in open and distance universities, as described in Figure 2. Using the pentahelix model combined with a development strategy is suitable for building a business incubator in ODL higher education.

4 CONCLUSION

The business incubator model at ODL higher education can be implemented with a combination of pentahelix element support and a gradual incubation development strategy. The difference in business incubators at ODL universities is the involvement of students as participants in business incubators, where the selection and incubation process does not have to be carried out on site and synchronously. The business incubator model at ODL tertiary institutions is expected to be an illustration for starting a business incubator for institutions and stakeholders.

ACKNOWLEDGEMENTS

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DIGITAL BOOK WITH CONTEXTUAL LEARNING APPROACH ON GRAPHIC DESIGN SUBJECT FOR HEARING-IMPAIRED STUDENT

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Abstract

Students with hearing impairments have difficulty understanding the basic knowledge of graphic design subject material, such as the basic concepts of design and elements and categorising product design are something abstract for them. This research aims to develop and validate a digital book to supplement learning graphic design in the classroom for students with hearing impairments with a contextual approach. The methodology used in this study is the development of the Lee and Owens model. as for the stages in the development of these learning materials, among others: (a) needs analysis; (b) learning design; (c) development and implementation; and (d) evaluation. The results of the evaluation from expert 61%. And student 66% .; with the average acquisition of all aspects are 63%, it can be concluded that Decent; there is no need to revise.

Keywords: Digital Book, Contextual Learning, Lee and Owens, Graphic Design, Deaf

1 INTRODUCTION

Graphic design is a field of art in getting information through the language of visual communication, which involves the aesthetic rules of the Design (Widya & Darmawan, 2016). It is the most in-demand skill for hearing-impaired students compared to other skills such as batik, woodcraft, computer, and leather. Hearing-impaired is someone with barriers due to internal or external factors that have impacted their hearing abilities and have another excess in visual abilities (Nofiaturrahmah, 2018). As a visual and kinesthetic learning style, they prefer to learn graphic design by practising using computer software programs directly. They are skilled in using graphic design software but need to understand basic design knowledge first to make creative design products (Ramadhani et al., 2018). Basic design, known as the eight main principles, needs to be considered: unity, balance, proportion, emphasis, rhythm, simplicity, clarity, and space and elements, as well as basic knowledge of Graphic Design. Basic knowledge is theoretical and abstract things for students with hearing impairments (Nofiaturrahmah, 2018). Basic knowledge is essential to understanding because it is a soft skill in organising, mixing, and matching various elements while still paying attention to the basic principles of design. This is the competency of a designer in making the creative initial design draft. (Mahendra & Pujawan, 2019).

Commonly in special need school, the learning process in the classroom is less conducive. They are taught with various disabilities with special needs barriers in one classroom. Hearing-impaired

students have memory limitations due to language barriers in the vocabulary (Alsindi, 2021). The information they receive is easier to understand visually or translate into their sign language first, then understanding the intent and purpose of the material needs help to assist personalise (Boamah, 2021). Based on the unconducive learning system and the barriers to information, many students do not get attention when they have difficulty understanding the learning, which impacts the acquisition of learning outcomes.

The graphics design subject is integrated into information technology subjects with the exact duration of learning only one hour a week (Kemendikbud, 2014). The approach still relies on meeting with the teacher in class. From the interview, the limited time to study in class and the lack of teaching materials for students to study at home make teachers feel that they have not been maximal in teaching graphic design lessons. Meanwhile, to make teaching materials, the teacher does not have much time. Another learning supplement is needed to facilitate the learning (Anggraeni et al., 2019).

Learning using technology for hearing-impaired students has been established effectively to assist students in improving their understanding of the learning (Knoors & Marschark, 2014). For example, video is one of the supplements to assist hearing-impaired who have limited memory in understanding the meaning of information. Using video in learning makes them easier to repeat, back and forward media videos to clarify (Nofiaturrahmah, 2018). It also found that several learning technologies such as e-learning, artificial Intelligence, Module, multimedia, video, and hypermedia were developed for hearing-impaired students. Most areas focused on language to assist their barriers to reading comprehension (DeWitt et al., 2015). For the problem of improving basic understanding, digital books have been tested for hearing–impaired students. It is found in mathematics subjects with multi representative approach on digital books proven effective for student (Suarsana, 2021). It can be resumed that digital book is one of the learning technologies that can be implemented in this research.

Furthermore, the research found that the learning strategy of Contextual Teaching and learning has proven effective strategy learning in graphic design subjects in the classroom (Ramadhani et al., 2018). This previous research suggests that the following research would develop electronic learning digital media by visualising the example of concept material with concrete matter (Ramadhani et al., 2018). the same as what has been recommended in previous research states that needs to be developed learning material to assist them as a supplement with appropriate technology (Z Ibrahim, 2021).

Based on this, the researcher wants to facilitate the researcher to develop a digital book using the right aspect

methodology development research with questions consisting of the following:

1. How does demand analysis of digital books for hearing-impaired in graphic design?
2. How do we develop a digital book for hearing-impaired students in graphic design?

2 METHODOLOGY

This research is a type of research and development (research and development) aiming to develop learning materials and test eligibility. The learning materials developed are A digital book operated using the internet and devices. The model development of this research is Lee and Owens model (2004), which is a model developed to develop electronic learning devices. Lee's development stage and Owens consists of five stages, namely: (1) Needs assessment and analysis, (2) design, (3) Development, (4) Implementation and (5) Evaluation.

The subject was hearing-impaired design graphic students in eleven senior stages at the Special School (SLB N 02 Jakarta). As many as eight students, one graphic designer teacher and one technology information teacher collected data for needs analysis by interviewing and observation. At this stage, researchers conducted observations using an instrument with a four-level Likert scale with four options (1) strongly agree, (2) agree, (3) disagree, (4) strongly disagree that converted into a number adopted in previous research (Zainuddin Ibrahim et al., 2016). For evaluation, using an instrument with a four-level Likert scale with four options (1) excellent, (2) Good, (3) enough, (4) not good that converted into a number. The instrument for evaluation has been validated by using evaluation learning media with an internet-based (Siregar & Hadiansyah, 2018). The expert who conducts the assessment is a person with a special need education field with a master's level and not involved in developing teaching materials (Chaeruman, 2019). The analysis technique uses the score formula for each item and the average score (Akbar, 2013), that is :

$$p = \frac{x}{xi} \text{ x } 100 \text{ \%}$$

P = Prosentase

X = amount score in one item

Xi   = amount ideal score

The ending result of validation qualification has four stages (Arikunto, 2010).

Table 1: Qualification of validation qualification

Prosentase (%)	Validation Ceriteria
76% - 100%	Very decent, no need to revise
51% -75 %	Decent, no need to revise
36 % - 50%	Decent enough, needs to be revised
$\leq$ 35 %	Not worth it, needs to be revised
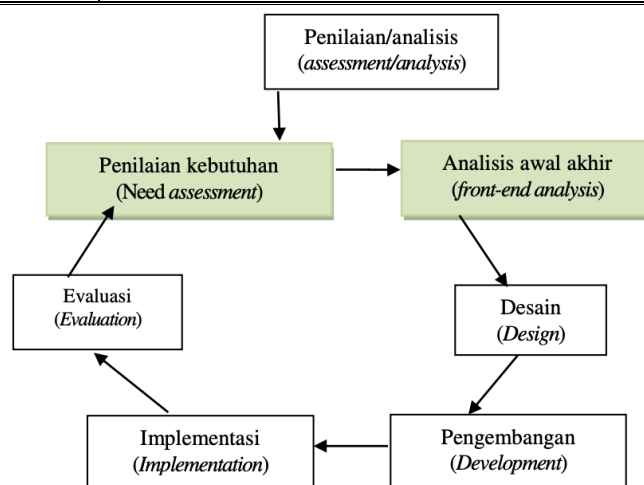
Figure 1: Lee and Owens's model of development (2004)

The first stage needs analysis to find the difficulty of learning to design graphics. Which materials are challenging to understand by giving instruments? What are their expectations for this subject? That information needs to be known to find the gap between the actual condition. The second stage is the design, which includes deciding the learning objectives, listing the media and material, and layout the visualisation of digital books. The third stage is the product development stage, translating product specifications into physical form. This development stage includes making a storyboard, inputting material, and developing interface designs. The product is feasible to implement in the learning process and testing on the internet. The fourth stage is implementation. At this stage, expert reviews evaluate learning media in four aspects: material, learning approach, and media.

Moreover, the expert gives suggestions and improvements. Due to the time limitation, the research was only finished in four stages. The fifth stage is an evaluation, a trial of the student yet to be implemented.

3 FINDINGS AND DISCUSSION

This research's finding explains four stages: need analysis, design, development, and implementation.

3.1 Development result

3.1.1 Need and front-end analysis

Following the average number of data, Hearing-impaired students have difficulty understanding the basic principle of the printed product, the pre-design step, and the basic elements. The learning media that needs is a video with sign language and an electronic book. Based on the data above, learning objectives is setting, can be seen in the data below:

Table 2. Material is considered problematic stated by the student

	average
Understanding of the basic principles of printed products	80%
Pre-design step understanding	78%
Understanding the basic elements	75 %
Categorize design products	75 %

Table 3. Media needs in learning graphic design chosen by the student

	average
Video with sigh language	89%
Media containing of picture, animation, and video	87%
Elektronik book	87 %
Video with subtitle	85 %

In addition to finding out the difficulties of the material faced by students, researchers also observed the readiness of facilities and infrastructure in schools. Researchers found that there were 15 tablets from the procurement of school operational funds that had not been appropriately maximised for learning. This can be used to access digital books for students at school easily.

3.1.2 Design

The results in this design stage are in the table of competencies, table of content, form of Storyboards, Manuscripts, and Flowcharts.

Table 4. Competencies

General	Implement the basic knowledge of graphic design
Indicator	Students able to demonstrate the product design by implementing the principle, and elements.
Specific	Understand basic concepts of graphic design
Indicator	Student able to categorize various kind of graphic design
	Student able to show the differences on nine principles
	Student able in the right element that should be implemented in illustration of design.

3.1.3 Implementation

Researchers at this stage of development make products using several software such as video material using IMovie, Final Cut Pro, Canva Pro, and Filmora. Makin and editing Pictures and graphs using canvas pro and photoshop. Then all the material is combined in one learning material in PowerPoint that converts into HTML format to be easier to operate on the internet as the prototype.
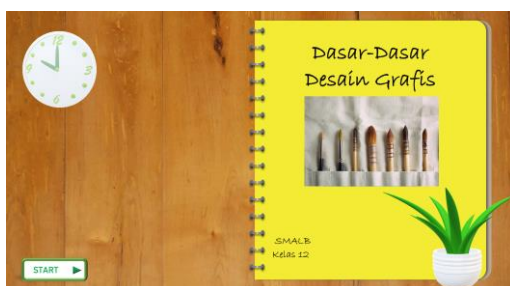
Figure 2: Book Cover

Figure 3 : Visualization by picture
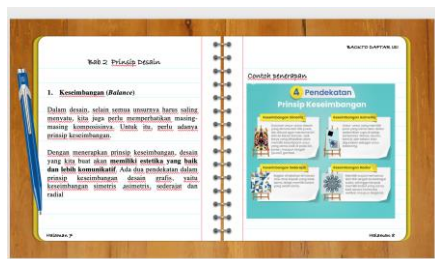
Figure 4: Visualization by illustration

Figure 5: Video show concrete

Figure 6 : consists of task
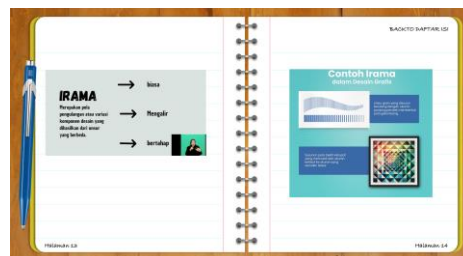
Figure 7: consist of example

3.1.4 Evaluation

After the prototype is completed, it is then submitted to experts from a postgraduate education background in extraordinary education, result:

Table 5: an expert assessment

Technical Quality	17	
Usability	4	
Technical visual and audio	10	66%
Clarity illustration	6	
Learning	16	
Content	21	90%
Congcret example	4	
language suitability	3	
Comprehension	3	
Grammar	4	86%
Spelling accuracy	4	
Naration	4	

term accuracy	3	
accuracy of language structure	3	
Average		61%

The summary of suggestions and improvements from each aspect are :

1. Language Aspect, Overall, it is good, but there is a slight delay in translating from sign language at specific minutes.

2. The material aspect, the pilot part of the implementation of the theory, should be given an eye barrier which is the first learning goal and the first learning goal.

3. Media aspect, For infographics, it is good, but the facilities for sign language corners are given space that does not change because several transitions can break students' focus during learning. After all, the sign language interpreter moves.

4. In the learning aspect. The lessons in the video are pretty good, especially the description of real examples; after accumulated accumulating in all aspects, the learning video product. The average expert test validation results get the following result.

5. The average score shown 66% means that the digital book is Decent; there is no need to revise.

Table 6: by student

Language	4	
materi	3	
media	3	66%
learning	4	
Comprehension	4	
Average		66%

The summary of student evaluation is 66% means   Decent; there is no need to revise.

4   CONCLUSION

The average number of gains from experts and students, when put together, is 63% means Decent; there is no need to revise. The most notable from experts are that by visualising the example in a real situation, the student gets the actual examples of concept implementation. The strategy of

increasing understanding of the basic concepts of graphic design can be resumed for hearing-impaired students by visualising the concrete material. After their understanding of the concept, the video also gives the task of categorising, summarising, making the poster and presenting in their implementation.

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MOBILE LEARNING APPLICATION DESIGN BASED ON AUGMENTED REALITY GEOMETRY MATERIALS

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Abstract

Learning media is needed to facilitate students' understanding to support the learning of mathematics in the material of geometry so that it becomes concrete. Based on this, it is necessary to design an augmented reality-based mobile learning application. The steps in making a mobile learning application are adapted from the development model of Borg & Gall (2003) which consists of ten stages. The ten stages are summarized into three parts: planning, development, and evaluation. This research focuses on the first stage, namely planning. This research method is research and development (R&D). The planning section consists of two stages, namely (1) data collection in the form of needs analysis and (2) planning (planning). Data collection has been carried out based on the results of the analysis of student needs through questionnaires and needs analysis from experts based on interviews and literature studies. The results of this study get the right content and appearance to develop applications.

Keywords: application design, augmented reality, geometric, learning mathematics, mobile learning.

1   INTRODUCTION

Almost all fields of human activity have adopted easier, more effective, and more efficient methods by employing ever-improving technological advancements. The advancement of modern technology undoubtedly has a significant impact on education, particularly when it comes to the utilization of learning media. Learning media, according to Saputro & Saputra (2015), turns out to be developing in step with existing technology, including print technology, audio-visual technology, computer technology, and a mix of print technology and computer technology. The use of learning media in the teaching and learning process can also inspire students to develop new interests and wants, motivate them to learn, and even have a psychological impact on them (Azhar, 2017). The development of learning technology in Indonesia has been increasingly advanced with the existence of various learning media using computers and *mobiles*.

Mathematics, particularly geometry, is one subject that necessitates the use of learning tools. Although spatial structure has been taught in elementary school, the capacity to solve three-dimensional issues remains inadequate or low. Students may struggle to visualize a square pyramid since the shape of a square in a pyramid is typically depicted as a parallelogram. Because each sort of spatial structure has its shape and formula for area and volume, many students are disinterested in

learning geometry because it is difficult, and they do not know exactly what the shape of each shape is (Djumanta & Susanti, 2008).

According to Bruner (in Wati & Purwanti, 2022), children learn mathematical concepts in three stages: *enactive, iconic*, and *symbolic*. The *enactive* stage is the learning stage in which concrete items or objects are manipulated, the economic stage is the learning stage in which pictures are used, and the *symbolic* stage is the mathematical learning stage in which symbols or symbols are manipulated. Meanwhile, Hudoyo (in Istiningsih et al., 2018) claims that learning mathematics is a process of developing or constructing concepts and principles, not merely passive and static teaching, but active and dynamic learning. This is by the constructivist view, which is a view in teaching and learning because students build their meaning from their experiences and interactions with others. Likewise, Z.P. Dienes (in Bossé *et al.*, 2021) contends that every mathematical concept or principle can only be fully comprehended if it is first provided to pupils in a concrete form that is understandable. Dienes emphasizes the importance of manipulating objects in learning mathematics.

Currently, the media utilized in spatial building learning is either a blackboard or a printed book, thus the inside and back of the part are not visible. The teacher usually uses teaching aids to visualize the form of the space, but students must take turns observing the shape of the area closely because not everyone can get all types of props with many types of shapes. Storage space for teaching aids, as well as the variety of teaching aids that must be brought into the classroom, are also obstacles.

Several research has shown that *mobile learning* can be used as a learning approach for those who learn through doing. As a result, *mobile learning* can expand options for both on-the-job and lifelong learning. This approach can save costs in terms of housing, time, and energy from the place of residence to the educational institution. In line with that, higher education institutions can also overcome the shortage of places for students and also the lack of infrastructure. This phenomenon will also help to alleviate the problem of teaching staff.

In traditional classroom learning, the learning system used to teach students to be active in the classroom is still limited. Augmented Reality (AR) technology can be utilized using many media, including desktops, mobile devices, and smartphones. This technology itself is portable and can be used in various circumstances. AR can be used to enhance traditional classroom instruction and content, additional instruction in specialized classrooms, add content to the world outside the

classroom, and can be combined with other technologies to enrich applications (Antonioli *et al.*, 2014). According to students, the learning method using AR is more stimulating and interesting than using presentation slides. This is because students prefer audio, video, and feelings when using three-dimensional objects that are transferred in the real-world (Yuen *et al*., 2011).

AR technology is applied to mathematics subjects in the spatial building based on this. This material was chosen based on the difficulty of educators employing the appropriate media to teach the material. Previously, AR research on mathematics subjects had been conducted, with a discussion on the introduction of geometry formulas. These features are presented via *smartphones* camera (Subagyo *et al.*, 2015). The addition of nets in the form of animation and a space calculator to compute volume distinguishes it from previous research. AR was created by merging these distinct features to make mathematics more engaging for students. This will have a significant impact and will encourage them to learn and teach geometry.

2   METHODOLOGY

Research and development (R&D) is the research methodology utilized in this research. Development research is a type of research methodology used to create a specific product and evaluate its efficacy. To be able to produce particular products needs analysis research must be conducted (Sugiyono, 2017). The result of this research is a mobile learning application based on *Augmented Reality* that serves as a learning resource and is intended to increase student comprehension.

Data was collected by distributing needs analysis questionnaires to students and conducting interviews with experts. Questionnaires are a set of questions given to respondents for data collection techniques. The data analysis technique used in this research is descriptive quantitative analysis. The results of data analysis are used to identify things that must exist in the learning of spatial construction materials as a reference in designing *mobile learning* media.

3   FINDINGS AND DISCUSSION

The result of this research is a *mobile learning* application called "ABRAR: *Augmented Reality* Building Application," which can be accessed via a smartphone running the Android operating system. This media's content includes AR simulations, resources, learning videos, quizzes, spatial calculators, and information based on the results of a student needs analysis.

The steps for creating a mobile learning application are based on Borg & Gall's (2003) development model, which consists of ten stages. The ten stages are summarized into three parts: planning, development, and evaluation. This research took two years to complete. The planning and development section will be completed in the first year, 2022. The evaluation section will be completed the following year. The following is an explanation of the research process that will be carried out throughout the first year, with a focus on the design part.

The planning section consists of two stages: (1) data collecting in the form of a needs analysis and (2) *planning*. Data was collected based on the outcomes of an analysis of student needs via questionnaires and needs analysis from experts via interviews. The outcomes of data collecting in the form of a needs analysis are used for the next stage, which is planning. In addition, this first stage included a literature review. This is meant to find theoretical notions to determine the proper steps in constructing these products (Sukmadinata, 2006). The activity of needs analysis is explained further below.

3.1 Analysis of Student Needs

This stage of analyzing student needs was carried out on 36 students from the PGSD FKIP UT Study Program who filled out a questionnaire and had previously taken the Mathematics Education II course. The data gathering step took place between 11 and 24 April 2022 in *online* tutorial classes (Tuton) and webinar tutorials (Tuweb). According to the requirements analysis results, pupils are still relatively proficient in learning the subject because only 60% of students comprehend the material well. This is supported by the results of other needs analysis which shows that as many as 38% of students do not know the various shapes of flat and curved planes and as many as 59% of students do not understand the properties related to shapes, such as sides, ribs, side-space diagonals, and the nets they have learned.

Based on the needs analysis data, students have difficulty in learning the material of geometry due to 58% of students having difficulty imagining the shape of the space, 5% of the material is a lot, 21% of learning is less interesting, and 53% of the absence of alternative learning media. Physical objects can help students make connections between their visual understanding and their sense of taste, including relating spatial abilities and helping students focus their attention (Billinghurst *in* Ibili *et al.*, 2019). In addition, the learning method used by the tutor to teach the material of the spatial structure is dominated by discussion (79%) and practice questions (63%). The large percentage of

discussion and practice questions that are monotonous is one of the factors that make it difficult for students to visualize the material and feel that learning becomes less interesting.

To overcome the problem of visualizing building materials, 88% of students want 3D modeling of geometric shapes, 58% want learning videos to boost their understanding of building materials, 28% want to use *smartphones* as a learning resource, and 26% want to reproduce exercises. Learning mathematics is a process of reconstructing concepts and principles; the learning process must be active and dynamic, rather than static and passive (Rusnandi *et al.*, 2016).

As revealed by Turmudi (2008) views that mathematics learning so far does not involve students actively. In addition, he stated that mathematics learning so far has been conveyed in an informative manner, meaning that students only get information from the teacher so the degree of "attachment" can also be said to be low. With this kind of learning, students as learning subjects are less involved in finding the learning concepts that must be mastered. This causes the concepts given not to make a sharp impression in the memory of students so that they are easy to forget and often confused in solving a problem that is different from the one exemplified by the teacher. Therefore, it is important to provide and prepare teaching materials that can facilitate students to involve themselves actively and dynamically in learning and understanding mathematical concepts so that they can see the relationship between mathematics and other concepts.

Along with the rapid development of technology, it is not surprising that many students already have personal smartphones. This is supported by the results of data analysis which states that 100% of students have personal smartphones. Nearly 86% of students utilize the internet as a learning tool to understand the material displayed in lectures. In addition, there are now many *platforms* that provide alternative learning resources. However, just 65% of students use *smartphones* for academic purposes, whereas 84% of students use them for non-academic purposes. Learning in the modern era is significantly influenced by the use of technology and media (Sakat *et al.*, 2012). Therefore, advanced technology can be used to develop more creative and innovative learning media.

Mathematics is deemed dull by the majority of students. This is because mathematics, like more abstract learning, tends to be abstract. Educators must be able to make mathematics learning enjoyable and engage students in active, creative, and innovative learning activities. The learning media factor is one of the factors that can make mathematics pleasant and fascinating. *Mobile*

learning media is a learning media that can be utilized in the classroom. According to the findings of the needs analysis questionnaire, 100% of students agree that *mobile learning* on spatial materials is utilized as an alternative learning method, and 81% are interested in adopting *Augmented Reality*-based mobile learning in the learning process. Innovative *mobile learning* media makes the learning process easier and more interesting so that it is effective for learning (Huang *et al.*, 2016). In addition, the material contained in *mobile learning* can be adapted to learning needs. The needs analysis that has been carried out provides information that 89% of students want a summary of material and practice questions, and 100% of students agree that in *mobile learning* there is a learning video feature that can help understand learning material.

Based on the problems and needs of students, the researchers concluded that a learning application that can be accessed via *smartphones* is required as an alternative learning resource for students. If *smartphones* are used properly in the learning process, their presence among students can be positive. This is reinforced by 95% of students who are already familiar with *mobile learning* and 86% of students who have used *mobile learning* in the classroom learning process. Tutors' ability to use technology-based learning media in learning building materials is also good because the dominant tutor employs *Powerpoint* media while teaching these subjects. This is evidenced by more than 80% of student answers supporting this and as many as 74% of students are interested in learning about building materials using smartphones. The content presented in *mobile learning* is made by considering the wishes of students. As many as 100% of students agree that in *mobile learning* there is a learning video feature to explain the material, then as many as 89% of students want a summary of the material and practice questions and their discussions. In addition, it is proven by 86% of students agree that *mobile learning*-based learning media can make it easier to understand the material. Overall, as many as 93% of students are interested in learning building materials using *mobile learning*.

3.2   Expert Needs Analysis

According to expert interviews, learning spatial material is seen to be incredibly difficult because it depends on factors like spatial ability and the use of learning media.

"Learning the material of geometry is a learning that is quite difficult to achieve the learning objectives because there are several factors that hinder students from understanding the material. Among them are the different spatial abilities of students, even the spatial abilities of

teachers also influence the teaching style of this material. Another factor is the media, where the introductory media for building material which is learning about three-dimensional objects is taught through two-dimensional objects such as images on paper, blackboards, or screens."

According to several studies, students have difficulty in geometry because of their weak geometric concepts, their inability to solve geometrical problems, and their low geometric object reasoning (Budiarto & Artiono, 2019; Subaidah et al., 2017). Therefore, we need effective learning media in understanding the material of geometry. The use of learning media in the teaching and learning process can also encourage students to develop new interests and wants, motivate them to learn, and even have a psychological influence on them (Azhar, 2017).

According to expert information, the things needed in studying the material of spatial structure are spatial abilities and literacy skills in dealing with the problems given.

"Good spatial skills are needed in studying spatial material, as well as literacy skills are also needed in dealing with the questions provided. This is because the material of spatial structure also includes calculations and measurements involving unknown variables such as volume and surface area."

Because it can aid students in comprehending geometric concepts and in being familiar with and interacting with their surroundings, spatial literacy is crucial for students. Spatial literacy can also be applied in the disciplines of *Science, Technology, Engineering, and Mathematics* (STEM) and is one of the factors needed in various types of work so spatial literacy skills are needed by students to excel in various fields and be able to compete globally. The *Program for International Student Assessment* (PISA) (Lane et al., 2019), which is part of the *space and shape* content in mathematical literacy, is one of the international standards that can test or evaluate spatial literacy (Yusmin, 2016). The ability of students in the context of *space and shape* is still low. The average achievement score of Indonesian students in the *space and shape* category is 383 while the average score for the Organization for Economic Co-operation and Development (OECD) is 490, as seen in the PISA data (Piacentini & Monticone, 2016).

Then there are several evaluations of the learning process on the building material that has been done. As stated by the expert:

"The major evaluation is that most learning is still driven by printed books and lecture methods... Since there has been pressure from learning to be held online, an evaluation of the learning process of building materials has been developed. Some teachers have been seeking ways to adjust when they are unable to use the blackboard in class due to students no longer learning in class, but learning from home."

The material in the printed book is deemed less than optimal since understanding the material for spatial construction requires tangible visualization, for which text and images are not enough. Books as media and AR technology supplements can assist teachers to deliver material using 3D visualization in printed books, making it more interesting and easier to absorb the material (Abdillah et al., 2020). To overcome this problem, AR technology has great potential to assist learning activities in education and improve learning quality throughout the process by combining the actual and virtual worlds (Nincarean et al., 2013).

In the interview process conducted by the informants (experts), they gave their opinions related to learning interesting spatial materials, namely the exploration process to reduce learning saturation.

"Learning about building materials will be more engaging if students are also invited to explore the basics of understanding geometry, geometry, and real objects surrounding it so that students are not bored because they just struggle with counting and formulas."

The concept of meaningful learning in mathematics learning is consistent with the constructivist viewpoint because students are said to understand if they construct meaning from their experiences by making cognitive connections between new experiences and their previous understanding of mathematics, rather than simply memorizing formulas/propositions (Gazali, 2016). Likewise, Z.P. Dienes (in Bossé et al., 2021) contends that every mathematical notion or principle can only be fully comprehended if it is first provided to students in a concrete form that is understandable. Dienes emphasizes the importance of manipulating objects in learning mathematics.

In addition, informants (experts) argue that further consideration is needed for some students who are not familiar with technological sophistication in the use of *mobile learning*.

"It may be interactive for some students who are accustomed to technological sophistication, and these students will easily adapt to learning. On the other hand, it may be possible to find

a percentage of students who are unfamiliar with technology, making it difficult for some of these students, but this can be a challenge in and of itself, as the teacher in one class must take a different approach in delivering this latest technology-based learning to students. students who are used to, but are yet unfamiliar with, this sophisticated technology."

In *mobile learning*, good visualization features are required to study geometric material.

"Good visualization features will be highly helpful in learning and understanding students, that are easy to understand, and supportive designs will also pique their interest in using them."

The examples in the form of space, according to Zodik & Zaslavsky, are highly dependent on visualization. This *Augmented Reality* method has the advantage of an appealing visual display because it may show 3D objects as though they exist in a real setting (Amir, 2017). Learning will be more engaging because an *android smartphone* can show a virtual three-dimensional form of the desired object in the real world.

After carrying out the data collection stage in the form of needs analysis from students and experts proceed to the planning stage. The planning stage shows that a *mobile learning* application is needed for *Augmented Reality*-based building materials to support learning so that it can improve students' spatial abilities and can provide convenience in exploring abstract objects projected in 3D.

3.3   Planning for Making Augmented Reality-Based *Mobile Learning* Applications

The *Augmented Reality*-based *mobile learning* media, which will take the form of an application, will be developed. Students can pick the right time according to their readiness to learn. This is in line with the principle of fun learning, meaning that *mobile learning* provides an alternative time and place to learn without any pressure from external parties. This is an advantage of *mobile learning* in terms of time and place, allowing students to access materials and information at any time and anywhere (Ally, 2009).

Researchers want to develop *Augmented Reality*-based *mobile learning* on spatial materials. This is because *mobile learning* is one of the learning media that uses technology to allow student participants to quickly access information and learning materials at any time and anywhere. According to Buchori (2017), Android learning media that can be selected based on spatial structure

characteristics are *Augmented Reality* media. *Augmented Reality* is a technology that blends two-dimensional and three-dimensional virtual objects in our environment and projected virtual objects in real-time with Android phones (Azuma in Gybas et al., 2019). According to Saputro & Saputra (2015), AR technology is the integrity of digital elements that are added to the real world directly (real-world data) and follow environmental conditions that exist in the real world and can be applied to *mobile* devices. The *Augmented Reality*-based *mobile learning* media that was developed is expected to be learning support that can improve students' spatial abilities in building materials so that it can provide convenience in exploring abstract objects projected in 3D.

4   CONCLUSION

Based on the problems and the findings of the needs analysis of students and professionals, the researchers formulated that mobile learning media, which can be accessed via *smartphones*, is required as an alternate learning source for students studying building materials. Because it is based on *Augmented Reality*, the developed *mobile learning* media is expected to improve students' spatial abilities. Because it can display 3D objects as though they were in a real environment, this *Augmented Reality* approach has an appealing visual display.

ACKNOWLEDGEMENTS

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THE EFFECT OF DISTANCE LEARNING TRAINING ON STUDENTS' KNOWLEDGE OF SELF-STUDY

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Abstract

To increase the readiness, resilience, and success of new student studies, in addition to the New Student Study Orientation (OSMB), UT imposes the obligation to organize Distance Learning Skills Training (PKBJJ) activities for new students. The purpose of this study is to analyze the influence of PKBJJ activities on knowledge in terms of independent learning which includes understanding the concept of PTJJ, self-study, how to manage time, how to read fast, and understanding UT online. In this case, researchers want to try to find out the extent of the influence of PKBJJ activities on new students in the concept of independent learning, especially in the higher education environment. The methods used in this study are the questionnaire method and the documentation method. Data samples were obtained from 4 UPBJJs, namely UPBJJ-UT Manado, Surakarta, Palangka Raya, and Bandar Lampung. The sample taken was 20% of the total number of students from each UPBJJ. The method carried out for sampling researchers uses *purposive sampling techniques and points directly at respondents.* The results of this study show that the highest percentage of PKBJJ activity effectiveness is in choice 4 (good), and UPBJJ which has a figure of 50% or more is UPBJJ Manado (50%), UPBJJ Palangka Raya (54.8%), and the highest UPBJJ Bandar Lampung (76.5%). PKBJJ activities can already be understood by students. This can be seen from understanding the concept of PTJJ, self-study, how to manage time, how to read fast, and understanding UT online

Kata kunci : *PKBJJ, Independent Study, Universitas Terbuka Students*

1 INTRODUCTION

Self-study ability is the ability to set goals and solve difficult problems independently. In helping to develop academic abilities, the most important thing is to make students enjoy a more comprehensive learning process. Universitas Terbuka (UT) plays as a Remote Open College prioritizes and demands independent learning for all its students. In this context, there are two challenges that UT must overcome. Both are related to the diversity of educational service inputs and a culture of self-learning that has not yet been established. However, these two things cannot be used as a justification for the low success rate of student studies. Various interventions that can trigger and support the success of student studies must be carried out in various ways. Education before and when becoming a UT student, curriculum engineering, providing meaningful learning experiences and a wide selection of learning modes, assessments that empower students, and fast and accurate student services, are strategic instruments that will support the success of UT students' learning processes and outcomes. (Kusmawan et al., 2020).

Therefore, to increase the readiness, resilience, and success of new student studies, in addition to the New Student Study Orientation (OSMB), UT imposes the obligation to organize Distance Learning Training (PKBJJ) activities for new students. In this case, researchers want to try to find out the extent of the benefits and effectiveness of PKBJJ activities for new students in the concept of independent learning, especially in the Higher Education environment.

2   METHODOLOGY

The research was conducted intentionally (purposive) techniques and points directly at respondents. It was taken place at UPBJJ- UT Bandar Lampung, UPBJJ Palangkaraya, UPBJJ Surakarta, and UPBJJ Manado. The sample taken was 20% of the total number of students from each UPBJJ, that the sampling refers to Isaac and Michael (Sugiyono, 2014). The data collection techniques used in this study are from questionnaire, obtaining the data on the benefits of PKBJJ by 3rd-semester students, and documentation, that is obtained from students who submit information on complaints and opinions about PKBJJ.The data analysis technique used is in a qualitative descriptive form, leaving no number of elements. The data processing process in this study is to draw conclusions researchers use the data processing process using the percentage formula (%).

3   FINDINGS AND DISCUSSION

A recap of the questionnaire data is carried out by entering the respondent's data into the data tabulation. Once grouped, it is summed up and subsequently concentrated. This section is described one by one related to the results of initial data processing and will then be described as follows

Table 1. Results of the recapitulation of UPBJJ Manado student questionnaires

NO	QUESTIONS	SCORING SCORE/WEIGHT					NUMBER OF STUDENTS
		1	2	3	4	5	
		SK	K	C	B	SB	
Understanding PKBJJ Material							
1	Do you understand the concept of PTJJ (Distance Higher Education)	0	0	5	25	8	38
2	Do you understand the concept of self-study	0	0	5	18	15	38
3	Do you understand how to manage study time	0	0	7	16	15	38
4	Do you understand how to read fast	0	0	10	18	10	38
5	Do you understand UT Online	0	0	6	11	21	38
Total		0	0	**33**	**88**	**69**	**190**

Table 2. Results of the recapitulation of the UPBJJ Surakarta student questionnaire

NO	QUESTIONS	SCORING SCORE/WEIGHT					NUMBER OF STUDENTS
		1	2	3	4	5	
		SK	K	C	B	SB	
Understanding PKBJJ Material							
1	Do you understand the concept of PTJJ (Distance Higher Education)	0	0	55	85	101	241
2	Do you understand the concept of self-study	0	0	8	130	103	241
3	Do you understand how to manage study time	0	0	20	127	94	241
4	Do you understand how to read fast	0	0	118	69	54	241
5	Do you understand UT Online	0	0	65	111	65	241
Total		0	0	**266**	**522**	**417**	1205

Table 3 Results of the recapitulation of the UPBJJ Palangka Raya student questionnaire

NO	QUESTIONS	SCORING SCORE/WEIGHT					NUMBER OF STUDENTS
		1	2	3	4	5	
		SK	K	C	B	SB	
Understanding PKBJJ Material							
1	Do you understand the concept of PTJJ (Distance Higher Education)	0	0	7	57	18	82
2	Do you understand the concept of self-study	0	0	10	48	24	82
3	Do you understand how to manage study time	0	0	15	43	24	82
4	Do you understand how to read fast	0	0	25	37	20	82
5	Do you understand UT Online	0	0	10	29	43	82
Total		0	0	**67**	**214**	**129**	**410**

Table 4. Results of the recapitulation of the UPBJJ Bandar Lampung student questionnaire

NO	QUESTIONS	SCORING SCORE/WEIGHT					NUMBER OF STUDENTS
		1	2	3	4	5	
		SK	K	C	B	SB	
Understanding PKBJJ Material							
1	Do you understand the concept of PTJJ (Distance Higher Education)	7	14	132	124	60	337
2	Do you understand the concept of self-study	5	13	99	135	85	337
3	Do you understand how to manage study time	9	13	101	138	76	337
4	Do you understand how to read fast	5	11	117	145	59	337
5	Do you understand UT Online	14	21	143	101	58	337
Total		**40**	**72**	**592**	**643**	**338**	1685

Based on the result data listed in Table 1, Table 2, Table 3, and Table 4, the highest percentage of PKBJJ activity effectiveness is in option 4 (good), and UPBJJ which has a figure of 50% or more is UPBJJ Manado (50%), UPBJJ Palangka Raya (54.8%), and the highest UPBJJ Bandar Lampung (76.5%). As for UPBJJ Surakarta, the percentage of the five choices is all less than 50%. This means that the implementation of PKBJJ has been good enough in the four UPBJJs but not good enough in UPBJJ Surakarta.

The Understanding of material here includes PTJJ concepts, self-study concepts, how to manage study time, understanding how to read fast, and understanding of UT Online
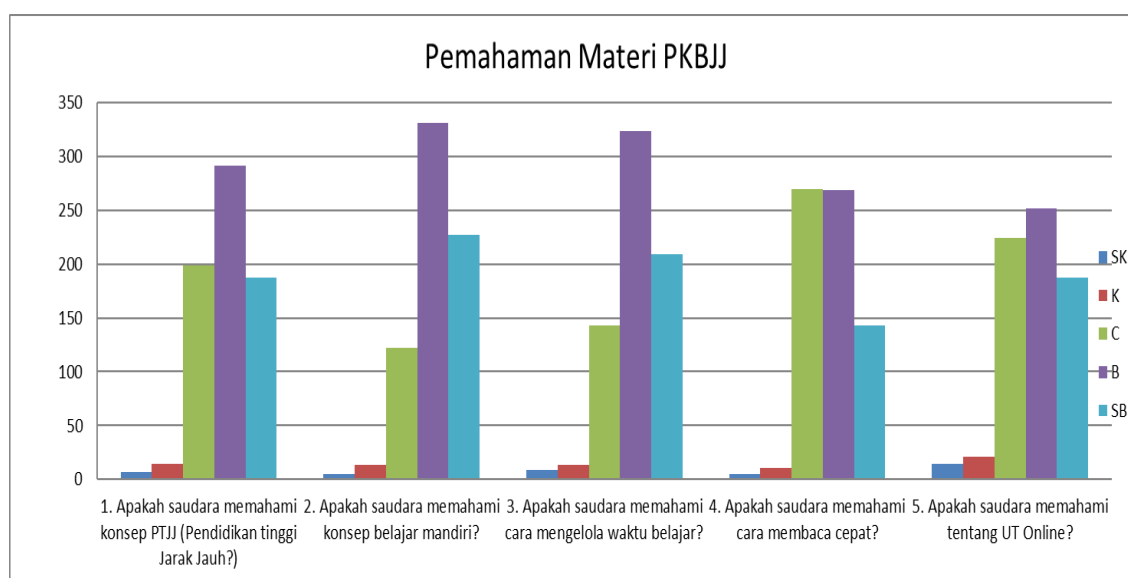
Figure 1. Number of Students from the four UPBJJ (UPBJJ Manado, Surakarta, Palangka Raya, Bandar Lampung) who understand PKBJJ Material

From Figure 1 above, most students understand the concept of self-study, then how to manage study time, the third is the concept of PTJJ, the fourth student understands how to read fast, and the last one is about online tutorial services.

Lindvist (2005) mentions that knowledge and comprehension place more emphasis on sensory observation and experience known as empirical knowledge or *aposteriori* knowledge. This knowledge can be obtained by making observations and observations that are carried out empirically and rationally. Empirical knowledge can also develop into descriptive knowledge if one can describe all the characteristics, traits, and symptoms that exist in the empirical object. Empirical knowledge

can also be gained through human personal experience that occurs repeatedly. Al-Shboul, et al. (2013) mention that the quality and quantity of knowledge a person has and what kind of knowledge he has mastered plays an important role in his work/actions. According to Al Fadda (2019), knowledge is an aspect of behavior that is mainly related to the ability to remember the material that has been learned and the ability to develop intelligence. The student knowledge measured in this study is everything that students know about the distance learning system, which is obtained from education, experience, and interaction with other parties. Student knowledge about PTJJ is a student's cognitive ability in aspects of distance learning planning, distance learning strategies, and the distance learning process.

The concept of learning is well understood by students. *Independent learning* is essentially learning that does not depend on the supervision of others and is part of human life. The process of self-study is carried out by students continuously in the long term. Students do not have lecturers who can immediately help solve their learning difficulties, so the learning process depends entirely on their perseverance in managing their learning activities. Koç (2019) reports that most UT students have low or average self-study readiness. Self-directed learning is a learning process in which the learning person is responsible for determining for himself what to learn when to learn, and how to learn it (Ivankova & Stick, 2006). Students have the potential to succeed in learning independently, but they have not been able to take responsibility for determining their own learning needs, planning, implementing, and evaluating their learning (Guglielmino & Guglielmino, 2010). Therefore, PKBJJ is considered very important to be given before the independent learning process is carried out.

The management of study time is reported to be an important factor influencing the completion of student studies in the Distance Education system. This is an important component in *self-regulated* learning, namely the ability to organize oneself in learning. Students who can regulate or regulate themselves are seen as individuals who take learning initiatives and actively strive to achieve their learning goals (Mc Givney, 2004). So, they are responsible people and can control or direct their learning. During the learning process, this individual can direct their motivation, metacognition, and behavior to achieve his learning goals (Schunk, 2008; Zimmerman, 1990).

Studying habits, among others, need to be supported by learning motivation and the ability to manage study time so that it has a regular study schedule and an adequate number of study hours. In addition, good study habits also need to be supported by learning skills, such as skills in understanding reading, taking notes, making summaries, skills in preparing for exams and supported by a conducive learning

atmosphere. The ability to manage study time is one of the important factors that support learning success. Because students are expected to compile their study schedules, study time is often defeated by other activities that are also considered important, such as socializing with neighbors, watching with friends, playing with children, and so on. Procrastinating study time or doing assignments can cause more material to be learned or tasks that must be done in the remaining time. It is possible that students only study when they are about to face an exam. Students in this PKBJJ activity are directed to have a study schedule and carry out a regular study every week, how many hours in one week they study, how many courses are taken in one semester, whether they make notes while studying, whether they study specifically to prepare for exams, whether they study alone or with friends, and when they usually learn. Good student study habits encourage them to successfully obtain a GPA above the minimum required (Ng & Ng, 2015).

The understanding of PKBJJ material relates to the student's motivation to study at UT. The decisions made by students to study and complete their studies at UT are inseparable from the motivation of each student. Motivation is a psychological process that reflects the interaction between attitudes, needs, perceptions, and decisions that occur in a person. Motivation as a psychological process arises due to factors within a person called intrinsic or external factors called extrinsic factors (Prastya & Restia, 2020). Bracey (2010) mentions that intrinsic actors can be personalities, attitudes, experiences, and education, or various expectations, and ideals that reach into the future, while extrinsic factors can be generated by various sources, can be due to the influence of leader, family, colleagues, or other very complex factors.

Several studies have shown that students who are more successful in their studies use more self-regulation strategies in learning than less successful students (Aragon & Johnson, 2004; Doherty, 2006; Holder, 2007). The ability to self-regulate is the most significant predictor of student learning success (Kolpashnikova & Bartolic, 2019). According to Zimmerman (2002), students who set their learning targets are more successful in their studies than those who do not. Previous studies have shown that students who are better able to self-regulate tend to be more successful in learning (Lynch & Dembo, 2004; Zimmerman, 2002).

Based on the interview results, students who are not actively involved in the study group or have less experience interacting in the group, have a lack of understanding of PTJJ. After the PKBJJ activities, they did not delve back into the material provided. This is because there is no communication

between fellow students, or the student feels alone because they do not have a study group. So that useful information such as information contained on the UT web is less explored. In addition, there is a lack of access / obtaining information that is useful for increasing knowledge about PTJJ. Students who are involved in study group activities have more opportunities to solve learning problems, obtain important information immediately from the pokjar management, and exchange information with fellow students, and others. Opportunities like these can support students to further develop their knowledge and ability to learn independently. This indicates that the study group is an effective vehicle to help students meet their needs to optimize the learning activities they are undergoing. The results of this study are following the findings of research by Malta (2011) that students need groups as a forum to discuss problems in learning activities.

Internet proficiency is related to the level of students' understanding of PTJJ. This means that the higher the level of ability to use the internet, the higher the student's knowledge about PTJJ. For students' understanding of PKBJJ to increase, it can be done by motivating students to be active in accessing media as a source of information (such as the UT website, interaction with tutors who provide information about PTJJ) and ensuring the availability of sources of information for students.

4 CONCLUSION

Distance learning skills training carried out at UPBJJ Manado, Surakarta, Palangkaraya, and Bandar Lampung influences students' understanding of independent learning. PKBJJ activities which include understanding the concept of PTJJ, the concept of independent learning, how to manage study time, how to read fast, and UT online can be well understood by Universitas Terbuka students' distance learning skills training carried out at UPBJJ Manado, Surakarta, Palangkaraya, and Bandar Lampung has an influence on students' understanding of independent learning. PKBJJ activities which include understanding the concept of PTJJ, the concept of independent learning, how to manage study time, how to read fast, and UT online can be well understood by Universitas Terbuka students.

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DEVELOPMENT OF THE ASEAN ENCYCLOPEDIA MEDIA TO IMPROVE STUDENTS' LEARNING OUTCOMES IN CLASS VI SOCIAL STUDIES LEARNING

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Abstract

Based on the results of interviews with teachers, results of daily tests, and questionnaires, there are problems in ASEAN learning. Many students get grades that do not reach the KKM during daily and semester tests. Based on these problems, the researchers developed a learning media in the form of an encyclopedia. This study aims to develop the ASEAN encyclopedia media and determine the effectiveness of the ASEAN encyclopedia media in social studies learning for sixth grade elementary school students. The method used in this research is R&D with ADDIE model. The ADDIE model is carried out in five steps, namely analysis, design, development, implementation, and evaluation. The research subjects were the sixth grade students of SDN Grogol Selatan 05, SDN Grogol Selatan 08, and SDN Grogol Utara 05 were 179 students. The technique used to determine the sample in the study is purposive sampling then the data collected is analyzed descriptively qualitatively for interview data and quantitative descriptive for test data and questionnaires. To test the effectiveness, paired t-test was used to determine Hypothesis Ho: there is no difference in learning outcomes before and after the use of the ASEAN encyclopedia, Ha: there is a difference in learning outcomes before and after the use of the ASEAN encyclopedia and the t-test criteria tcount < t table shows a significant difference between the initial variable with the final variable. tcount > ttable shows that there is no significant difference between the initial variable and the final variable. The results of the feasibility test for language materials experts are 4.71 categorized as very feasible, the language validation questionnaire with an average rating of 4.67 is categorized as very feasible, the design and media validation questionnaire with an average rating of 4.83, the teacher's response test with an average value 4.5 which is categorized as very decent. The ASEAN encyclopedia learning media was tested one to one at SDN Grogol Selatan 05, SDN Grogol Selatan 08, Grogol Utara 05 with an average score of 4.58 which was declared very feasible, small group trials with an average score of 4.4 and large group trial obtained an average value of 4.5 which is categorized as very feasible. The results of the effectiveness test of the t arithmetic value are smaller than t table (-8.4054 < -1.9697) with 244 dk and an error rate of 5% so that Ho is rejected and Ha is accepted. So that there is a significant difference between the value of student learning outcomes before and after using the developed ASEAN encyclopedia media.

Keywords: ASEAN Encyclopedia Learning Media Development, ADDIE Model, Learning Outcomes

3 INTRODUCTION

According to Law No. 20 of 2003 education in Indonesia is carried out based on the 2013 curriculum which began to be implemented in the 2013/2014 school year. The 2013 curriculum wants students to have soft skills and hard skills consisting of attitudes, skills, and knowledge competencies so that they become creative, innovative, and characterized students. This is in accordance with the statement of Ahmad Yani and Mamat Ruhimat (2018: 42) that the skills that must be mastered by students are divided into two, namely hard skills and soft skills.

The 2013 curriculum is applied in the learning process in schools. Learning according to Gestalt in A.Rusdiana & Yeti Heryati (2015:146) is a teacher's effort to provide learning materials in such a way that it is easier for students to organize (organize) into a meaningful pattern. Learning is an

interaction between students and teachers that has been planned so that it becomes a regular activity and causes students to have changes in behavior. Teachers need to create a learning environment that supports the learning process.

According to Jarolimek (1993) in Sapriya: 2017: 165 suggests that the basic purpose of learning by utilizing picture aids, for example, is so that the message conveyed is truly accurate. Another factor to consider is that pictures, photos, or illustrations should be appropriate for the developmental level/age level of the student.

According to Piaget in Rayandra (2011) the stage of cognitive development in elementary school students is at the stage of concrete operations 7-11 years, namely the child's thought process must be concrete, not abstract. Thus, at this time in solving problems children use concrete or physical logic. Then at this stage the child has begun to be able to arrange categories based on a hierarchy. Elementary school students are also at the formal operational stage aged 11 years and over, namely the thinking process at this time has begun to abstract, complex reasoning has begun to be used, and has been able to test one hypothesis in mentality (Nana Syaodih, 2009 in Sutirna, 2013). In essence, it can be concluded that the older the child, the higher the ability to think and the sharper the level of understanding in reading (Sapriya: 2017). By paying attention to students, teachers will be able to arrange good learning implementation.

In the learning process, various types of experiences can be obtained. As previously mentioned, Edgar Dale suggests a hierarchy of learning experiences based on the degree of concreteness and abstraction. Edgar Dale in the cone of his experience said that verbal symbols are the most abstract symbols because language is basically abstract, so teachers need to draw models, models of actual objects in presenting a particular lesson. Students will be able to understand / understand what is conveyed by the teacher. (Rayandra Asyar:2011:3)

According to Sapriya:2017:164 The most widespread use of visual aids in books are pictures, photos, and illustrations. It is used to acquire realism, to express thoughts, to remember actual objects, and in short to provide meaning in learning. This effort is made because words alone are not enough to convey messages or meanings accurately, precisely, and quickly like pictures. Pictures can also help in improving inquiry skills so that good social studies textbooks today are those that contain a number of pictures accompanied by a number of questions, not just a description of the content of the picture or illustration.

Various tools can be used by teachers to convey teaching messages to students through sight and hearing to avoid verbalism that may still occur if only visual aids are used. In an effort to use the media as a tool according to Edgar Dale (1969) in Rayandra Asyhar (2011) learning media are grouped based on the level of experience gained by the learner. The levels of experience are arranged in a chart known as Dale's Cone of Experience. The most concrete experiences are placed at the bottom of the cone and the more abstract the more abstract the experience gets. This means that the use of real object media is the most effective in achieving learning objectives. According to Musfiqon (2012) the classification of experiences is widely followed by educators in determining what tools should be appropriate for certain learning experiences.

Learning in elementary schools includes Social Science subjects. Social Sciences are subjects taken from various social sciences. In social science lessons students learn social knowledge such as theories, cases, and examples of events that occur in society. Social Studies is an understanding of concepts related to society and the environment. Social studies examines a set of events, facts, concepts, and generalizations related to social issues, making social studies difficult to learn. Previous research conducted by Rusmawan (2013) stated that quite a lot of students had difficulties in learning to master social studies material. Difficulties in learning social studies are caused by the low level of student interest. Students' low interest in social studies is also evidenced by the low interest in reading in social studies subjects. According to Adiwiyarso (2008) in Rusmawan (2013) suggests that "quite a lot of students have difficulty in learning to master social studies teaching material is more due to low reading levels, and students' dependence in learning on teachers."

Based on the results of a survey from the Program for International Student Assessment (PISA) in 2015 - 2019 that the reading ability of Indonesian children aged 15 years in the international world is at an unsatisfactory level and places Indonesia in the lowest rank in OECD countries. In 2018-2019 Indonesia was ranked 72 out of 77 countries with a score of 371. In 2015 the reading score was 397. If you look at the decline in student interest in reading in 2015 and 2018.

One of the materials in Social Studies subject for class VI is ASEAN. ASEAN was established on August 8, 1967. Based on the 2013 curriculum, the ASEAN material studied by grade VI students is about geographical characteristics and socio-cultural, economic, political life in the ASEAN region, and Indonesia's role in cooperation in the fields of economy, politics, socio-culture, technology, and education within ASEAN. ASEAN material is contained in themes 1, 4, 5, 7, and 8 so that this material is taught intermittently.

The decline in students' interest in learning the ASEAN material is that learning is more teacher-centered. Students are not involved in the learning process. Students only listen to the teacher explain and then take notes on the material presented by the teacher. So that in learning some unpleasant events were found. Based on research conducted by Setiawan (2013) that learning Social Sciences is very boring so that bad behavior occurs during the learning process such as truancy, leaving class when given the task of taking notes, falling asleep or falling asleep when the teacher explains, playing cellphone while taking notes or when explaining, and chatting with my classmates. This happens because the teacher always uses the lecture method. Teachers are not varied in carrying out the learning process, for example teachers only use the lecture method or ask students to take notes (Puskur: 2007: 6).

According to Asyhar (2011) in Nunuk Suryani, Achmad Setiawan and Aditin Putria (2018) the use of media can improve students' memory because media can increase students' attention and motivation towards learning materials. In teaching chemical element symbol material, the teacher uses media images, element cards, diagrams, photos, videos and so on rather than simply explaining the names of these chemical elements verbally so as to minimize conceptual errors in students.

Based on the results of researchers' interviews with 4 sixth grade teachers at SDN Grogol Selatan 05, SDN Grogol Selatan 08, and SDN Grogol Utara 05 on February 4, 2021 before the study, it was found that the low learning outcomes of students on ASEAN materials were caused by students being lazy to read books, materials, etc. too broad while learning time is little, ASEAN material is taught intermittently because the material is contained in different theme books so when students are asked about the previous ASEAN material they forget.

Based on the results of previous studies and interviews, the researchers wanted to develop an encyclopedia learning media. Researchers developed an encyclopedia media because based on Sri Erdawati's research (2018) that encyclopedia media can increase students' learning motivation. Researchers will develop an encyclopedia learning media that is valid, interesting and in accordance with the development of class VI students.

In line with previous research and to overcome the problem of social studies learning, especially on ASEAN material, the researcher wants to try to develop an encyclopedia media and is expected to be able to change the memorization pattern of students into a pattern of understanding. The ASEAN encyclopedia media is a learning media that presents ASEAN material that is equipped with pictures, colors that are designed as attractive as possible so that students are interested, and do not feel bored.

This encyclopedia can be used as an e-encyclopedia so that it can be used in distance learning. Based on the background, the researcher will develop an encyclopedia learning media for grade VI elementary school.

By using developed media that is tailored to the needs of students and teachers in the classroom, it is expected to increase the effectiveness of learning which leads to increased student learning outcomes. There are two main reasons for the importance of developing learning media. The two reasons are as follows:

1. Media limitations such as print media which requires a lot of money for printing and distribution, or computer-assisted media which requires adequate computer equipment and the ability of qualified students and teachers. For this reason, existing media can be developed or collaborated to overcome various limitations.

2. As the actualization of teachers in developing learning media from their abilities, as stated in the Regulation of the Minister of National Education Number 16 of 2007 concerning Academic Qualification Standards and teacher competencies, it is explained that teachers must utilize information and communication technology for learning purposes. Teachers also use information and communication technology to communicate and develop themselves. Government Regulation of the Republic of Indonesia Number 74 of 2008 concerning teachers article 3 paragraph 4 which states that one of the pedagogic competencies that must be mastered by teachers in managing student learning is the use of learning technology.

Based on the background of the problem, the research questions that will be elaborated are:

1. What are the steps to develop the ASEAN encyclopedia learning media in social studies subjects for class VI?

3. How is the feasibility of the ASEAN encyclopedia learning media in the class VI social studies subjects being developed?

2. How effective is the use of ASEAN encyclopedia learning media in social studies subjects for class VI?

This study intends to provide an overview of appropriate ASEAN encyclopedia learning media used in learning and can improve the learning outcomes of sixth grade elementary school students in social studies learning.

2 METHODOLGY

This research is a type of research and development or in English terms it is called Research and Development (R & D). According to Borg and Gall (1983) in Amir Hamzah (2018) defines development research (a process used to develop and validate existing products or new products, it can also find knowledge or answer problems. To develop this research, the researcher uses the ADDIE model. The characteristics of the ADDIE model are to provide opportunities for learning design developers to collaborate with content, media and instructional design experts so as to produce good quality products. There are 5 stages in the implementation of the ADDIE model development, namely: (1) analysis (analyze), (2) design, (3) development, (4) implementation, and (5) evaluation. The subjects of this study were grade VI students at SDN Grogol Selatan 05, SDN Grogol Selatan 08, and SDN Grogol Utara 05 with different backgrounds. Both differ in students' abilities, parents' educational and occupational backgrounds, as well as differences in mileage and means of transportation used to go to school, and 6th grade teachers. Researchers used purposive sampling in finding samples. According to Sugiyono (2019:144) purposive sampling is a sampling technique for data sources with certain considerations.

The instrument is used as a measuring tool to collect data. The instruments used in this research and development are interviews and questionnaires. At the stage of needs analysis using interview instruments. At the product validation stage, media experts, material experts, and also linguists use a questionnaire instrument. At the stage of the One-to-One trial, the Small Group Trial and the Field Trial using questionnaires and observations. At the summative evaluation stage using test questions. The instruments to be used are:

1. Needs Analysis Instrument

This instrument contains questions that aim to determine the needs of teachers in learning social studies material for ASEAN in class VI so that the encyclopedia media developed is in accordance with the needs.

2. Test Questionnaire for Material Experts, Linguists, and Design and Media Experts
3. Product Trial Questionnaire for Students

This feasibility test instrument will be shown to students as objects that will use the encyclopedia media product that has been developed. at the one-to-one trial stage there are three students, small

groups of 9 people, at the field trial stage the Field Trials will be tested on 30 students. To determine the effect of the ASEAN encyclopedia media, researchers used tests in the learning process.

2.1 Development Procedure

The development procedure in this development research follows the steps instructed in the ADDIE development model including the following:

2.1.1 Analysis (analysis)

The purpose of this analysis is to clearly define the details of the program or design. At this stage the researcher analyzes matters related to the development of the encyclopedia, including:

2.1.1.1 Curriculum analysis

Curriculum analysis is done by reviewing the curriculum used. This is so that the developed encyclopedia can be used by various schools and is not based on a particular school curriculum. The things that are analyzed in the curriculum are the basic competencies that are expected, and the indicators that students must achieve in the ASEAN material.

2.1.1.2 Needs analysis

Needs analysis is carried out by analyzing the characteristics of students aiming to identify the characteristics of students according to their level of education. In this study, researchers examined references that discussed the psychological development of sixth grade elementary school students. In addition, researchers also conducted interviews with teachers. It is considered important to know the level of students' ability, motivation, and other aspects. The results of student analysis are used to determine whether elementary students are suitable for using the ASEAN encyclopedia learning media.

2.1.1.3 Analysis of the development of teaching materials

This media development analysis is carried out by reviewing references that discuss aspects that need to be considered in the development of teaching materials so that they can be classified into proper and good teaching materials. In this analysis, an assessment is carried out on aspects to create and develop a good encyclopedia, namely those that meet the aspects of the feasibility of the content of the material, the aspects of the feasibility of the media, and the aspects of the feasibility of the language. In addition to the encyclopedia aspects, an analysis of the scientific-based learning model

is also carried out which is the basis for the encyclopedia to be developed, so that an ASEAN encyclopedia on social studies subjects will be obtained for grade VI students.

2.1.2   Design

After the analysis stage, the ASEAN IPS encyclopedia is designed. Activities carried out at the planning stage are:

a.   Prepare books and reference sources related to the material

b.   Compile a map of encyclopedia needs

c.   Encyclopedia design drafting

d.   Determining the title of the encyclopedia

e.   Determining the design of the encyclopedia

The steps to be taken in writing an encyclopedia are as follows.

1)   Formulation of basic competencies that must be mastered, namely basic competencies derived from the 2013 content standards.

2)   Design from the media side

3)   Preparation of material topics

4)   Determine attractive colors and images to support learning

5)   Determine the writing structure

6)   Preparation of assessment instrument design

An encyclopedia assessment instrument was developed to assess the validity, practicality and effectiveness of the encyclopedia. The validity of the encyclopedia will be assessed by three experts, namely a material expert, namely someone who masters social studies learning materials and concepts who are competent to provide an assessment related to the feasibility of content and presentation of material, a media expert is someone who masters media theory and concepts and is competent to provide an assessment of the feasibility of design, presentation and presentation. material, and a linguist, namely someone who has mastered the material and concepts of competent grammar who provides an assessment and feasibility of using the language contained in the ASEAN encyclopedia learning media with the approval of the supervisor.

The instrument for assessing the accuracy of the design or learning design, the accuracy of the content of teaching materials, and the attractiveness of the encyclopedia in the form of a questionnaire filled out by teachers and students. Before being used in encyclopedia assessment, the assessment instrument that will be developed will be validated first.

2.1.3 Development

According to Benny and Dewi (2019:1.26-1.27) at this step the design of teaching materials that have been outlined in the design will be written and produced into teaching materials that are ready to be studied and refined through a continuous revision process.

Researchers developed assessment instruments and student response questionnaires. The development of the assessment instrument is based on the points of a good LKS requirement. In addition, a student response questionnaire was also developed containing points of good teaching materials but changed with a more communicative grammar. After developing the research instrument, the researcher developed test questions. The development of test questions is based on core competencies and basic competencies based on the material.

According to Sugiyono (2019:414) this stage aims to determine the validity of the products developed both from the media and material aspects. Product validation is carried out by expert lecturers, data about product deficiencies or weaknesses will be obtained. These shortcomings will then be corrected by the researchers.

The ASEAN Encyclopedia that has been validated is then tested on students. For student trials, there are three stages that will be given to individuals (one-to-one evaluation), small group trials (small group trials), and field trials (field trials). This stage will analyze the accuracy of the design or learning design, the accuracy of the content of teaching materials, the attractiveness, and effectiveness of the encyclopedia developed for students. The results of the student and teacher response questionnaires are used to measure the accuracy of the design or learning design, the accuracy of the content of teaching materials and the attractiveness of the encyclopedia and can be a reference for improving the encyclopedia.

The purpose of the development stage is to produce the final form of learning media after going through revisions based on expert experts or practitioners and test data. The limited trial stage, and extensive trials, and expert validation. The purpose of this stage is to validate or assess the feasibility

of the design. Based on input from material experts, language, and media were revised to make the product more precise, effective, easy to use, and has high technical quality. Field trials were carried out to obtain direct input in the form of responses, reactions, comments from students as the target users of learning media and observers to the learning media that had been prepared. The test results are used to improve the product. In this one-on-one trial using a questionnaire. Quantitative data and descriptive information were collected using a questionnaire guide, then analyzed and used for revision. The purpose of this field trial is to determine whether the resulting product can be used in a learning context or not. The product that has been tested in the field is the final product that is ready to be implemented.

2.1.4 Implementation

According to Nunuk Suryani and colleagues (2018) there are two procedures in implementation:

2.1.4.1 Preparing teachers

Determining teachers who become development partners in implementing the implementation of the ASEAN encyclopedia media developed in the classroom, the previous teacher has been given guidance and direction regarding the implementation of the developed media.

2.1.4.2 Preparing students

Provide direction to students prior to implementation.

Implementation is the activity of using the product. The implementation of the ASEAN encyclopedia media that was developed is applied in grade 6 at SDN Grogol Selatan 05, Grogol Selatan 08, and SDN Grogol Utara 05 can be used as a companion book for the 2013 curriculum textbooks and work on the questions in the 2013 curriculum textbooks.

When in implementation, the teacher carries out learning by following the lesson plans, guiding students using the developed ASEAN encyclopedia media, and providing feedback. Student-centered learning.

2.1.5 Evaluation

The purpose of the evaluation phase is to assess the quality of the developed media related to the learning process and outcomes, both before and after implementation. According to Nunuk Suryani et al (2018) there are two types of evaluations known, namely formative evaluation and summative

evaluation. According to Seels and Richey (1994) in Nunuk Suryani (2018) formative evaluation is guided by technical studies, tutorials, and trials, and data collection methods are often informal, such as observation, interviews, questionnaires, and short tests. Summative evaluation requires more formal data collection procedures and methods such as standardized tests with validated questions, and using comparative group studies in a quasi-experimental design.

At this stage the evaluation carried out is a summative evaluation because this evaluation is to determine the effectiveness of learning media in improving learning outcomes. Learning outcomes are known by giving posttest practice questions whose material is taken from the developed learning media. During the implementation process, the learning media developed were tested for effectiveness through competency measurements before and after learning. If the learning competence is better than before, then the learning media developed is declared effective. The evaluation is carried out by giving posttest questions to students as users of the developed learning media, and then comparing them with the pretest scores that have been tested before learning using learning media begins.

To measure the level of influence of student learning outcomes in the use of the ASEAN Encyclopedia, researchers used paired t-tests by comparing learning outcomes before using and after using the ASEAN Encyclopedia media.

Image (One Group Prettest -Posttest Design)

$$O_1 \quad X \quad O_2$$
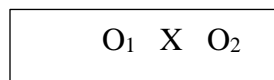
Information :

O1 = Value before treatment

O2 = Value after treatment

X = Treatment

This data was obtained by using a learning achievement test conducted at the beginning of the lesson before using the ASEAN encyclopedia media (prettest) and at the end of the lesson after using the ASEAN encyclopedia media (posttest). The learning outcomes obtained are used by comparing the learning outcomes of the initial and final tests. To calculate the level of comparison using the t-test formula of two paired samples with a significance level of 0.5%

$$t = \frac{x_1 - x_2}{\sqrt{\dfrac{s_1^2}{n_1}} + \sqrt{\dfrac{S_2^2}{n_2}} - 2r \left(\dfrac{S_1}{\sqrt{n_1}}\right) \left(\dfrac{S_2}{\sqrt{n_2}}\right)}$$

Information

x1 = sample mean before treatment

x2 = average sample after treatment

S1 = standard deviation before treatment

S2 = standard deviation after treatment

n1 = number of samples before treatment

n2 = number of samples after treatment

r = correlation between values before and after using the ASEAN encyclopedia media

The following is the flow of the stages of developing and researching ASEAN material encyclopedias as social studies learning media:

Figure 18 The Flow Of The Stages Of Developing And Researching ASEAN Material Encyclopedia as Social Studies Learning Media
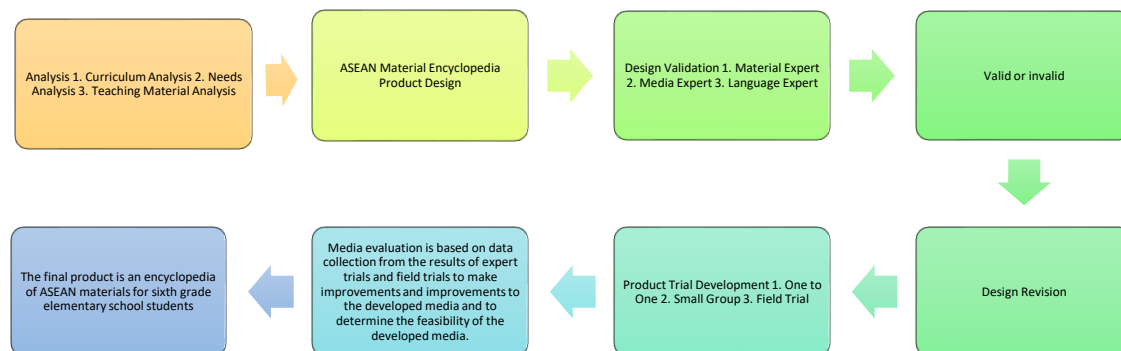
2.2 Data analysis technique

The data that must be analyzed in this study are in the form of a media expert validation questionnaire, material, language and teacher and student responses. The measurement scale of the ASEAN encyclopedia development research used by researchers is by using the Likert scale. The Likert scale

is referred to as a measuring tool for something that is expressed through a series of statements that will be given to respondents to provide answers. The scoring on the validation instrument data analysis can be seen in the following table:

Table 1 Scoring Table Of Validation Instrument Analysis

No.	Answer Options	Score
1.	Very precise, very appropriate, very clear, very interesting, very easy.	5
2.	precise, very appropriate, clearly interesting, easy.	4
3.	Quite precise, quite appropriate, clear enough, interesting enough, easy enough	3
4.	less precise, less appropriate, not very clear, less attractive, less easy.	2
5.	Very inaccurate, very inappropriate, very unclear	1

The results of the assessment scores from each material expert, linguist, and design and media expert were then averaged to determine the validity and feasibility of the encyclopedia.

The formula for the average score of the questionnaire (Arikunto, 2010):

$$x = \frac{\sum x}{N\ x\ n}$$

x = average score

$\sum x$ = total score

N = number of question items

n = number of respondents

The average score of the questionnaire was then converted into a qualitative one using a five Sukardjo scale (2008). The results of the assessment scores from each validator of material experts, linguists, and media experts were then averaged to determine the validity and feasibility of the encyclopedia.

Product validation in this study uses a scale of five according to Sukardjo, 2006: 101). Based on these calculations, the above quantitative data is obtained and then the quantitative data is converted into qualitative data with a scale of five (Sukardjo, 2006: 52-53) as follows:

Table 2 Score Category Conversion

Score Interval	Category
4,22 – 5	Very Worthy
3,41 – 4,21	Worthy
2,61 – 3,40	Decent enough
1,80 – 2,60	Less worthy
<1,79	Very Less Worthy

The conversion of score categories becomes a reference for classifying the results of the average score obtained from the assessments of experts, teachers, and students in assessing the design quality of the ASEAN encyclopedia book product. After getting the product quality category, the product that gets the "decent" to "very feasible" category, then the product is ready to be tested by making revisions first. However, if the product is categorized as "poor" or "very poor", then the product needs to be revised and re-validated. Products that are suitable for use can then be used in the trial process.

3.FINDINGS AND DISCUSSION

The results of research and development obtained are as follows:

3.1. Analysis

In this study, researchers analyzed students' initial abilities, and the problems found in learning at SDN Grogol Selatan 05, SDN Grogol Selatan 08, and Grogol Utara 05 were the media used in the teaching and learning process using student books as a teacher's handbook. At this stage the researchers conducted tests and interviews with teachers and students containing the media used during learning. Based on the results of the interviews, the researchers made the background of the problem and analysis of the needs to develop an encyclopedia learning media that can improve student learning outcomes in ASEAN materials.

3.1.1. Curriculum Analysis

At this stage the researcher made an ASEAN encyclopedia based on the 2013 curriculum.

3.1.2 Student Needs Analysis

At this stage, the researchers conducted a needs analysis which was carried out at SDN Grogol Selatan 05, SDN Grogol Selatan 08, and Grogol Utara 05. The things included were initial abilities, obstacles experienced, and learning resources used by students. Based on the results of the needs analysis, the researchers decided to develop an ASEAN encyclopedia learning media in the sixth grade of elementary school.

3.1.2.1 Teaching Materials

Based on the results of interviews with sixth grade students, the teaching materials used in the classroom are student books. Teachers sometimes use media and do not use learning media during the learning process.

3.1.2.2 Lesson Material

Based on the results of interviews with class VI students, the material that is difficult to learn is ASEAN material regarding geographical characteristics and socio-cultural, economic, political life in the ASEAN region and the cooperation of ASEAN countries in the fields of politics, security, socio-culture, and the role of Indonesia in such cooperation.

3.1.3 Teacher needs analysis

The needs analysis aims to determine the ASEAN learning process, learning models, teaching materials, and instructional media used when learning ASEAN in grade VI elementary school. The four aspects of the data were collected by interviewing the sixth grade elementary school teacher.

3.1.3.1 Method

Based on the explanation of the sixth grade teacher in learning not only use the lecture method. The learning model used is only a scientific approach because the 2013 curriculum is required to use the scientific method.

3.1.3.2 Teaching Materials

Based on the explanation of the sixth grade teacher in the class, there are student books to carry out learning activities and sometimes the teacher uses learning media such as learning videos about

ASEAN countries. Students feel that seeing the video does not immediately understand so they have to watch it several times.

3.1.3.3 Learning Materials

Based on the explanation of the sixth grade teacher, sometimes there are difficulties when the material is difficult so that students take long to understand ASEAN material, especially about geographical characteristics and socio-cultural, economic, political life in the ASEAN region, forms of cooperation between ASEAN countries, and the role of Indonesia in cooperation.

3.1.3.4 Learning Process

Of the 4 respondents, 2 respondents had difficulty conveying the ASEAN material. 2 respondents experienced that students had difficulty understanding ASEAN material, obstacles in teaching ASEAN. 1 respondent stated that students were not interested when the teacher delivered ASEAN material. 3 respondents experienced that students were not enthusiastic about participating in learning about ASEAN.

3.1.4 Media Development Analysis

In the preparation of product manufacture, it is important to consider methods, media, materials, sources and barriers, ideas and materials for making media, determine images and colors, determine the equipment needed and formulate into a physical form. The results of the product planning stages that have been carried out by researchers are as follows:

3.1.4.1 Choosing Method

The learning method used in the implementation of the ASEAN encyclopedia media learning media is a scientific approach. The scientific approach was chosen because in it there are 5 steps in the learning, namely observing objects students are asked to observe the ASEAN encyclopedia learning media, then students ask about the ASEAN encyclopedia learning media after observing, then collect information from reading ASEAN encyclopedia books, process information, and communicate the results of trying to use the ASEAN encyclopedia. ASEAN encyclopedia learning media. With a scientific approach students have the opportunity to learn actively, explore curiosity, and foster student interest in learning social studies so that students gain knowledge based on the experiences they feel.

3.1.4.2 Selecting Media

The media that the researcher chose was learning media in the form of 2 dimensions that had a real form in working on ASEAN questions that were adapted to the characteristics of sixth grade elementary school students. At this stage, the researcher made the ASEAN encyclopedia learning media in the form of a book.

3.1.4.3 Choosing Material

In accordance with the name of the media, namely the ASEAN encyclopedia learning media which contains geographical characteristics, socio-cultural, economic, political life in the ASEAN region, cooperation between ASEAN countries, and Indonesia's role in cooperation in the economic, political, social, cultural, technological, and social fields. , education within the scope of ASEAN in social studies learning class VI SD.

3.1.4.4 Create learning objectives

The learning objectives in using the ASEAN encyclopedia learning media are as follows:

a) By using this ASEAN encyclopedia Learning Media, students will find it easier to learn about ASEAN.

b) By using this ASEAN encyclopedia Learning Media, students are able to learn ASEAN independently.

c) By using the ASEAN encyclopedia learning media, students are more enthusiastic about learning so that their learning outcomes increase.

3.2 Developed ASEAN Encyclopedia Media Design

After getting the data obtained from interviews, the next step is to design learning media in the form of an ASEAN material encyclopedia for class VI SD. The steps taken by the researchers are:

a. Create a flowchart containing flowcharts in the ASEAN encyclopedia media. The flowchart that is built is in the form of a flowchart of the structure of the material or message to be conveyed through the ASEAN encyclopedia media. The media encyclopedia flowchart is designed with the aim of

explaining the flow of material and media. Furthermore, the flowchart becomes the designer's guide in compiling the material in the table of contents.

b. Collecting sources obtained from books on ASEAN, google, and youtube.

c. Design material in Power Point and Word.

d. Designing an encyclopedia using the adobe illustrator application. Selecting the paper used. The researcher decided to use 120gr Art Paper so it wouldn't tear easily.

e. Prepare test questions based on basic competencies and indicators for social studies lessons for grade 6.

f. Create an assessment instrument

3.3 Development

At this stage the research aims to create an ASEAN encyclopedia learning media that has been designed. Development is the process of making a design a reality. According to Benny and Dewi (2019), the design of teaching materials that have been outlined in the design will be written and produced into teaching materials that are ready to be studied and refined through a revision process that is carried out continuously and validates the media.

The media trial was carried out in two stages, namely: the first stage was the validity test by linguists, subject matter experts, and media experts and instructional media design. This validation is carried out so that the learning media developed is to obtain certainty that the media is feasible to be tested on students. Expert validation is useful for checking errors in writing language, material and design in an encyclopedia that is tailored to the needs of students.

The second stage tested the practicality of the individual group (one-to-one trial), small group trial (small group trial), large group (field trial), and 4 grade VI teachers at SDN Grogol Selatan 05, Grogol Selatan 08, and Grogol Utara 05.

Based on the results of expert reviews and field trials that have been carried out in the development stage, two stages of data analysis were carried out, namely qualitative and quantitative data analysis. Qualitative data analysis is used to process data in the form of input, criticism and suggestions from experts and field tests for further revision in stages for the development of better media. While the

analysis of quantitative data obtained from the assessment of respondents in the form of numbers in the questionnaire given. All stages of this evaluation are aimed at the feasibility of the final product. Decent in terms of content, design and language.

3.3.1 Material Expert Assessment

The material expert assessment was carried out by Dr. Sidik Puryanto, M.Pd Based on table 4.4, the average score is 4.71. In accordance with the encyclopedia product table stated in the criteria very feasible. Products that have been developed and have been worthy of assessment are worthy of being tested in the field.

3.3.2 Linguist Assessment

The assessment of the development of the encyclopedia learning media is carried out by linguists who are experts in their fields. The assessment was carried out by Dra. Lis Setiawati, M.Pd. Obtained an average of 4.67. According to the conversion table, the encyclopedia product score category is stated in very feasible criteria. Products that have been developed and are eligible for assessment are worthy of being tested in the field.

3.3.3 Design and Media Expert Assessment

The assessment of the development of the encyclopedia learning media is carried out by experts in the field of design and learning media experts. The assessment was carried out by Dr. R. Benny A.Perbadi, M.A. Obtained an average rating of 4.83. According to the conversion table, the encyclopedia product score category is stated in very feasible criteria. The product that has been developed has been feasible in the assessment and is feasible to be tested in the field.

Table 3 Results of Expert Formative Evaluation Recapitulation (Expert Review)

Respondents	Number of Items	Score obtained	Average
Material Expert	21	99	4,71
Design and Media Expert	23	111	4,83
Linguist	9	42	4,67
Total			14,21
Average			4,74
Category			Very Eligible

From the evaluation results above, the average overall score obtained from the experts is 4.74, which means it is very feasible

Based on the average results of the 3 experts obtained an average value of 4.74. In accordance with the conversion of the encyclopedia product score category, it is stated in the very feasible criteria, this is reinforced by the assessment of three experts that the product that has been developed has been feasible in the assessment and is worthy of being tested in the field.

3.3.4 Individual Trial Assessment (one to one trial)

The implementation of this one-to-one trial was carried out to get an assessment as well as criticism and suggestions. Respondents for the one-to-one trial were taken by 3 students in grade VI, SDN Grogol Selatan 05, SDN Grogol Selatan 08. SDN Grogol Utara 05.

Obtained an average of 4.58. According to the conversion table, the encyclopedia product score category is stated in very feasible criteria.

Students are asked to provide comments on the products developed. Students' comments on the developed ASEAN encyclopedia are that each ASEAN member country is limited by different colors so that students can easily distinguish the boundaries of each country. The images displayed are in accordance with the content of the material. The layout of the image is appropriate and easy to observe. The colors used are comfortable to see, the size of the ideal ASEAN encyclopedia. The material in the media makes learning fun. This media makes it easier to work on ASEAN problems. The quality of the book is very good and the pictures are clear and there are no flaws

3.3.5 Small Group Trial Assessment

The small group trial assessment was carried out by 9 students. Each school sent 3 students to fill out questionnaires and interviews. The test results obtained with an average value of 4.4. According to the conversion table, the encyclopedia product score category is stated in very feasible criteria.

The students commented that the encyclopedia was very good to understand and that the writing was easy to read. The picture is very good, pleasing to the eye, and in accordance with the content of the material. The layout of the image is appropriate and easy to observe. The colors used are pleasing to the eye. The size of the ASEAN encyclopedia is ideal. The material in the media makes learning fun. This media makes it easier to do the questions. The book is easy to read because the writing is large. The size of the book is just right, not too big.

3.3.6 Field Trial Assessment

After the implementation of the small-scale trial, the assessment stage was carried out on a field-scale trial involving 30 students from SDN Grogol Selatan 05, SDN Grogol Selatan 08, and SDN Grogol Utara 05. Based on the percentage score, the average score was 4.5. In accordance with the conversion table, the encyclopedia product score category is stated in the criteria very suitable for use in learning social studies subjects.

Students from SDN Grogol Selatan 05, SDN Grogol Selatan 08, and SDN Grogol Utara 05 had a good response about the encyclopedia learning media on ASEAN grade VI elementary school materials.

3.3.7 Educator Assessment

The assessment of the development of the encyclopedia learning media was carried out by 4 educators from SDN Grogol Selatan 05, SDN Grogol Selatan 08, SDN Grogol Utara 05. Based on the assessment scores obtained an average of 4.5. In accordance with the score category conversion table, the product that has been developed is very feasible in the assessment.

3.3.8 Design Revision

The encyclopedia on ASEAN grade VI SD material was validated by expert validators in their fields, so the next step was to improve the design of the ASEAN material encyclopedia learning media as learning material for social studies subjects in accordance with the criticisms and suggestions of the

expert validators. The validation results provide information to researchers regarding weaknesses in the developed media.

In accordance with the criticisms and suggestions that have been given by expert validators to the ASEAN encyclopedia class VI SD as learning material for social studies subjects, the researchers made revisions to correct errors and deficiencies in the media used as a reference in social studies learning.

3.3.9. Individual Trial Results (one-to-one trial)

The individual trial (one-to-one trial) aims to identify the shortcomings of the initial product that has been designed and has been assessed by experts. This trial was conducted between an instructional designer and three students individually, the three students were selected based on their abilities, namely moderate, above-medium, and below-medium abilities so that they can be seen as representative samples (Suparman, 2012). In this one-on-one trial, more emphasis was placed on aspects including readability of the text, understanding of the encyclopedia material developed using interview guidelines. Based on the table above, it is known that the average individual trial result is 4.6. After being converted to a Likert scale conversion table, the level of achievement of 4.6 is in a very feasible qualification so that this teaching material does not need to be revised.

3.3.10 Small Group Trial Results

Small group trials were conducted with a larger number of students, and to re-test the revised initial product from the one-to-one or one-to-one trial. In small group trials, the optimal number of students is between 8 and 20 (Branch, 2009). Thus, the small group trial subjects in the development of the ASEAN encyclopedia media involved 9 students at SDN Grogol Selatan 05, Grogol Selatan 08, and Grogol Utara 05 which consisted of 3 people with low abilities, 3 people with moderate abilities, and 3 people with high abilities. Quantitative data and descriptive information were collected using interview guidelines and questionnaires, then analyzed and used for revision. Based on the table the average test results of the small group is 4.4. After being converted to a Likert scale conversion table, the level of achievement of 4.4 is in a very feasible qualification so that this ASEAN encyclopedia media does not need to be revised. Criticisms and suggestions from respondents in small group trials in questions through questionnaires, were accepted and taken into consideration to improve teaching materials.

3.3.11 Field Trial Results

The purpose of this stage is to determine whether the resulting product can be used in a learning context or not. After being revised based on input from small group trials, the product will be tested in the field in teaching and learning activities (Suparman, 2012). The product that has been tested in the field is the final product that is ready to be implemented. The Large-Scale Trial consisted of 30 students at SDN Grogol Selatan 05, Grogol Selatan 08, Grogol Utara 05. Based on the table results the average field trial results (field trial) was 4.5. After being converted to a Likert scale conversion table, the level of achievement of 4.5 is in a very decent qualification so that this teaching material does not need to be revised. Criticisms and suggestions from respondents in large group trials in questions through questionnaires, were accepted and taken into consideration to improve teaching materials.

The average result of the large group test (field trial) was 4.5. After being converted to a Likert scale conversion table, the level of achievement of 4.5 is in a very decent qualification so that this teaching material does not need to be revised. Criticisms and suggestions from respondents on individual trials in questions through questionnaires, were accepted and taken into consideration to improve teaching materials.

3.3.12 Educator Assessment

The teacher assessment was carried out at SDN Grogol Selatan 05, SDN Grogol Selatan 08, and SDN Grogol Utara 05 with an assessment sheet covering 8 aspects including content aspects, presentation aspects, language aspects, design aspects, language aspects, grammatical structure aspects, and aspects. vocabulary and spelling, totaling 15 assessment points, which were assessed by 4 educators in grade VI who have been teaching for 5 years and have the status of civil servants.

This educator assessment aims to improve the shortcomings and weaknesses of the encyclopedia learning media in ASEAN sixth grade elementary school materials as one of the reference media in the social studies subject learning process.

The average result of the educator's assessment is 4.5. After being converted to a Likert scale conversion table, the level of achievement of 4.5 is in a very decent qualification so that this teaching material does not need to be revised. Criticisms and suggestions from respondents on the assessment

of educators in questions through questionnaires, were accepted and taken into consideration to improve teaching materials.

3.3.13 Design Revision

The encyclopedia on ASEAN grade VI SD material was validated by teachers and students, so the next step was to improve the design of the ASEAN material encyclopedia learning media as learning material for social studies subjects in accordance with the criticisms and suggestions of teachers and students. The validation results provide information to researchers regarding weaknesses in the developed media.

3.4 Implementation

The implementation phase in this study was carried out by testing the media in the implementation of learning. The implementation of the ASEAN encyclopedia media developed was carried out in grade 6 at SDN Grogol Selatan 05 with 58 students, South Grogol 08 with 35 students, and SDN Grogol Utara 05 with 30 students. The ASEAN encyclopedia media is used as a companion book for the 2013 curriculum text book and working on the questions in the 2013 curriculum text book.

When in implementation, the teacher carries out learning by following the lesson plans, guiding students using the developed ASEAN encyclopedia media, and providing feedback. Student-centered learning.

3.5 Evaluation

It is known that the average value of learning outcomes before using the developed ASEAN encyclopedia media x_1= 57.64, standard deviation s_1 = 16.52, and variance s_1^2 = 272.82. The average learning outcomes after using the developed ASEAN encyclopedia media x_2 = 65.98, standard deviation s_2 = 16.54 and variance s_2^2 = = 273.4425. The correlation between the values before and after using the ASEAN encyclopedia media developed by r was found to be 0.776. These values are entered in the t formula:

$$t = \frac{57.64 - 65.99}{\sqrt{\frac{272.8211}{123} + \frac{273.4426}{123} - 2.0.776 \left(\frac{16.53}{\sqrt{123}}\right)\left(\frac{16.54}{\sqrt{123}}\right)}} = \textbf{-8.4054}$$

The t value is then compared with the t table price with dk = 123 + 123 -2 = 244. With 244 dk and an error rate of 5%, then t table = 1.9697. The value of t count is smaller than t table (-8.4054 < -

1.9697) so that Ho is rejected and Ha is accepted. So there is a significant difference, the value of student learning outcomes before and after using the developed ASEAN encyclopedia media. After using the developed ASEAN encyclopedia media, student learning outcomes increased.

This shows that there is a significant effect on the difference between learning outcomes in the pretest and posttest. So that there is an effect of using ASEAN encyclopedia learning media on learning outcomes before and after using ASEAN encyclopedia media. This has also been done by Samsul Nizar's previous research entitled Development of Encyclopedia of Medicinal Plants Collection of PT. Sido Appears as a Learning Media for Plantae Materials for Class X SMA. Validation of Encyclopedia of Medicinal Plants collection of PT. Sidomuncul is declared in the very feasible category with a percentage of 97.5% by the media validator, feasible with a percentage of 77.5% by the material validator, and very feasible with a percentage of 87.5% by the learning device validator as a learning medium for Plantae material for class X SMA.

4   CONCLUSION

This R & D research produces learning media in the form of an ASEAN encyclopedia for class VI SD which is suitable for use in learning. The research that has been done can be concluded that:

1. The development model used in this study is the ADDIE model. Product development procedures include: (1) analyzing the needs of teachers and students, curriculum and media development by determining the learning objectives that will be used in preparing the ASEAN encyclopedia learning media, choosing strategies, media, materials and considering methods, sources, barriers, images and colors , and formulate it into physical form, (2) designing by making flowcharts, collecting sources, designing materials, designing encyclopedias, selecting papers, compiling test questions, compiling questionnaires (3) developing by making products, validation of media experts, materials, language , conducting individual trials, small groups, large groups, and assessments of educators (4) implementing the ASEAN encyclopedia media developed in the implementation of learning (5) evaluating to find out whether the resulting product can improve learning outcomes.

2. Teaching materials in the form of encyclopedias on ASEAN grade VI SD materials that have been developed have been tested through a material validation questionnaire with an average assessment of 4.71 categorized as very feasible, a Language validation questionnaire with an average assessment of 4.67 categorized as very feasible, a questionnaire design and media

validation with an average assessment of 4.83, the educator's response test with an average assessment of 4.5 which is categorized as very feasible. The ASEAN encyclopedia learning media was tested one to one at SDN Grogol Selatan 05, SDN Grogol Selatan 08, Grogol Utara 05 with an average rating of 4.58 which was declared very feasible, small group trials with an average rating, 4, 4 and the large group trial obtained an average rating of 4.5 which was categorized as very feasible.

3. To calculate the effectiveness of the encyclopedia media on learning outcomes, the paired t-test formula is used. After entering into the paired t-test formula, the t-count value is -8.4054 with dk = 244 and the error rate is 5%, then t-table = 1.9697 so that the t-count value is smaller than t-table (-8.4054 < -1.9697). This means that Ho is rejected and Ha is accepted. So there is a significant difference, the value of student learning outcomes before and after using the developed ASEAN encyclopedia media. After using the developed ASEAN encyclopedia media, student learning outcomes increased.

ACKNOWLEDGEMENTS

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GAME DEVELOPMENT ON AR AND AI-BASED VIRUSES FOR MICROBIOLOGY AND GENETICS COURSES

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Abstract

Since the Covid-19 pandemic, the government has implemented various policies to break the chain of the spread of Covid-19 in various sectors, including the education sector. Among them, the implementation of the lockdown policy in areas that have been included in the red zone for the spread of the Covid-19 virus and avoiding the virus by physical contact known as physical distancing and many more. The Government of the Republic of Indonesia has also established various health protocols implemented throughout Indonesia by the government with centralized guidance by the Ministry of Health of the Republic of Indonesia in 2020. This has had many impacts for Indonesia. One of the impacts on the education sector is the holding of online learning processes that are held online and in an emergency at their respective homes with the aim of reducing the level of spread of Covid-19. The learning process in schools is the best public policy tool as an effort to increase knowledge and skills. So many educational institutions in Indonesia are developing games as learning media. teaching staff need innovation in learning in this new normal period with the use of multimedia, namely the existence of Game-Based Learning. Games are media that can be used in the learning process to stimulate students in teaching and learning activities in the classroom. Educational games are games created to stimulate thinking including increasing concentration and solving problems. An effective interactive learning technique for early childhood is to use educational games, this is because most children at an early age have a high curiosity about everything in the surrounding environment. Educational games are new learning media that are believed to increase children's motivation in learning and can increase children's understanding of learning materials by using a learning media in the form of interesting games. This study aims to determine how much effective educational games are as a medium for student learning. The research method used is a game using Augmented Reality (AR) and Artificial Intelligence (AI) to beat players. Using the Agile Software Development Lifecycle (SDLC). The game is in the form of an educational game for students about viruses related to microbiology courses and the process of translation and genetic transcription related to genetics courses. This research is still completing the prototype of the learning game application and will soon be tested. We hope that students will find it easier and more interested in studying difficult subjects.

Keywords: Educational games, students, Microbiology and Genetics courses.

1 INTRODUCTION

The Covid-19 pandemic has had a major impact on all fields, including education. The world of education also feels significant in every line of learning activities. Since the Covid-19 pandemic, the government has implemented various policies to break the chain of the spread of Covid-19 in various sectors, including the education sector. Among them, the implementation of the lockdown policy in areas that have been included in the red zone for the spread of the Covid-19 virus and avoiding the virus through physical contact known as physical distancing and much more. The Government of the Republic of Indonesia has also established various health protocols implemented throughout

Indonesia by the government with centralized guidance by the Ministry of Health of the Republic of Indonesia in 2020.

This has had a lot of impact on Indonesia. One of the impacts on the world of education is the implementation of an online learning process that is carried out online and in an emergency at home with the aim of reducing the level of spread of Covid-19. The learning process in schools is the best public policy tool as an effort to increase knowledge and skills. So many educational institutions in Indonesia are developing games as learning media. teaching staff need innovation in learning in this new normal period with the use of multimedia, namely Game Based Learning.

In addition to the impact of the covid pandemic, genetics and microbiology material is material that is quite difficult to learn for students due to the lack of effective learning resources and the ability to practice the material. Supported by research by Cimer (2012) stated that genetic material is one of the five most difficult sciences in biology according to students. One of the reasons for the difficulty of students to learn it is the lack of effective learning resources and the ability to practice the material. This is caused by the lack of objects to carry out experiments, only limited to certain animals and plants. In addition, the problem lies in the time it takes to carry out the experiment which is quite long. For example, to find out the application of Mendel's law to a rabbit object, it takes a long time to wait for the object to crossbreed and give birth to offspring.

So it can be said that as a result of the limitations in carrying out these practical activities, students become less interested in studying science and do not master the material being taught. Based on these two things, we need a way that can help students master genetics and microbiology material in the era of the covid 19 pandemic and the new normal era, both theoretically and practically to improve and facilitate the learning of these materials. Learning media is a form of tool for teachers and lecturers to convey information in learning activities. Currently, there are still many schools and universities that use a learning system oriented to the media of material books and verbal delivery of material by teachers and lecturers. This problem causes a lack of understanding and lack of interest of students in understanding a material, especially in the matter of Genetics and Microbiology. The learning media provided by the teacher is still insufficient to support the achievement of maximum student and student achievement. Therefore, an interesting learning media is needed that aims to foster students' interest in learning and increase their understanding of genetics and microbiology. Alternative learning media that can be used are educational games based on Android. Educational

games are games designed to stimulate and improve thinking power and concentration in solving problems. Educational games can provide knowledge for students in a unique and interesting way. Educational games are used as educational media that have a learning by doing learning pattern. According to Eun-Yong Park and Hong Yo Park (2010) educational games can be used as a means to conduct effective learning and improve the quality of education. One of the most widely used genres of educational games is a puzzle game. Based on the opinion of Javier Melero and Davinia Hernández-Leo (2013), puzzle games train players' ability to solve problems, train logic, analyze, and hone players' memory. This shows that puzzle games are suitable to be used as media that represent practical activities that require logic and analysis in their activities. The theoretical basis used to make this game is a good game, gameplay design, in the form of a quiz to find out the shape, structure and process of the virus entering the body. In addition, it is in the form of a letter puzzle for the transcription and translation of DNA to RNA, user interface and artificial intelligence for better games, because there are instructions and time and value.

2 METHODOLOGY

This game is a quiz to help students, especially students, better understand microbiological material regarding the shape, structure, and process of entering the virus into the body. As well as letter puzzle games to understand the process of transcription and translation of DNA to RNA in genetic material. This game uses Augmented Reality (AR) and Artificial Intelligence (AI) to beat players by the system. Using the Agile Software Development Lifecycle (SDLC). The design method in this study uses the Agile Software Development Life Cycle (SDLC) which is a combination of iterative and incremental process models. It focuses on process adaptability and customer satisfaction with fast delivery of working software products. The Agile SDLC breaks the product into small incremental builds. This build is provided into iterations. In the process of developing agile SDLC, the customer can see the result and understand whether he is satisfied or not. This is one of the advantages of the agile SDLC model. One drawback is that there are no defined requirements making it difficult to estimate development resources and costs.

Each iteration of the Agile SDLC consists of a cross-functional team working on different phases:

1. Collection and analysis of needs

2. Design the requirements

In phases 1 and 2, you must define the requirements. This game is made complete with artificial intelligence, with game hints, answer hints, distractors, time and score in the game.

3. Construction/iteration and Implementation

When the team defines the requirements, the work begins. The designers and developers started working on their projects. The goal of designers and developers is to deploy the work product within the estimated time. The product will go through various stages of upgrade, thus encompassing simple and minimal functionality. In this process, plots and story boards are created. And the application of the game started from the process of making a quiz to measure the understanding of students in microbiology material, with 5 questions, such as virus forms, virus types, virus morphology, virus structure, virus transmission. If you succeed, you get a score of 100. Next, the questions are in the form of a puzzle game by arranging the letters of the DNA structure that are transcribed and translated into RNA and Interferons. If successful, the score is 300. Thus, the total score is 400. And there is time for each question and answer instructions. If the player cannot be on time, the player will be game over, in other words, the player or student does not understand the concept of microbiology and genetic material.

4. Testing and Feedback

When installed on Android, it must have a large storage capacity and permission to access the installation on Android. In the process of making this game, we invited experts to provide some input, both changes to the story board, features, and plot.

3   FINDINGS AND DISCUSSION

The designs made for this game are material design, gameplay design, user interface design, and visual design. The microbiology-based quiz game and genetic-based puzzle game for college students have the name Genvir. The game has a quiz and puzzle genre with combined gameplay, where the player chooses the correct answer for the quiz and drag and drop the name arrangement of the image part of the virus body, as well as drag and drop on a gene letter puzzle element to find the gene pair for the transcription process and translation, and the emergence of interferon.

Interface Design

a. Game Menu Interface Initial View

This is displayed when the application is open, there is about ownership of the game, the play button to start (start), then appears for game instructions, click continue to start the quiz question.

b. In-game display

This view appears after clicking continue. In this screen, players will answer quiz questions, there are 5 quiz questions such as virus forms, virus types, virus morphology, virus structure, virus transmission. There is a picture of a lamp in the upper right corner, as a clue to the answer, every 1 question is given a duration of 2 minutes to answer and is given a value of 20 for the quiz, so a total of 5 questions is 100.

Then to the next question, there are instructions for playing with compiling a genetic letter table and matching them with their partners to continue the process of transcription and translation of genes from DNA to RNA, resulting in the emergence of interferons for immunity. Each phase is worth 100 so that if it is correct the value is 300. So if successful the student will get a value of 400. But on the contrary if it is not successful, then the game will be given a warning and there will be more viruses, so it's game over.

Seen in the following figure:

Figure 1 Appearance begin the game

Source: Primary Data, 2022

Figure 2 About the research teams

Source: Primary Data, 2022

Figure 3 The Rule of The game
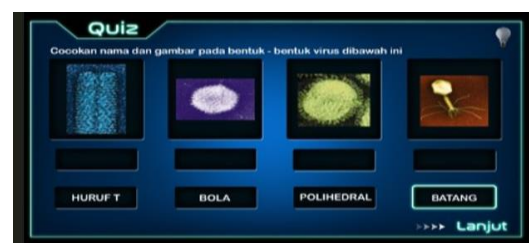
Source: Primary Data, 2022

Figure 4 Question 1 for the shape of the virus

Source: Primary Data, 2022

Figure 5 Question 2 for the shape of the corona virus

Source: Primary Data, 2022
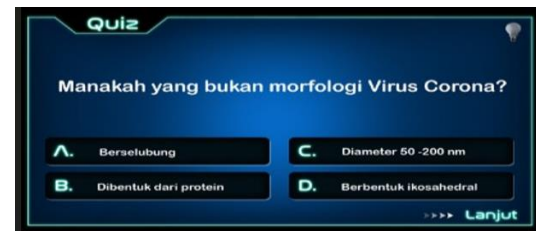
Figure 6 Question 3 for the morfology of the virus

Source: Primary Data, 2022
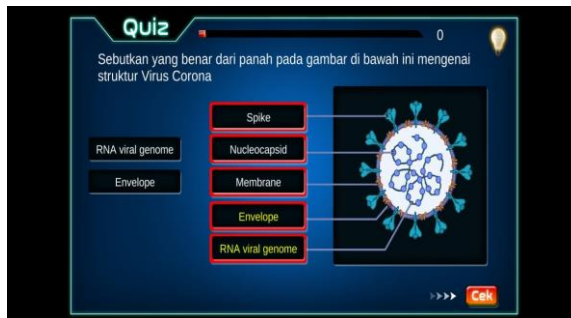
Figure 7 Question 4 for the stucture of the virus, with the instruction of true answer. Because the lamp in top of the right is yellow. But if the player isnt correct answer the line is red.

Source: Primary Data, 2022
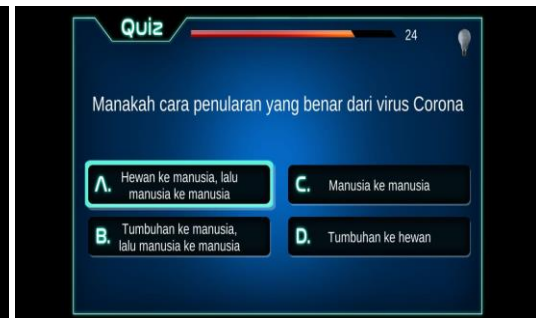
Figure 8 Question 5 for the transmission of the virus, with the true answer, because the line was green.

Source: Primary Data, 2022

Figure 9 The Rule of the game

Source: Primary Data, 2022

Figure 10 Question 6 for the puzzle game Transcription and Translation of DNA or RNA Interferons to amino acids

Source: Primary Data, 2022
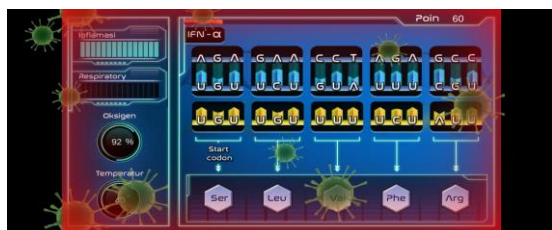
Figure 11 If the time was end virus come more to warning and the line was red.

Source: Primary Data, 2022

Figure 12 The end of this Game we can see Score.

Source: Primary Data, 2022

c. Final result display This display shows the final result after answering all the questions in the game. This display also shows the number of scores obtained and a menu to repeat, if the score is not sufficient.

4   CONCLUSION

Learning media varies along with technological developments. The use of games as learning media is expected not to be boring, thereby increasing student learning outcomes. Game Genvir is a learning game about viruses and their genetics. In this game includes 2 courses namely Microbiology and Genetics. As for the learning outcomes, students are expected to be able to understand modules 4 and 6 in microbiology courses regarding viruses, and microbial genetics. And students can understand module 5 in the genetics course on gene expression.

The flow of this virus game begins with starting the game, then entering quiz 1 there are 5 questions about the virus. In Quis 1, students have 2 minutes to play. After entering quiz 2 there is a game about DNA transcription and RNA translation into amino acids for alpha, beta, and gamma interferons, by arranging amino acids resulting from transcription and translation processes. In quiz 2 students have 5 minutes to play. If successful, the total score that will be achieved by students in this game is 400 points. This educational game for microbiology and genetics courses can be used by students to increase their knowledge. It's just that it is very limited in the use of storage capacity space on student androids because of the large enough memory storage capacity of 58 MB.

ACKNOWLEDGEMENTS

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MOBILE LEARNING WITH CASE STUDY METHODS FOR CIVIC EDUCATION IN ELEMENTARY SCHOOL

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Abstract

This development research produces learning media in the form of mobile learning with a case study method for Civic Education subjects. This development is expected to facilitate students learning in class VI and form characters that follow the values of Pancasila. This development uses the Rapid Prototyping model, which consists of five stages: assess needs and analyze content, set objectives, construct a prototype, utilize the prototype, and install and maintain the System. The evaluation in this development research consisted of expert reviews (material experts and media experts) and user trials. The assessment involved a material "very good," a media expert, and 12 users. The results of the expert review stated that mobile learning was excellent by material experts and media experts. Meanwhile, at the evaluation stage of one-on-one trials and group trials, it was noted that mobile learning was excellent. So it can be concluded that mobile learning with this case study method is "very good" and can be used for learning media with further improvements.

Keywords: Mobile Learning, Metode Studi Kasus, Sekolah Dasar, Rapid Prototyping

1   INTRODUCTION

Pancasila is the foundation (Wen Lee & Ande, 2022) and guidelines for the Indonesian people in daily life in society and the state (Diniyanto & Sutrisno, 2022). The majority of Indonesian citizens certainly already know what is contained in Pancasila. In practice, many cases and irregularities in Indonesia still do not follow the contents of Pancasila (Mukaromah et al., 2022). Many cases occur among students who show that the character possessed by students is contrary to the application of Pancasila, one of which is the case of bullying. Bullying is a negative behavior from a person or group toward victims who are targeted to be hurt physically or emotionally, either verbally, physically, relationally, or cyber (Kallman et al., 2021). The results of the PISA (Program for International Student Assessment) research in 2018 showed that the number of bullying that occurred among students in Indonesia reached 41% (Safari, 2022). This figure also makes Indonesia the fifth country with the highest number of student bullying cases (Ramadhanti & Hidayat, 2022). Cases of bullying or bullying are rampant in Indonesia and take various forms, ranging from students receiving threats and ridicule to violence (Filipenko et al., 2022). Another source also stated that bullying occurs mainly in elementary school students aged 7-12 years, accounting for 76% of bullying cases reported to the Indonesian National Commission for Child Protection (Borualogo & Casas, 2021a).

Cases that contradict the values of Pancasila also occur in one of the public elementary schools in the Bekasi Regency area. The researcher interviewed sixth-grade teachers at SDN Telajung 01. The teacher said that many cases in elementary school, especially in grade VI, contradicted the application of Pancasila values. Some of these cases are cases of bullying that happened to a grade VI student several years ago. The student received unpleasant treatment from some of his classmates because he did not have the appearance of his peers and worked as a tire patcher to help his family's economy. This problem shows that students, as part of Indonesian society, have forgotten their national identity, which should be based on Pancasila, especially on the second principle. In the second principle of Pancasila, we sued to respect and treat fellow human beings fairly and civilly(Tirza, 2022). They followed their dignity without discriminating against ethnicity, religion, gender, social position, and skin tone because all Indonesian citizens have equality of status, degree, rights, and essential obligations as creatures of God Almighty. In this precept, human values must uphold social life (Filipenko et al., 2022). The empathy and compassion to act pretty without using violence should be more instilled in the younger generation (Iriani & Astuti, 2021) to reduce the level of bullying from an early age, namely at the sixth-grade elementary school level which is the age of early teens (12-15 years). In adolescence, children begin to learn and develop in terms of recognizing themselves and their environment. Changing students' character is more complicated than instilling character values from an early age that follow the Pancasila values to create moral and dignified characters (Filipenko et al., 2022). Pancasila and Citizenship Education aims to develop people who believe, have a noble character, and have a high sense of responsibility following Pancasila and the 1945 Constitution (Fadil & Rahmawati, 2022). Citizenship Education is a process to prepare a generation that knows its responsibilities as citizens (Noe et al., 2021). However, it is miserable that so far, the Civic Education subjects, which contain the delivery of Pancasila and the 1945 Constitution, are not the fundamental values of national and state life but are only limited to the basis of government administration.

Based on interviews with sixth-grade teachers, information was obtained that Civic Education activities were not optimal. Students are less interested in Civic Education and think it is a complex subject because it is theoretical and rote. In addition, the lecture method still dominates learning activities, and teachers only rely on printed learning books which eventually causes students to become bored when learning takes place. The lack of student interest and the use of conventional learning methods also causes a lack of student participation and activity in the learning process

because students only listen and accept the material presented by the teacher without trying to understand it more deeply, either by asking directly to the teacher or seeking information independently. In face-to-face learning activities, students still have difficulty participating in learning, plus now learning activities at all levels of education in Indonesia in the past year have been carried out remotely. It also causes the learning process at SDN Telajung 01 not to run optimally.

Civic Education that only relies on media in the form of printed learning books and is dominated by verbalism will make it challenging to achieve learning objectives. Moreover, the examples and applications of this Civic Education are still abstract. This condition, if left unchecked, will lead to failure in achieving Civic Education objectives which should be able to form students who behave and have character, according to Pancasila. Civic Education should be able to involve students to play an active role, such as the concept of active learning, which should minimize the part of the teacher towards the use of learning media that can actualize the learning process to be more efficient, effective, and practical (Winarni et al., 2022). Civic Education activities that focus on forming student attitudes and characters should also be presented in the right way and with suitable media so that Civic Education can make students not only able to memorize theories but also be able to apply them in real life.

Based on these problems, a solution is needed that can be used to help achieve the learning objectives. The answer is the selection and use of appropriate learning methods assisted by learning media that can facilitate the achievement of predetermined learning objectives. The learning method that can be used in Civic Education is the case study method. The case study method is a form of inquiry that focuses on solving problems or cases. This method is closely related to problem-solving learning, but this case study method has a broader scope (Winarni et al., 2022). The case study method can assist students in making decisions regarding problems in real stud lives.

The results of Muhammad Japar'sents research show that the case study method in Civic Education activities can facilitate students to think critically, analyze, and act following the Pancasila. Learning using the case study method will present problems relevant to events that have been experienced or will occur in students' daily lives. Several types of cases include (1) directed case, (2) dilemma (decision case), (3) interrupted case (4) analysis or issue case. And the case that will be used in this research is the analysis or issue case (Japar, 2018). While the learning media that can be a solution to the problems above is mobile learning. Mobile learning is a model that utilizes digital technology media that can be an alternative to learning media that has high enough flexibility, allowing users to

access information, materials, and instructions quickly, and can also be used anywhere and anytime (Widyatama & Pratama, 2022).

Online learning in higher education is increasingly needed(Aswan, 2022; Pattaufi & Aswan, 2022; Thaib et al., 2017). This need makes many lecturers try to develop online learning processes, both blended learning, online learning, and Mobile Leaning (Arnidah et al., 2022; Arriany & Aswan, 2022; Siregar & Aswan, 2019). Mobile learning is a learning model that adopts the development of cellular technology and mobile devices (handphones) used as learning media. Mobile learning was developed with a multimedia format that presents text, images, and audio and minimizes video and animation due to the limited content size so that it is easily accessible via cellphone so that it becomes exciting and easy-to-understand learning material (Hardiansyah et al., 2022; Jurnal et al., 2022). Using mobile learning as a learning tool can make teaching activities easier because it can stimulate students outside school hours or face-to-face (Prima et al., 2022). Using mobile phones, students can access learning materials in text, images, sound, data, and video (Hardiansyah et al., 2022). In this research, mobile learning will be developed as a software application. Mobile learning is suitable to be used independently by students because mobile devices have been widely used among students who are a generation of digital natives. It's supported by a survey of internet users in Indonesia in 2019-2020, reaching 196.7 million users from Indonesia's population of 266,911,900 people(Triwibowo et al., 2022). The rapid number of internet users, including elementary school students, opens up the potential for developing and using mobile learning to help smooth learning. Mobile devices used in mobile learning include PDAs, cell phones, and tablets. With the existence of digital learning media in the form of mobile learning, learning is expected to be more interesting because there are variations in teaching media so that it does not only rely on printed learning books and teacher descriptions so that students can feel new experiences in Civic Education. Another advantage of mobile learning is the use of smaller devices that are mobile and cheaper than devices such as personal computers. Learning materials contained in mobile learning can also be visualized with a more attractive appearance and can be combined with content suitable for various student learning styles.

Based on the description above will be developed a product in the form of mobile learning media using case study methods that are interactive, communicative, and fun. Learning materials will be presented through sound, text, pictures, videos, examples of applications and cases following everyday life, and practice questions related to learning materials that can arouse students' intellectual emotions. The difference between this development and previous developments is that case studies

and mobile learning methods can be used remotely to support Civic Education, especially in materials that aim to shape students' attitudes and character. Mobile learning can also be used offline, so students don't need an internet connection. It can re-instill the values of Pancasila in students and help the smooth learning process of teachers and students. In addition, it is expected to create independence in students when using these media.

2 METHODOLOGY

This type of product development research uses the Rapid Prototyping development model. The model consists of 5 stages, namely (Pratiwi et al., 2022) :
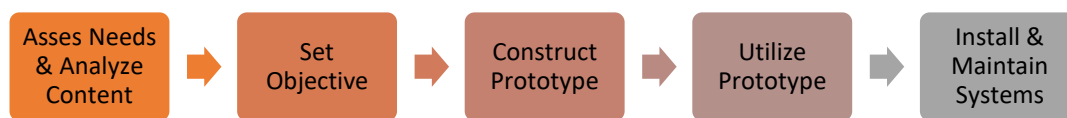
(1) Assess Needs & Analyze Content

At the assessment needs stage, the goal is to identify the needs and characteristics of students and their needs during learning. Meanwhile, at the Analyze Content stage, an analysis of the material to be delivered is carried out, the learning media to be used, and the duration of the delivery of learning materials.

(2) Set Objectives

The next stage is the formulation of learning objectives that must be discussed with related material experts. The learning objectives will formulate general learning objectives that include the main learning objectives. Then develop specific objectives which contain derivatives of the general purposes that have been acquired. The formulation of this goal is based on the analysis results in the first stage.

(3) Construct a Prototype

At this stage, a prototype for developing student analysis results, learning materials, and formulations is made. The steps in making this prototype is creating a content map, designing scripts, developing content, and developing usage procedures.

(4) Utilize Prototype

After the prototype has been developed, a review of material experts, learning media experts, and student trials as users is carried out. The prosecution is rapid, where adjustments or revisions will be made to each feedback received.

(5) Install & Maintain Systems.

This research produces mobile learning that has been re-exported into .apk form, ready to be installed and used on mobile smartphone devices. At this stage, revisions are made based on feedback from expert reviews of material and media experts as well as input from students. Corrections are made until the product is suitable for use.

The target users in this study are class VI students at SDN Telajung 01. The implementation of this research was carried out from January 2021 to November 2021. Products developed will go through formative evaluation with expert reviews, one-to-one user testing, small group user tests, and evaluation of learning outcomes. This development uses a questionnaire instrument with a Likert scale of 4-1. The aspects assessed are adjusted to the theory of computer and software product quality, characteristics and criteria for learning media assessment, product assessment, and graphic design principles.

3   FINDINGS AND DISCUSSION

Result

The implementation of this development research is carried out online and offline. The development was carried out for ten months, from January 2021 to November 2021. This development uses the Rapid Prototyping development model by Tripp Bichelmeyer 1990. The following are the stages of development:

1) Assess Needs & Analyze Content

a) Assess Needs

Based on the interview guide to teachers that had been made, the teacher said that Civic Education activities in class VI of SDN Telajung 01 were still using the lecture method. In addition, the media used in learning activities is in the form of printed books. Student learning outcomes in Civics Education to Pancasila are still not optimal. It is based on the students' daily tests, which show that the score is still below the KKM. One meeting on the subject of Civics on a theme of 35 minutes duration. The teacher revealed that students felt bored when learning Civic Education and were less interested in Civics lessons. The obstacles students face in the Civic Education process are that students perceive Civics as only theoretical and memorizing. The limited learning media and the methods used to make it difficult for students to understand the abstract Civics material. For the

characteristics of students in class VI of SDN Telajung, students are already able to use the device independently, which is a consideration in developing media according to the ability of these students.

b) Analyze Content

At this stage, information is obtained regarding the Civics Education material that will be developed. The results obtained after discussing with the teacher and looking at the books used by students are that the fabric used in the development this time is related to the values of the second precept of Pancasila. The material is contained in the Civics Class VI subject on Theme 7 Sub-theme 1 (Leadership material for Leaders Around Me). The material in the theme book is still incomplete because it only presents the points of the second principle of Pancasila according to the TAP MPR, and there is no further explanation or example. The values of the second principle of Pancasila and their application need to be made into mobile learning media because currently, learning is being carried out remotely (PJJ) and does not get direct explanations from the teacher. So it is hoped that it will make it easier for students to understand the material even though they are learning from home.

2) Set Objectives

After conducting a needs assessment and content analysis, in the second stage, activities were carried out to set learning objectives for mobile learning, which were developed by discussing with the teacher. After using mobile learning, the general instructional purpose is that students are expected to be able to analyze the application of the values of the second precept of Pancasila in everyday life. While the Special Instructional Objectives are (1) Students are expected to be able to explain the points contained in the second principle of Pancasila, (2) Students are expected to be able to mention examples of the application of the second principle of Pancasila, (3) Students are expected to be able to analyze case examples of the application of the second principle of Pancasila.

3) Construct a Prototype

The next stage is developing a mobile learning prototype. This third stage starts with creating the design of the prototype to be developed. The design stages include producing GBIM (Outline of Media Content), JM (Material Outline), flowchart, and storyboard.

a) Making GBIM, JM, Flowchart, and Storyboard

The Media Outline (GBIM) and Material Outline (JM) are produced at this stage. The GBIM and JM are included in the appendix. After the GBIM and JM were made, the developer started to make flowcharts and storyboards based on the previously created GBIM and JM. The purpose of making flowcharts and storyboards is as an illustration or illustration that will be presented in the software used in developing mobile learning (Smart Apps Creator). Flowcharts and storyboards will be used as references in the development of mobile learning, also included in the appendix.

b) Making Prototype

At this stage, the design display and components of the collection and material will be presented in the mobile learning prototype. The design was produced using Adobe Illustrator. The following is an example of creating a display and content design using Adobe Illustrator.

Figure 1 Mobile Learning Development Process on Smart Apps Creator Software

Figure 2 Mobile Learning Main Page Display

Figure 3 Pages of Sample Case Materials for the Second Precept of Pancasila

4) Utilize prototype

   a) Expert Review Stage

The expert review aims to assess the material contained in mobile learning.

Table 1 Recapitulation of Expert Review Results

Respondents	Average score
Material Expert	3,68
Learning Media Expert	3,40
Average Value	**3,54**

After receiving reviews from media and material experts, the developer carried out revision activities on mobile learning following comments and inputs provided by experts.

   b) One-to-One Trial Phase

One-to-one or one-to-one trials were conducted on two sixth-grade students at SDN Telajung 01. The two students were chosen because they had different levels of understanding. From the results of these trials, the average score is as follows:

Table 2 Recapitulation of One-to-One Trial Results

Respondents	Average score
Respondent 1	3.53
Respondent 2	3.03
Average Value	3.28

c) Small-Group Trial Phase

After the one-to-one trial was carried out, the next thing to do was a small group trial consisting of 10 students with different bits of intelligence. The results of these trials are as follows:

Figure 4 Small Group Trial Results Recapitulation
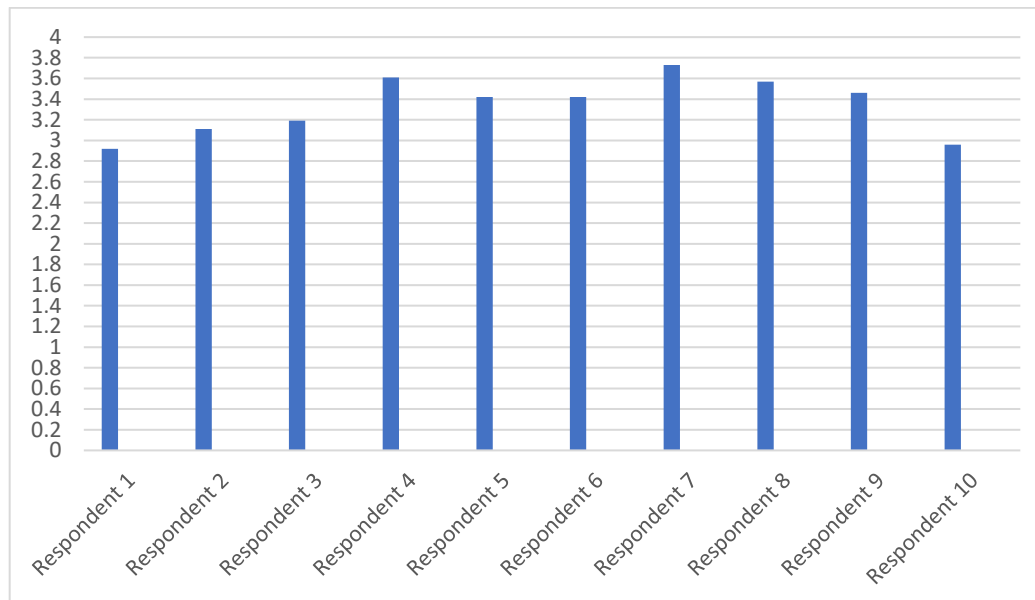
Furthermore, an assessment of student learning outcomes is carried out by being given an evaluation of learning outcomes. The following are the results of the review:

Figure 5 Recapitulation of Learning Outcome Evaluation
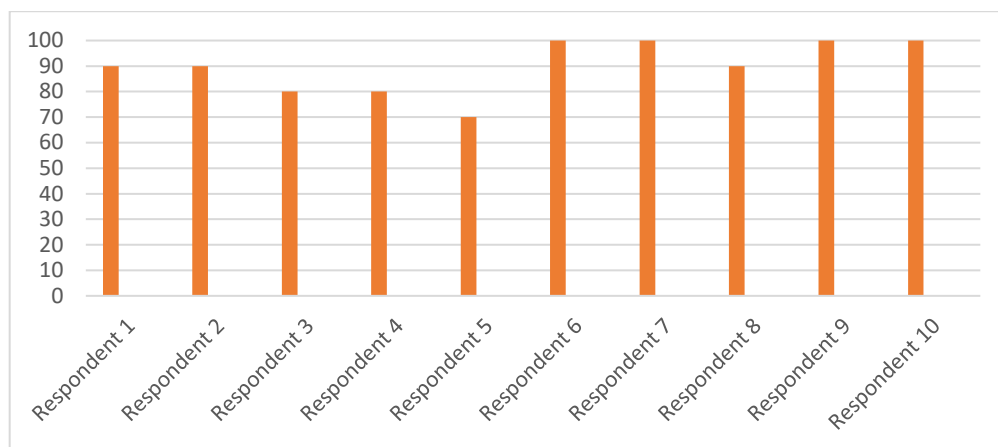
5) Install and Maintain System

The step taken at this last stage is to export the final results of the revised mobile learning. Mobile learning that has been shipped back into .apk form is ready to be installed and used on smartphone mobile devices.

Discussion

Pancasila is the basis of the state (Wen Lee & Ande, 2022) and the way of life of the Indonesian people. However, many cases and irregularities in Indonesia are still not by the values of Pancasila (Mukaromah et al., 2022). An example is bullying. The study's results stated that 58.35 male students had been victims of bullying, while 67.8% of female students had been victims of bullying (Krisnana et al., 2021). Another source also stated that bullying mainly occurs in elementary school students aged 7-12 years, accounting for 76% of bullying cases reported to the National Commission for Child Protection (Borualogo & Casas, 2021b). Cases of bullying also occurred in one of the public elementary schools in the Bekasi Regency area, such as at SDN Telajung 01. This problem shows that students, as part of Indonesian society, have forgotten their national identity, which should be based on Pancasila, especially on the second principle. In the second principle of Pancasila, we must respect and treat fellow human beings in a fair and civilized manner (Tirza, 2022) by their dignity without distinction of ethnicity, religion, gender, social position, skin color, and so on.

Knowledge and application of Civics values must be improved to avoid deviating further. The lack of student interest and the use of conventional learning methods also cause students to become

passive in the learning process. Solutions are needed that can be used to help achieve learning objectives. Online learning, where the learning process can be done on a mobile basis anywhere and anytime with various platforms, can improve students' understanding and learning outcomes (Aritonang & Safitri, 2021; Aswan, 2018; Taskiran, 2021). Mobile Learning is a learning process that can be an alternative to improve student understanding in the learning process (Pillena et al., 2019; Talakua & Sesca Elly, 2020). PKN learning using mobile learning is effective and can improve student learning outcomes, with 86% of students getting results above the minimum (Lestari & Halimi, 2022; Nurzaelani & Kasman, 2019; Sarkadi et al., 2020). Increasing knowledge of PKN is expected to affect the attitudes of students so that they do not do things that are contrary to Pancasila (Aydin & Yildirim, 2021; Hudi, 2017) Aydin & Yildirim, 2021; Hudi, 2017)

4   CONCLUSION

The product produced in this development research is mobile learning with a case study method for Civic Education for class VI at an elementary school at SDN Telajung 01. This mobile learning was developed using the Rapid Prototyping model, which consists of 5 stages: Assess Needs & Analyze Content, Set Goals, Build Prototypes, Utilize Prototypes and Install & Maintain Systems. This product has undergone a formative evaluation, resulting in a media expert review of 3.4 and a material expert of 3.68. Meanwhile, the 0ne to one user trial got a score of 3.4, the small group user trial was 3.4, and the evaluation of learning outcomes with an average value of 90. These results indicate that mobile learning with the case study method can be categorized as very good and suitable to be used as a Civic Education media. Mobile learning with the case study method for Civic Education for Class VI subjects has several shortcomings in its development. Improvements need to continue to be made to improve again so that it can maximize use. Therefore, several suggestions can be considered for the necessary repair materials.

It can be even better for developers to perform maintenance and repairs to improve the quality of mobile learning so they can do mobile learning. More parties can feel the value of its usefulness for further developers who will develop mobile learning so that they can master things related to the development of good mobile learning, such as programming languages , or consult with experts in the field of making software for mobile learning. In addition, developers also need to understand how to create mobile learning that can be used on various mobile/mobile device operating systems.

ACKNOWLEDGEMENTS

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THE INFLUENCE OF CHARACTER EDUCATION AND STUDENTS' SOCIAL ATTITUDES ON LEARNING OUTCOMES OF INDONESIAN CLASS IV AND LEARNING MOTIVATION AS INTERVENING VARIABLES

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Abstract

Indonesian is one of the main lessons in school, success in learning Indonesian can be seen from the learning outcomes. Not all student learning outcomes are above the standard set, many students are forced to take remedial exams. This study aims to determine the effect of character education and social attitudes on learning outcomes through learning motivation as an intervening variable. The study used a causality design with a mix-methods. A total of 160 students were determined by proportional random sampling technique from five public elementary schools in Kebayoran Lama. There are two methods of collecting data, namely through the distribution of questionnaires (character education, social attitudes, and learning motivation) and the method of documenting test scores as a result of learning Indonesian. The analysis was carried out using path analysis with the help of the SPSS version 26 program. The results showed that; (1) character education has a positive effect on learning outcomes both directly and through the mediation of learning motivation, and (2) social attitudes have a positive effect on learning outcomes. learning either directly or through the mediation of learning motivation, and (3) learning motivation has a positive effect on learning outcomes, (4) character education and social attitudes simultaneously affect student learning outcomes, (5) character education, social attitudes, and learning motivation simultaneously affect student learning outcomes.

Keywords: Character Education, Social Attitude, Motivation, Learning Outcomes

1 INTRODUCTION

Education has a very important role to create an intelligent, peaceful, open, and democratic life, for this reason, educational renewal must always be carried out to improve the quality of national education (Wasiso, et al., 2020). Education is one of the benchmarks to see the quality of a nation where the better the quality of education in a country, the greater the opportunity for the country to continue to develop (Nirwana & Marliyah, 2020). Teachers are the most important factor in improving the quality of human resources, in this case, students as recipients of information and who act as one complementary element in the learning process at school. One of the successes of students in the learning process is shown by learning outcomes in a period, although not all students have

satisfactory learning outcomes because often students find students who have to make improvements to improve their learning outcomes

Learning outcomes are an indication of success in the learning process. Student learning outcomes can be influenced by character education (Najib & Achadiyah, 2012; Wahyuliono, et al., 2013). Realizing the condition of the character of the Indonesian nation is increasingly being eroded, the government took the initiative to carry out a mental revolution by building a quality national character. This is in line with Article 3 of Law Number 20 of 2003 concerning the National Education System, national education functions to develop abilities and form a dignified national character and civilization to educate the nation's life, in essence, the character of citizens must be supported by moral values, so that social welfare will be created. Character is the trait, perception, and good-bad of a person in applying ethical values, morals, emotions, and various other psychiatric abilities that are reflected through his good behavior (Gulo, 1982, p. 29). Character education is education used to instill and develop character in students so that they have a noble character after having it so that they can apply it in daily life like at home, school, or in the community (Wibowo, 2013, p. 40). Character education in Indonesian learning is the introduction of values, facilitating the acquisition of awareness of the importance of values, and internalizing values into the behavior of daily learners through the learning process both inside and outside classes on subjects Indonesian.

Social attitudes can also affect learning outcomes (Nirwana dan Marliyah, 2020; Wasiso et al., 2020). Social attitudes describe a predisposition or tendency to behave in a certain way towards others, one common opinion, and one attitude directed towards social goals, as opposed to attitudes directed towards personal goals (Chaplin, 2006). Social behavior is the physical and psychic activity of a person towards others or vice versa to fulfill oneself or others in accordance with social demands. Social behavior is an atmosphere of interdependence that is a necessity to guarantee human existence (Ibrahim, 2001, p. 222).

Student learning outcomes are also strongly influenced by various internal factors such as intelligence, motivation, health, and learning methods (Djaali, 2014, p. 99)) Motivation can improve student learning outcomes (Tokan & Imakulata, 2019; Sartina & Indartono, 2019). Learning motivation influences students' learning behavior. Students who are highly motivated to learn to push themselves towards the goals to be achieved. Students who can determine their learning direction and goals will have the power to obtain better learning outcomes.

This study aims to analyze the influence between character education, social attitudes and learning motivation on student learning outcomes in Indonesian educational institutions, namely State Elementary Schools located in the Kebayoran Lama Utara area, Cluster 2, Kebayoran Lama District, South Jakarta on grade IV students whose students are at the stage of growth and development.

2   METHODOLOGY

The research uses a mixed methods approach, which is a combination of quantitative research and qualitative research to analyze the influence of character education (X1) and social attitudes (X2) on student learning outcomes (Y) both directly and through mediation of student learning motivation (Z / invertening).

2.1   Character Education

Character education is a deliberate effort to help people understand, care about, and do based on ethical values. In this definition, character education refers to three components that must be processed, namely: (1) the mind, which is indicated by the word "understand", (2) taste, which is indicated by the word care about, and (3) the body, which is indicated by the word act upon core ethical values. Character education is defined as an education that develops character values in students so that they have values and character as their character, applying these values in their lives that include (1) hard work, (2) curiosity, (3) tolerance, (4) independence (5) courtesy, and (6) creative. The six dimensions of character education can be developed in 18 statements in the questionnaire.

2.2   Social Attitudes

Social attitudes are individual consciousnesses that determine the real deeds of behaving in a certain way towards others and attaching importance to social goals rather than personal goals in people's lives. Social attitudes are related to students' attitudes toward the subject matter, students' attitudes towards teachers/teachers, student's attitudes towards the learning process, and attitudes related to values or norms related to learning material (Fadlillah, 2014). Included in the assessment of social attitudes in this study are (1) responsible behavior, (2) honesty, (3) care, (4) discipline, and (5) self-confidence (Nirwana & Marliyah, 2020). All five dimensions of social attitudes were developed in 15 statements in the questionnaire.

2.3 Learning Motivation

Learning motivation is the overall driving force in students that generates enthusiasm for learning because of expectations, ideals, needs, affections, and energy in the form of encouragement both from within students and from outside students to participate in teaching and learning activities in order to obtain maximum results and achieve the desired goals. The learning motivation in this study was a score obtained from respondents' answers about the learning motivation of grade IV students at SDN region 2, Kebayoran Lama District, South Jakarta. In summary, the motivational indicators in this study are 1) praise, 2) reward, 3) passion, 4) intelligence, 5) talent, and 6) self-confidence. The six dimensions of learning motivation were developed in 18 statements in the questionnaire.

2.4 Learning Outcomes

The learning outcomes in this study are the results achieved by students in achieving the goals that have been set after carrying out the learning process which can be seen in the form of scores, grades, and numbers that are influenced by factors from within and within the students to measure all aspects of learning, namely cognitive aspects, affective aspects, and psychomotor through the results of learning evaluation. The learning outcomes in this study are the average score of grade IV learning achievement at SDN Region 2, Kebayoran Lama District, South Jakarta, covering 3 aspects of student assessment, namely cognitive, affective, and psychomotor in Indonesian subjects. The scores of student learning outcomes are taken from the test scores of subjects Indonesian grade IV students of SDN Region 2, Kebayoran Lama District, South Jakarta, for the 2020/2021 school year. The score used is an assessment of the daily test conducted by the Indonesian Language Teacher class IV.

Researchers used five State Elementary Schools in Kebayoran Lama Utara as a population, and the determination of samples was carried out using a proportional random sampling technique so that as many as 160 students were killed. Data collection is carried out in three stages, namely the dissemination of questionnaires, interviews, and documentation of the value of student learning outcomes. Quantitative data analysis goes through several stages starting from testing research instruments, descriptive analysis, classical assumption testing, path analysis, and hypothesis testing with the help of the SPSS version 26 program. Then qualitatively analyze the data through three stages, namely data reduction, data presentation, and drawing conclusions.

3 FINDINGS AND DISCUSSION

3.1 Finding

3.1.1 Research Instrument Test

Data on learning outcome variables in Indonesian was obtained through documentation of daily test results while data on character education, social attitudes, and learning motivation were collected through research questionnaires developed from each indicator. The research questionnaire is first tested for validity and reliability to ensure that each item of the statement has met the provisions as a research instrument. The statement item is declared valid when the r value is calculated > r table (0.1552) while the reliability when Cronbach's Alpha value > 0.7 is as follows.

Tabel 1 Research Instrument Test

Pengujian	Pendidikan Karakter			Sikap Sosial			Motivasi Belajar		
	No	R_{hitung}	Ket.	No	R_{hitung}	Ket.	No	R_{hitung}	Ket.
Validitas Instrumen	1	0,748	Valid	1	0,741	Valid	1	0,602	Valid
	2	0,716	Valid	2	0,779	Valid	2	0,430	Valid
	3	0,394	Valid	3	0,724	Valid	3	0,625	Valid
	4	0,607	Valid	4	0,653	Valid	4	0,675	Valid
	5	0,576	Valid	5	0,750	Valid	5	0,720	Valid
	6	0,564	Valid	6	0,614	Valid	6	0,621	Valid
	7	0,567	Valid	7	0,752	Valid	7	0,704	Valid
	8	0,757	Valid	8	0,796	Valid	8	0,739	Valid
	9	0,711	Valid	9	0,698	Valid	9	0,665	Valid
	10	0,516	Valid	10	0,512	Valid	10	0,648	Valid
	11	0,451	Valid	11	0,878	Valid	11	0,590	Valid
	12	0,530	Valid	12	0,600	Valid	12	0,455	Valid
	13	0,687	Valid	13	0,656	Valid	13	0,601	Valid
	14	0,697	Valid	14	0,769	Valid	14	0,344	Valid
	15	0,670	Valid	15	0,836	Valid	15	0,733	Valid
	16	0,633	Valid				16	0,825	Valid
	17	0,542	Valid				17	0,581	Valid
	18	0,570	Valid				18	0,789	Valid
Reliability Instrumen	Cronbach Alpha			Cronbach Alpha			Cronbach Alpha		
	0,877			0,925			0,897		

3.1.2 Test Classical Assumptions

The classical assumption test as a prerequisite analysis includes four tests such as normally distributed data, slashed from multicollinearity, having a linear relationship, and being free from the symptoms of heteroskedasticity through the following series of tests.

Tabel 2 Normality Test (Kolmogorov Smirnov)

			Unstandardized Residual Model 1	Unstandardized Residual Model 2
Model	N		160	160
	Normal Parameters[a,b]	Mean	0,0000000	0,0000000
		Std, Deviation	5,97873352	8,50369058
	Most Extreme Differences	Absolute	0,064	0,055
		Positive	0,052	0,043
		Negative	-0,064	-0,055
	Test Statistic		0,064	0,055
	Asymp, Sig, (2-tailed)		0,200[c,d]	0,200[c,d]

The research data has been normally distributed because it has an Asymp, Sig, (2-tailed) value of > 0.05 as evidenced through the Kolmogorov Smirnov test. Then the Variance Inflation Factor (VIF) value < 10 and tolerance > 0.1 then the model has been freed from multicollinearity.

Tabel 3 Multicollinearity Test

		Collinearity Statistics		Keterangan
Model		Tolerance	VIEW	
1	(Constant)			
	Pendidikan Karakter	0,459	2,178	Tidak Terjadi
	Sikap Sosial	0,459	2,178	Multikolinieritas
2	(Constant)			
	Pendidikan Karakter	0,380	2,629	Tidak Terjadi
	Sikap Sosial	0,349	2,865	Multikolinieritas
	Motivasi Belajar	0,338	2,957	

The character education variable has a linear patterned relationship with learning outcomes, then the social attitude variable has a linear patterned relationship with learning outcomes, and the learning motivation variable has a linear patterned relationship with learning outcomes, this can be seen from the deviation value from linearity > 0.05 below.

Tabel 4 Linearity Test

			Sum of Squares	df	Mean Square	F	Sig,
Hasil Belajar * Pendidikan Karakter	Between Groups	(Combined)	13942,007	37	376,811	4,944	0,000
		Linearity	10232,647	1	10232,647	134,265	0,000
		Deviation from Linearity	3709,360	36	103,038	1,352	0,115
	Within Groups		9297,893	122	76,212		

			Sum of Squares	df	Mean Square	F	Sig,
		Total	23239,900	159			
Hasil Belajar * Sikap Sosial	Between Groups	(Combined)	12390,092	27	458,892	5,583	0,000
		Linearity	9478,072	1	9478,072	115,311	0,000
		Deviation from Linearity	2912,020	26	112,001	1,363	0,132
	Within Groups		10849,808	132	82,196		
	Total		23239,900	159			
Hasil Belajar * Motivasi Belajar	Between Groups	(Combined)	13544,020	37	366,055	4,606	0,000
		Linearity	9504,042	1	9504,042	119,586	0,000
		Deviation from Linearity	4039,978	36	112,222	1,412	0,085
	Within Groups		9695,880	122	79,474		
	Total		23239,900	159			

Through the scatterplot chart obtained the distribution of data on both model 1 and model 2. The basis for making decisions is that if the data spread and does not form any pattern, it can be said that the model does not contain heteroskedasticity (Ghozali, 2016).
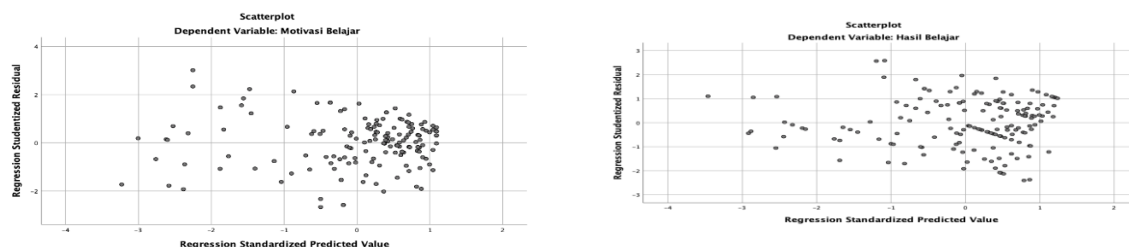
Figure 1 Heteroskedasticity Test Results with Scatter Plot

3.1.3   Hypothesis Testing

Hypothesis testing is carried out with statistical t-tests obtained through path analysis and the Sobel Test. Path analysis was conducted to see the magnitude of the influence of character education and social attitudes on learning motivation and its impact on student learning outcomes. Path analysis is an extension of regression analysis in two models and is continued with the Sobel Test as follows.

Tabel 5 Hypothesis Testing

Interaction	Koefisien	T $_{Statistic}$	Keterangan
Character Education → Learning Motivation	0,394	5,703	Significance
Social Attitudes → Learning Motivation	0,548	7,039	Significance
Character Education → Learning Outcomes	0,402	3,708	Significance
Social Attitudes → Learning Outcomes	0,301	2,358	Significance

Learning Motivation → Learning Outcomes	0,252	2,213	Significance
Character Education > Learning Motivation > Learning Outcomes	0,099	2,034	Significance
Social Attitudes > Learning Motivation > Learning Outcomes	0,138	2,089	Significance

The basis for decision-making is when the value of t $_{counts}$ > t $_{table}$. The table t value for the number of samples (n = 160) and the number of free variables (k = 2) are 1.97509. It can be seen that the calculated t $_{value}$ > 1.97509 is stated to have a significant influence. The value of the coefficient of the path when carried/substituted in the equation is as follows.

Model 1: $Z = 0{,}394\, X_1 + 0{,}548\, X_2 + e_1$

Model 2: $Y = 0{,}402\, X_1 + 0{,}301\, X_2 + 0{,}252\, Z + e_2$

Information:

a. The value of the coefficient $P_{x1z} = 0.394$ explains that increasing the character education variable by one point can increase learning motivation by 0.394 points.

b. The value of the coefficient $P_{x2z} = 0.548$ explains that an increase in the social attitude variable by one point can increase learning motivation by 0.548 points.

c. The value of the coefficient $P_{x1y} = 0.402$ explains that increasing the character education variable by one point can increase learning outcomes by 0.402 points.

d. The value of the coefficient $P_{x2y} = 0.301$ explains that by increasing the social attitude variable by one point can increase learning outcomes by 0.301 points.

e. The value of the coefficient $P_{zy} = 0.252$ explains that an increase in the learning motivation variable by one point, it can increase learning outcomes by 0.252points.

3.2 Discussion

3.2.1 *The Effect of Character Education on Student Learning Outcomes*

The results of the path analysis showed a statistical t-value of 3.708 with a probability of significance of 0.000. It can be seen that the statistical t value > 1.97509 and Sig. < 0.05 then H1 is declared accepted, meaning that there is a positive influence between character education on student learning outcomes. This positive influence is supported by a path coefficient value of 0.402 which means that character education provided to students can significantly improve student learning outcomes, when character education instilled in students increases by one point will make student learning outcomes increase by 0.402 points. Vice versa, when character education instilled in students decreases by one point, it will make student learning outcomes decrease by 0.402 points. The results of this study are

in line with the research of Wahyuliono et al. (2013), character education that covers aspects of independence and discipline that affects student learning outcomes. Then, (Najib & Achadiyah, 2012) mentioned that character education that covers aspects of discipline, confidence, and independence instilled in students has a role in improving student learning achievement.

Character education is interpreted as education that develops character values in students so that they have values and character as their character, apply these values in their lives that include hard work, curiosity, tolerance, independent courtesy, and creativity (Kemendiknas, 2010). In its implementation, character education can be integrated with various learning subjects without having to change the learning material that has been applied. Character values that can be instilled in students can be hard work, curiosity, tolerance, independence, courtesy, and creativity. These character values can significantly increase learning motivation which ultimately makes learning outcomes better. The existence of teachers plays an important role in shaping character in students at SDN Kebayoran Lama, character values in students can be formed by:

a. Train students to live a simple, not spoiled life, and provide space for students to try to solve problems both individually and in groups as an effort to instill the character of hard work.

b. Giving students space to explore, introduce new things, and use interesting learning media to increase student curiosity.

c. Give students the freedom to interact with anyone and introduce cultural, ethnic, and religious diversity so that students can interpret the meaning of differences so that the character of tolerance is embedded in students.

d. Organizing classes to create an orderly atmosphere, and dividing students into groups to share knowledge and provide space for students to discuss and question and answer so that student independence is formed.

e. Giving examples of students applying the 5S program (smiles, greetings, greetings, courtesy, courtesy) and accustom students to say the words "please", "sorry", and "thank you" in certain situations so that a polite character is embedded in students.

f. Develop learning that can foster new thoughts or ideas, develop project-based learning, appreciate students' questions and fantasies, and facilitate diverse media, to develop student creativity.

3.2.2 The Influence of Social Attitudes on Student Learning Outcomes

The results of the path analysis showed a statistical t-value of 2.358 with a probability of significance of 0.020. It can be seen that the statistical t value > 1.97509 and Sig. < 0.05 then H2 is declared accepted, meaning that there is a positive influence between social attitudes on student learning outcomes. This positive influence is supported by a path coefficient value of 0.301 which means that student social attitudes can significantly improve student learning outcomes, when students' social attitudes increase by one point, it will make student learning outcomes increase by 0.301 points. Vice versa, when the social attitudes of students experience a decrease of one point, it will make student learning outcomes decrease by 0.301 points. The results of this study are in line with the research (Nirwana & Marliyah, 2020) students' social attitudes are needed, especially in the learning process including responsible behavior, honesty, care, discipline, and confidence can have a significant effect on student learning outcomes.

Students' social attitudes include responsible, honest, caring, disciplined, and confident behaviors. Through this social attitude, it can increase learning motivation which in turn can make learning outcomes better. Social attitudes in this study are responsible behavior, honesty, care, discipline, and self-confidence (Nirwana & Marliyah, 2020). In appointing social attitudes in students of SDN Kebayoran Lama, teachers can:

a. Giving students independent assignments to complete both tasks in learning and other tasks such as picketing gnats students are accustomed to being responsible for their obligations

b. Convincing students of their abilities, approaching like friends so that students voluntarily tell their perceived problems so that an honest attitude is embedded.

c. Giving an example in the application of the K3 program (cleanliness, beauty, and order) then participating in the disaster awareness program and giving appreciation to the students who run it so that a caring attitude is embedded.

d. Create routines such as flag ceremonies in an orderly and solemn manner to get used to and appreciate students for the disciplined attitude shown.

e. Convincing students' abilities, accustoming students to appear in public, and training students to express their opinions and appreciation through giving rewards so that a confident attitude is formed.

3.2.3 The Effect of Learning Motivation on Student Learning Outcomes

The results of the path analysis showed a statistical t-value of 2.213 with a probability of significance of 0.028. It can be seen that the statistical t value > 1.97509 and Sig. < 0.05 then H3 is declared accepted, meaning that there is a positive influence between student learning motivation and student learning outcomes. This positive influence is supported by a path coefficient value of 0.252 which means that student learning motivation can significantly improve student learning outcomes, when student learning motivation increases by one point, it will make student learning outcomes increase by 0.252 points. Vice versa, when students' learning motivation decreases by one point, it will make student learning outcomes decrease by 0.252 points. This result is supported by research (Sartina & Indartono, 2019) which states that learning motivation has a significant effect on learning outcomes. Intrinsic and extrinsic motivation and learning behaviors together affect learning achievement (Tokan & Imakulata, 2019).

Learning motivation is the overall driving force in students that generates enthusiasm for learning because of expectations, ideals, needs, affections, and energy in the form of encouragement both from within students and from outside students to participate in teaching and learning activities in order to obtain maximum results and achieve the desired goals. Motivation can be intrinsic motivation and extrinsic motivation (Tokan & Imakulata, 2019), from both sources of motivation, can be implemented in praise, reward, passion, intelligence, talent, and self-confidence. When students have high learning motivation, it will allow students to understand the learning material better which ultimately makes learning outcomes better.

3.2.4 The Effect of Character Education on Student Learning Outcomes Through Learning Motivation Mediation

The results of the Sobel test showed a statistical t value of 2.034 where the value was more than t table = 1.97509 then H4 was declared accepted, meaning that there was a positive influence between character education on student learning outcomes through the mediation of learning motivation. This positive influence is supported by a path coefficient value of 0.099 which means that character education provided to students can motivate students to learn which ultimately increases student learning outcomes significantly. Thus, when character education is not implemented properly for students, it will reduce student learning motivation, and this will have an impact on reducing student Indonesian learning outcomes. This finding explains that student learning motivation has been able

to become an intervening variable between character education and student Indonesian learning outcomes. The results of this study are in line with research that states that there is a positive and significant influence between character education on student learning motivation (Fitriyaani, et al., 2021), then through increasing learning motivation can make students have good learning achievement (Putri, et al., 2020).

Character education is the basic capital that can equip students regarding the norms and values that apply in society which include personal aspects, environmental aspects, and social aspects. Character education teaches habits of thinking and behavior that help individuals to live and work together as a family, society, and nation. Character education is the foundation for students so that students can behave in a well-accepted manner in society. Character education in Indonesian subjects, it will make these students have a good social attitude (discipline, responsibility, independence, honesty, and creativity) that can motivate students' enthusiasm for learning so that they can obtain good learning outcomes.

3.2.5 *The Influence of Social Attitudes on Student Learning Outcomes Through The Mediation of Learning Motivation*

The results of the Sobel test showed a statistical t value of 2.089 where the value was more than t table = 1.97509 then H5 was declared accepted, meaning that there was a positive influence between social attitudes on student learning outcomes through the mediation of learning motivation. This positive influence is supported by a path coefficient value of 0.138 which means that the social attitudes that have been possessed by the student can motivate him to learn which ultimately improves student learning outcomes significantly. Thus, when students do not have a good social attitude, it will reduce student learning motivation, and this will have an impact on reducing student Indonesian learning outcomes. These findings explain that student learning motivation has been able to become an intervening variable between social attitudes towards student Indonesian learning outcomes. The results of this study are in line with research that proves that attitudes have a positive effect on learning motivation in students, if the positive attitude of students is high, it will increase their learning motivation (Putri & Rivai, 2019).). Research by Sartina & Indartono (2019) states that students' learning attitudes and learning motivation have a significant effect on learning outcomes.

Social attitudes teach how students behave in interactions with other students and the surrounding environment. Furthermore, attitude assessment is related to students' attitudes towards the subject

matter, students' attitudes towards teachers/teachers, student's attitudes towards the learning process, and attitudes related to values or norms related to learning materials. A person's social attitude is greatly influenced by how he gets along in society. A person's social attitude is also determined by the views of a group of people and has already been carried out repeatedly. Social attitudes can certainly be formed according to personal experience and can even be trained (Simanjuntak, 2017). Social attitudes can foster learning motivation so that in the end it improves student learning outcomes.

3.2.6   *The Influence of Character Education and Social Attitudes on Student Learning Outcomes*

The result of the F test obtained a calculated F value of 75.339 with a probability of significance of 0.000. It can be seen that the value of sig. < 0.05 then H6 is accepted, meaning that there is a significant influence between character education and social attitudes simultaneously on student learning outcomes. These two predictor variables when analyzed together can make student learning outcomes better, this is also supported by the R Square (R^2) value of 0.490, meaning that the variance of character education variables and social attitudes has been able to contribute to explaining the variance of student learning outcomes variables by 49%, although there are still other variables outside the model. The results of this study are in line with research that states that character education and social attitudes can affect learning outcomes (Wahyuliono et al., 2013; Wasiso et al., 2020).

Character education and social attitudes are the basis for building students for the better. Character education that has been implemented in most schools in Indonesia should be balanced with good student social behavior. the process of implementing character education in shaping students' social attitudes and behaviors is carried out outside the classroom related to school rules that become habitual and in the classroom is adjusted to material related to character values which can later shape students' social attitudes and behaviors (Siswati, et al., 2018). With students who get the right character education supported by a good social attitude, it will manifest success in the learning process that can be contained in student learning outcomes.

3.2.7   *The Influence of Character Education, Social Attitudes, and Learning Motivation on Student Learning Outcomes*

The results of the F test obtained a calculated F value of 53.106 with a probability of significance of 0.000. It can be seen that the value of sig. < 0.05 then H7 is accepted, meaning that there is a

significant influence between character education, social attitudes, and simultaneous learning motivation on student learning outcomes. These three predictor variables when analyzed together can make student learning outcomes better, this is also supported by the R Square value (0.505), the variance of the character education variables, social attitudes, and learning motivation has been able to contribute to explaining the variance of the student learning outcomes variable by 50.5%, although there are still other variables outside the model. These results explain that this model still has very potential for development. The results of this study are in line with the results state that the problem of low social attitudes of students needs to be improved through education, where a teacher is not only required to be able to instill aspects of knowledge in the learning process but also instill social attitudes to have a good impact on learning outcomes (Nirwana & Marliyah, 2020). Then from various studies, evidence was obtained that educating character, social attitudes, and learning motivation can affect student learning outcomes (Putri et al., 2020; Sartina & Indartono, 2019).

Character education has a good role in shaping students' social attitudes and motivating them to study harder. Social attitudes are very important in human life because social attitudes are needed to interact with students within the surrounding environment (school), this is based on the role of humans who are not as individual beings but as social beings who are not biased towards living alone through needing the help of others. Students who have a good social attitude supported by character education and learning motivation can significantly improve student learning outcomes in Indonesian subjects.

4 CONCLUSION

The results showed that character education and social attitudes have a significant influence in improving student learning outcomes in Indonesian both directly and through the intervening variable of student learning motivation. The social attitude variable has a dominant influence on student learning motivation, while the character education variable has a dominant influence on improving student learning outcomes in Indonesian.

This study only used two predictors, namely character education and social attitudes without paying attention to other variables outside the model with the magnitude of the contribution given through the R Square values of 0.662 and 0.505. For this reason, researchers are expected to be able to develop this research by adding other predictors such as the social environment and learning models applied

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LEADERSHIP DEVELOPMENT PROGRAM AT DISTANCE EDUCATION WITH THE TALENT POOL METHOD

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Abstract

Distance education (DE) operates by relying on the media to bridge the relationship between lecturers and students. Thus, in higher education, there is complex management. This high complexity demands high competence of human resources as well. The Universitas Terbuka (UT) has 39 units in the regions and 16 units at the headquarter which require strong leadership. Leaders are not born, they are developed. One of the media for leadership development is the talent pool. A talent pool is a collection of potential candidates that help an organization grow and achieve its long-term goals. At all times, talent pools help organizations build 'reservoirs of talent' to have on hand. This paper aims to share UT's steps in building a talent pool as a vehicle for leadership development. The first steps in developing the talent pool at UT have been started since 2019. The steps taken are a study of leadership needs, study concept and talent pool policies, development of talent pool models, to gain management support, building understanding with managers and employees at UT, conducting potential tests, compiling test results into 9 areas, conducting talent selection based on potential and performance test results, conducting training on leadership, training mentors, conducting apprenticeships for talents, monitoring the internship process, evaluating the progress of internship results, and evaluating talents. The results of the talent evaluation will be used to provide feedback to talents about the personal potential that must be developed and at the same time provide an assessment. After the first phase of activities in 2022, talents will be trained on managerial instruments and will return to doing internships. Along with the implementation of the talent pool, UT is also developing a career path. With the career path, all UT HR will be able to choose a career path according to their potential and competence. After potential employees complete their internship, they will be placed on the career path that has been prepared. In closing, it can be stated that the DE organization, which is complex, wide-ranging, and has a high workload and a high risk needs to prepare prospective leaders so that the DE institution can grow.

Keywords: talent pool, leadership, training, career path

1   INTRODUCTION

Open University is a tertiary institution that implements distance learning. Characteristics of Distance Learning rely on the media to bridge the relationship between lecturers and students. In higher education, there is complex management. This high complexity demands high competence of human resources as well. Nowadays, Universitas Terbuka (UT) has 40 units in regional offices and 16 units in the head office which require high-quality leadership. In line with UT's vision to become a world-class open and distance university, it means that only qualified leaders can bring UT to achieve this vision. Leaders are needed who not only accept this vision as knowledge but are also able to make it

happen by disseminating the vision to their subordinates, and others, encouraging, encouraging, and teaching others to achieve that vision.

Leading is not an easy thing, so it is necessary to prepare selected people to become leaders, it takes a group of people who are prepared in a planned manner to become leaders in the future. Choosing someone to be a leader requires a managerial approach (planned, trained, and developed to be elected) not to be chosen because of the most votes. Leaders are not born, they are developed. One of the leadership development media is the talent pool.

According to Pella and Afiffah (Pella & Afiffah, 2011), a talent is a human group that the company wants to maintain because of its advantages and also employees who are identified as having the potential to become leaders in the future.

According to Bourke (2020), companies that invest in talent pools will benefit, namely having a workforce plan that is aligned with organizational values, developing a system to collect an effective candidate database, and implementing a communication strategy (CSR, story employee inspiration, company innovation, and others) so that the company is remembered by job seekers.

2 METHODOLOGY

The approach used in this paper is a knowledge sharing about how UT as a state university develops a talent pool as a means to grow the potential of employees so that they are ready to become UT's future leaders.

3 FINDINGS AND DISCUSSION

UT develops a talent pool with systematic strategic steps. The basis for developing the talent pool is UT's business strategic plan for 2021-2026 and UT's needs as a PTN BH. These steps are the goal of the talent pool program and the development of a talent pool program implementation strategy. The following describes the two steps in detail.

3.1 The Benefit of the Talent Pool Program

The objectives of the talent development program for potential UT employees include:

a. UT has a comprehensive talent development method according to the needs of the organization

b. UT has a talent development program involving various parties in an integrative, effective, and systematic way according to the needs of the organization

c. UT knows the competency needs that need to be improved by talent

d. Talents get the same competency and career development opportunities

e. Talent can carry out managerial responsibilities effectively, responsibly, and efficiently

3.2 Talent Pool Program Implementation Strategy

The talent pool program at UT started in 2019, starting with conducting a leadership needs study, and reviewing talent pool concepts and policies. The four stages used as an approach to developing the talent pool program used are in the image below:

Figure 1 Stages talent pool program

3.2.1   Set Talent Criteria

At this stage, we clarify key positions, most important positions, positions with the highest risk, or positions related to the project as the target of the development program. Next, we carry out a series of activities to determine the criteria for prospective quality leaders in the organization at each level and position that has been determined. The criteria for talent are as follows:

a. Civil Servants and UT Non-Civil Servants with a minimum working period of 1-year

b. Minimum education S-1 for teaching and S-2 for lecturers

c. The maximum age of 50 years for lecturers and 45 years for students, when starting this program

d. Performance appraisal for the last 2 years is at least good

e. Never been a leader at UT

f. Based on the potential test in question, it is included in the talent box 7-9

g. Have no record of disciplinary violations in the last 2 years

h. Recommended by Leaders

3.2.2   Selecting Participants For Program Groups

At this stage, we make all kinds of efforts to select candidates from various positions, positions, and levels of existing employees as participants in the development program. At this stage, talent selection is carried out, which consists of two elements, namely identifying talents and attracting talents to be included in the development program group. Participants for the talent pool program at UT in 2022 are as follows:

Table 1 Participants of The Talent Pool Program

No	type of employee	Location		TOTAL
		HQ	RO	
1	Lecturer	30	28	58
2	Education staff	45	34	79
	TOTAL	75	62	137

3.2.3   Designing a Leadership Development Program for Participants

In this stage, we make all kinds of efforts to design, plan and execute development programs given to each development program member. The mechanism for implementing leadership development can be seen in the following figure:
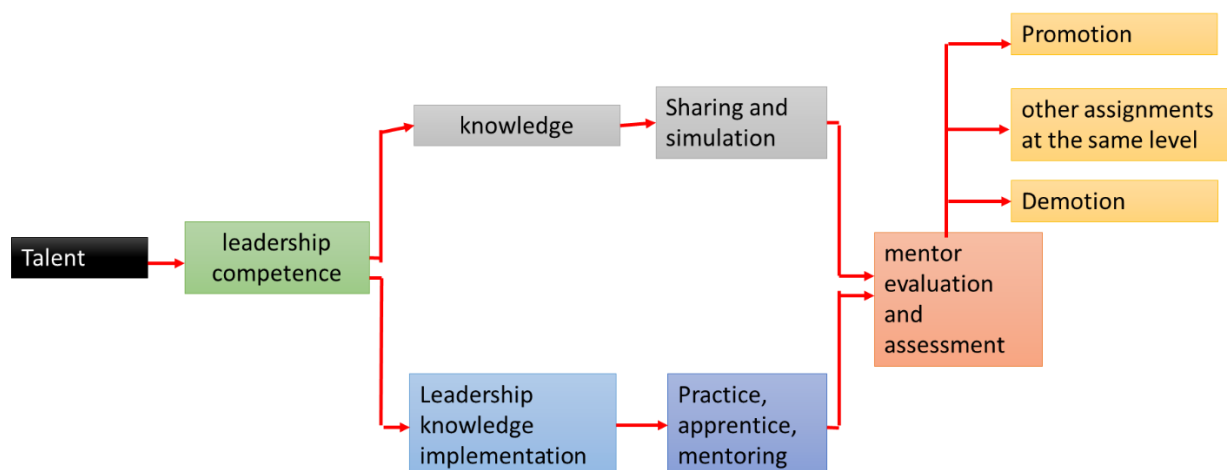
Figure 2 The mechanism for implementing a leadership development program

The talent development program is implemented using the following methods:

1. On-the-job learning;

The expected achievements in this program are that the polenta has a system view and work culture of UT as PTJJ and thinks and behaves in harmony with the theories, concepts, and practices of public sector leadership. The form of this method is in the form of internships at Central UT and supporting units, in the form of activities: Involved in the university team; Accompanying field coordinators in cross-unit meetings; Project assessments; Accompany the field coordinators following the ongoing activities; and Assisting the Head of Study Program in the field of Study Program management. The apprenticeship mechanism carried out can be seen in the following figure:
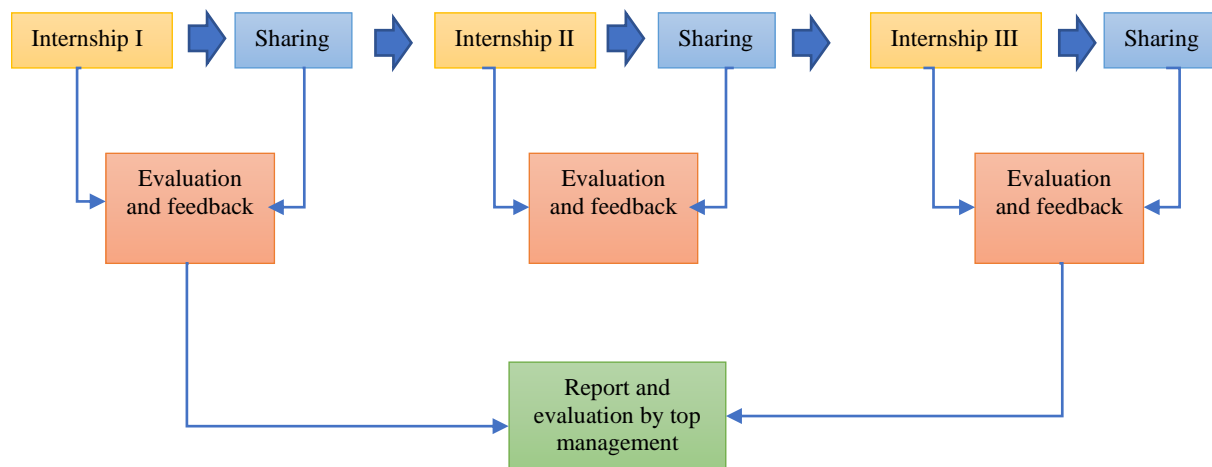
Figure 3 UT internship mechanism

Implementation of Internship Activities

1. Interns are divided into small groups of 4-5 people

2. Internship time: 1 week per unit

3. Participants will be accompanied by a Mentor who was previously given mentoring and coaching training. Mentor duties are as follows:

   a. Provide guidance and feedback focused on developing managerial competence

b. Helping the difficulties faced by talent

2. Coaching and mentoring

The expected achievement in this activity is that the talents gain direct experience. The form of activity in this program is in the form of mentoring/guidance/assistance in carrying out the main tasks and functions of employees or officials of the place of apprenticeship. The focus of this program can be seen in the following table:

Table 2   The Internship Design

UNIT	FOCUS	COMPETENCIES	EVENTS
Rektorat & PPMP	Teamwork	have the knowledge and skills about collaboration (participate in the university team)	• get involved on a university team or accreditation team • assist the field coordinators in cross-unit meetings
	Basic Leadership dan Managing People	have the knowledge and skills to use appropriate interpersonal approach styles and methods to gain the approval of others for an idea, opinion, or ideas put forward. This competency is required to be able to carry out work programs consistently and accurately.	
	Problem-solving strategy	have knowledge and skills in implementing problem-solving strategies	
UPP	Development HR	have knowledge and skills regarding HR development (education, training, and HR system development)	Project assessment
PBB	Learning and adaptability	has the ability and attitude to always update and expand knowledge, improve personal skills and abilities, and adapt quickly and flexibly to changes that occur in the work environment without hurting himself or his immediate environment.	Accompanying the field coordinators following the ongoing activities
Russian	Digital Literacy	have the knowledge and skills to understand, run, practice, and encourage the environment to use digital-based equipment, instruments, applications, or systems for work efficiency and effectiveness.	Accompanying the field coordinators following the ongoing activities
Fakultas	Manajemen Prodi	have knowledge and skills in study program management	Accompanying the study program manager in the field of Prodi management

3. Formal Learning/in-class program

The expected achievements in this activity are the talents having the competencies of Planning & Organizing, Innovation, Learning & Adaptability, Digital Literacy, and Individual Leadership. This program is in the form of learning/training. The focus of this program can be seen in the following table:

Table 3 The Focus of the Internship Program

SCOPE OF	COMPETENCE
Teamwork	Have knowledge and skills in cooperation
Basic Leadership, Managing People, Public Speaking	Have the knowledge and skills to use appropriate interpersonal approach styles and methods to get other people's approval for an idea, opinion, or ideas put forward. This competency is required to be able to carry out work programs consistently and accurately.
Organizational culture	Have knowledge and attitudes about UT organizational cultural values
Problem-solving strategy	Have knowledge and skills in implementing problem-solving strategies
Learning and adaptability	Have the ability and attitude to always update and expand knowledge, improve personal skills and abilities, and adapt quickly and flexibly to changes that occur in the work environment without hurting himself or his immediate environment.
Digital Mastery (Digital Literacy)	Have the knowledge and skills to understand, run, practice, and encourage the environment to use digital-based equipment, instruments, applications, or systems for work efficiency and effectiveness.
Social Networking	Have knowledge and skills on how to establish networking
Study Program Management	Have knowledge and experience in managing PRODI

4   CONCLUSION

The Open University (UT) has 39 units in the regions and 16 units at the headquarter which require strong leadership. Leaders are not born, they are developed. One of the media for leadership development is the talent pool. A talent pool is a collection of potential candidates that help an organization grow and achieve its long-term goals. At all times, talent pools help organizations build 'reservoirs of talent' to have on hand. The talent pool program at UT started in 2019, starting with conducting a leadership needs study, and reviewing talent pool concepts and policies. The four stages used as an approach to developing the talent pool program are:

a.   set talent criteria

b.   Select participants

c. designing leadership development programs

d. Evaluate and monitor the program implementation

The talent development program is implemented using the following methods:

a. On-the-job learning;

b. Coaching and mentoring

c. Formal Learning/in-class program

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DEVELOPING AUTOMATIC ITEM GENERATION

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Abstract

Developing and administering new test items each semester are important tasks for every teacher, as well as educational institutions, so that the assessment of student learning outcomes is meaningful and reliable. On the other hand, the time, effort, and competencies of teachers in particular are limited for frequently developing new items in a short time period. Hence, they need assistance to do so.

One method to produce new and good test items on a large scale and quickly is with the help of Automatic Item Generation (AIG). The potential benefits of AIG are promising. Through this research, the development of AIG software has been completed. The purpose of this paper is to describe and illustrate a method of AIG for generating a huge number of calculus test items that are closely aligned to the test blueprint.

Keywords: Automatic item generation, Computer-assisted assessment, Calculus 1.

1   INTRODUCTION

Two important tasks that should be conducted by every teacher in elementary, middle schools, or universities is first, developing and second, administering new test items each semester (whether for quizzes, midterm, or final exams). Administering test items, that have never been exposed to students, increases the test security and the validity level of the test results (Emberston, S.E, & Kinston, N.M; 2018). However, developing good items is not a simple task, but takes a long time and is expensive. The task includes constructing a test- blueprint, writing items, trying them out, revising them, and forming the test packages for administration. Rudner (2010) reported that to develop one test form of multiple-choice (MC) items in a high-stake testing program takes no less than one year. With an estimated cost of $1,500 to 2,000 for each item, a test form of 50 items can cost up to $100,000.

Lack of time, effort, expertise, and resources to develop test items drives some teachers to take a shortcut. Due to fear of the answer-key-leak, they administer the same items or the same test forms but by changing the order of the items and/or the order of the options. These test constructions are not considered good test practices per the Standards for Educational and Psychological Tests guidelines (AERA/NCME/APA, 2014).

In fact, there is a method to construct the MC items without violating the Standards guidelines, namely Automatic Item Generation (AIG). This method includes a two-stage process. First, subject

experts or test item developers prepare test templates or parent item models. Then, based on the parent item models, a computer algorithm is used to generate several possible items that can be obtained from the models. Therefore, instead of the test developers writing each individual item, AIG helps the test developers to get many similar items (a family of items) quickly from one parent item model.

Many benefits of AIG have been mentioned by Gierl, M. J., & Haladyna, T.M. (2013). First, because AIG can produce many items in a matter of seconds, of course, the costs of producing test instruments are lower (Ruder, 2010). Second, parallel test packages are two or more test packages that have different items or questions, but with the same level of complexity and difficulty. Because AIG can create many parallel test packages, it is possible for each test taker to see different test questions, thereby increasing test security (Bejar, I., 2013). Third, AIG can also produce items with varying degrees of difficulty, small error rates, and higher comparability levels than items made by test writers (Embretson, S.E.; 2016). Fourth, when combined with a computerized adaptive test (CAT), it allows AIG to generate new questions at the time of the exam (on the fly) based on the individual abilities of the examinees (Blum, Diego, B., & Heinz, H.; 2018).

1.1 THE PURPOSE

Little research has been proposed in Indonesia to explore the benefits of AIG. None of the research addressed software for generating comprehensive test items. The purpose of this study is to explore the benefits of AIG by introducing a method for generating calculus test items used in the Universitas Terbuka (UT) or Indonesia Open University. A prototype software has also been developed based on this method. Hopefully, the described method can be applied to any math item. We use calculus because many freshman students at UT enroll in this general class. In addition, calculus test items are more comprehensive and complex, including graphics, pictures, diagrams, numbers, and mathematical symbols. We introduce the basic logic needed to generate items with what is called a template-based method. Using this method, the AIG can generate items that are similar to the model. We use real test items to ensure that the illustration is understandable and concrete.

1.2 LITERATURE REVIEW

Automatic Item Generation (AIG) or the creation of test questions automatically is a way to produce many good items in a short time. AIG is a method for developing test items by combining educational measurement theories or psychometrics and computer programming (Gierl et al., 2013). Computer

algorithms are used to automate item construction according to the expected test blueprint or test characteristics. This method was first developed by Bormuth, J. R. (1962).

Currently, several methods of AIG have been successfully developed for various subjects and purposes. MathGen is a math problem generator engine for students in primary and secondary education in the USA. This engine is now in its the third version, MathGen 3.0 (Wilson, J., Morrison, K., & Embretson, S.E; 2014). Embretson, S.E., & Kinston, N.M. (2018) conducted qualitative research and empirical trials to evaluate the quality and psychometric results of the items made by MathGen 3.0, and they concluded that those items met the expected psychometric characteristics.

Ferreyra, M.F., & Backhoff-Escudero (2016) constructed two parallel test forms to measure students' competencies in basic education using AIG called GenerEx. They examined and compared the structure and psychometric characteristics of the items in the two forms. They concluded that GenerEx could be relied on to generate parallel test packets. Gierl and a number of other researchers (Gierl, M.J., Lai, H., & Turner, S.R., 2012; Gierl, M.J., Lai, H., 2013; Lai, H., Girl, M. J., Byrne, B.E., Spielman, A.I., & Waldschmidt, D.M., 2016) used an AIG engine called the Item Generator or IGOR (Gierl, M.J., Zhou, J., & Alves, C., 2008) to create multiple- choice items that measure the cognitive abilities of health workers. The items were compared with the items that were created manually by the expert item writers, and the results showed that the quality of the IGOR items was as good as the items made by the expert item writers.

Arendasy, M.E., Sommer, M., & Mayr, F. (2011) used AIG to create items that measure German and English-speaking fluency. The two tests were given to native English and German speakers, respectively. The results showed that the AIG questions were psychometrically acceptable. Holling, Berling, and Zeuch (2008) applied probability theory to automatically generate mathematical word problems with a predetermined level of difficulty. The Rasch model (1960) was used to test the fit of the model. The results obtained indicate that the level of difficulty produced by the items was as expected.

The original purpose of AIG was to create items that met the test-blueprint and the requirements of the item parameters. However, those two requirements were inadequate because the test developers needed an item model (Gitomer & Bennett, 2003). To satisfy the test blueprint and to confirm that the resulting items are intended as the item model, the item model can be developed from two

measurement approaches (Drasgow et al., 2006). The first approach is based on a strong theory (Irvine, 2002). Using this approach, the level difficulties of an item are estimated by making assumptions about the cognitive processes required to solve the item. All generated items in this template-based method are within the range of expected psychometric properties. When cost is the main factor, the strong theory may be useful, because it is not required for a field testing for the item calibrations. The strong theories usually are found on psychological tests. They have been applied mostly to tests requiring specific tasks such as mental rotation (Bejar, 1990) and spatial abilities (Embretson & Yang, 200&). On the other hand, most subjects or achievement tests (such as calculus) don't have any strong theory.

The second approach is based on a weak theory. Design guidelines produce calibrated items (Drasgow et al., 2006). An item model named a parent item model is used to generate items. The item features in the parent item model are manipulated to produce similar items with different components. The benefit of a weak theory for an automated item generation is in terms of its practicality. The parent model can usually be found in a previous administered exam. Also, a weak theory is useful for broad content domains in which few theoretical models exist on the cognitive knowledge and skills used by examinees to solve the items (Schmeiser & Welch, 2006). Due to calculus being a university class that doesn't have the strong theories being measured, this study used the weak theory. The test blueprint of the calculus class from the previous test administration was used to develop a set of items that consists of 30 MC items. Then, each item was implemented as the parent item model to generate new test items.

2 METHODOLOGY

2.1 Data: Item Models

This study used a set of items from the calculus final exam. The form consisted of 30 multiple-choice (MC) items with four options. Table 1 shows the distribution of the test contents. In UT, the topic or contents of calculus is divided into nine parts called modules that comprise one semester of lectures. Each of those 30 items was used as a parent item model for generating new test items.

Table 1.

Distribution of Items on the calculus test

No. Item	Contents
1, 2, 3, 4	Sets and Real Numbers
5, 6, 7, 8	Functions
9, 10	Different Types of Functions and the Graphics
11, 12, 13, 14	Limits and Continuity
15, 16, 17	Differentiation I
18, 19, 20, 21	Differentiation II
22, 23, 24, 25	Analytical Applications of Differentiation I
26, 27	Analytical Applications of Differentiation II
28, 29, 30	Limits of Indefinite Functions

2.2   Method

An item model is implemented in this study as a basis for AIG. The term item model was introduced by Bejar (1996). Other researchers used different terms: schema (Singley & Bennett, 2022), blueprint (Embretson, 2002), templet (Mislevy & Riconscente, 2006), form (Hively, Patterson, & Page, 1968), frame (Minsky, 1974), and shells (Haladyna & Shindoll, 1989). We have called it a template-based method.

The MC test item is divided into three parts: stem, options, and auxiliary information (Bejar, Lawless, Morley, Wagner, & Bennett, 2003). First, stem is part of the main item that provides information or context of the item, and gives questions or problems that must be answered by test takers. Second, options are answer choices consisting of one correct answer or key and several incorrect answers, which are often referred to as distractors. Third, auxiliary information is additional information or material that could be presented in the stem or options in the form of tables, pictures, or diagrams. As additional information, the auxiliary information may or may not be present in an item. Some elements in the stem or in the options of an item can be changed. These are called components. The components are used to produce several possible new test items.

Figure 1 shows an example of the MC item from a mathematics test of elementary schools. No auxiliary information is presented in this example. Components of the item which can be changed are "Dimas", "pens", "9", and "his". How to change these components is discussed in the following.

Dimas brought 80 pens shared with 9 of his friends. Each of his friends has the same number of pens. How many pens left over after Dimas handed them out to his friends?	Stem
A. 9 B. 8 *) C. 7. D. 6 Note: *) key answer.	Options

Figure 1 Item Model

Based on Figure 1, we can generate the item model as in Figure 2 with our template- based method. To generate new items, each of the five components (S₁, X₁, N₁, N₂ and gender) can be replaced with any other members of the component. Therefore, using all combinations, a total of 160 new items can be generated.

$[S_1]$ brought $[N_1]$ $[X_1]$ shared with $[N_2]$ of [gender] friends. Each of [gender] friends has the same number of $[X_1]$. How many $[X_1]$ left over after $[S_1]$ handed them out to [gender] friends?	Stem
A. N_2 B. $\mod\left(\frac{N_1}{N_2}\right)$ *) C. $\mathrm{if}\left(\mod\left(\frac{N_1}{N_2}\right)\right)>2),\mathrm{then}\ \mod\left(\frac{N_1}{N_2}\right)-1, else\ \mod\left(\frac{N_1}{N_2}\right)+1$ D. $\mathrm{if}\left(\mod\left(\frac{N_1}{N_2}\right)\right)>2),\ \mathrm{then}\ \mod\left(\frac{N_1}{N_2}\right)-2, else\ \mod\left(\frac{N_1}{N_2}\right)+2$	Options
• $(S_1: Gender):\{Toto: his, Tuti: her\}$ • $X_1:\{pencils, books\}$ • $N_1:\{50,60,70,90\}$ • $N_2:\{5,6,7,8,11\}$	Components
2 x 2 x 4 x 5 = 160	Possible new items

Figure 2 Generating New Items

Sets and Real Numbers. Three components of the items can be changed: the sets of A, B, and the operator ('-"). Accordingly, the set of A could be {1,2,3, …, 5}, {3,4,5, …,10}, {10,11,12,13, … ,17}, the set of B could be

$$\{x|-2 \leq x \leq 3, x \in Z\}, \{x|3 \leq x \leq 10, x \in Z\}, \{x|1 \leq x \leq 9, x \in Z\},$$

and the operator could be {−,+}. These possibilities are shown in Figure 4. The options for each item can be created as earlier in Figure 2).

Let $A = \{1,2,3, \ldots ,7\}$ and $B = \{x \mid -3 \leq x \leq 4, x \in Z\}$. What is $A - B$ adala ?	Stem
A. $\{1,2,3,4\}$ B. $\{5,6,7\}$. *) C. $\{-3,-2,-1,0\}$ D. $\{-3,-2,-1,0,1,2,3,4,5,6,7\}$	Options

Figure 3

Item Model of Calculus Test Item

Let $A = set1$ and $B = set2$. What is A operator B ?	Stem
A. The first four members of A B. A operator B. C. The first members of B D. A opposite operator B [opposite has 2 p's]	Options
• $Set1 : \{\{1,2,3, \ldots ,5\}, \{3,4,5, \ldots ,10\}, \{10,11,12,13, \ldots ,17\}\}$ • $Set2 : \{\{x \mid -2 \leq x \leq 3, x \in Z\}, \{x \mid 3 \leq x \leq 10, x \in Z\},$ $\{x \mid 1 \leq x \leq 9, x \in Z\}\}$ • operator $: \{-,+\}$	Components
2 x 3 x 2 =12	Possible new items

Figure 4

Generated Calculus Items

2.3 Results

Figure 5 shows the developed AIG dialog box developed as a template-based method. The dialog box shows how to generate new test items from the parent item model discussed in Figures 2 and 3. The dialog box is actually composed of three boxes. The first box is provided for the stem of the item model. The number of options needed for this item is typed in the provided box. After clicking the submit, the second box appears for users to input the information for each of the options. The inputs could be a math function, computation, graph, or any mathematical logic based on the input components

After inputting the information for each of the options, the number of components is recorded, and the third box of the components appears. After all contents of the components have been written, the last box is submitted to produce the new test items. In this example, the maximum number of new test items is 50. The user can provide how many items are needed. (There cannot be more than the possible number of the new test items.) Figure 6 shows the four new items generated from this AIG.

Table 2 displays the results of generating calculus test items used for the final exam in the IOU. Among of 30 items generated, 26 items could be generated successfully, while the three items (No. 7, 8, 9, and 10) could not. Those four items cannot be generated because they require graph manipulation.

Stem

$[S_1]$ brought $[N_1]$ $[X_1]$ shared with $[N_2]$ of [gender] friends. Each of [gender] friends has the same number of $[X_1]$. How many $[X_1]$ left over after $[S_1]$ handed them out to [gender] friends?

Number of Options

4 Submit

Options	Contents
A	N_2
B	$\mod\left(\frac{N_1}{N_2}\right)$
C	if$(\mod\left(\frac{N_1}{N_2}\right))>2$),then $\mod\left(\frac{N_1}{N_2}\right)-1, else \mod\left(\frac{N_1}{N_2}\right)+1$
D	if$(\mod\left(\frac{N_1}{N_2}\right))>2$),then $\mod\left(\frac{N_1}{N_2}\right)-1, else \mod\left(\frac{N_1}{N_2}\right)+1$

Number of Components

4 Submit

Components	
$(S_1: Gender)$	$\{Toto: his, Tuti: her\}$
X_1	$\{pencils, books\}$
N_1	$\{50, 60, 70, 90\}$
N_2	$\{5, 6, 7, 8, 11$

Number of New Test Items

50 Submit

Figure 5 AIG Dialog Box

Soal No 1.

Toto brought 50 pencils shared with 5 of his friends. Each of his friends has the same number of pencils. How many pencils left over after Toto handed them out to his friends?

A. 0
B. 1
C. 2
D. 5

Soal No 2.

Toto brought 50 pencils shared with 6 of his friends. Each of his friends has the same number of pencils. How many pencils left over after Toto handed them out to his friends?

A. 2
B. 4
C. 3
D. 6

Soal No 5.

Toto brought 50 pencils shared with 11 of his friends. Each of his friends has the same number of pencils. How many pencils left over after Toto handed them out to his friends?

A. 11
B. 6
C. 5
D. 4

Soal No 6.

Toto brought 60 pencils shared with 5 of his friends. Each of his friends has the same number of pencils. How many pencils left over after Toto handed them out to his friends?

A. 0
B. 1
C. 2
D. 5

Figure 6 Four New Items

Table 2 AIG Result

No Item	Topic	Auto Generate	
		Able	Unable
1, 2, 3, 4	Sets and Real Numbers	1, 2, 3, 4	
5, 6, 7, 8	Functions	5, 6	7, 8
9, 10	Different Types of Functions and the Graphics		9, 10
11, 12, 13, 14	Limits and Continuity	11, 12, 13, 14	
15, 16, 17	Differentiation I	15, 16, 17	
18, 19, 20, 21	Differentiation II	18, 19, 20, 21	
22, 23, 24, 25	Analytical Applications of Differentiation I	22, 23, 24, 25	
26, 27	Analytical Applications of Differentiation II	26, 27	
28, 29, 30	Limits of Indefinite Functions	28, 29, 30	

3   FINDINGS AND DISCUSSION

The purpose of this study is to develop the AIG for generating new test items for the calculus final exam administered in UT The present study was able to develop successfully 87% of the items. One challenge for generating math items is graph manipulation. Table 2 shows the items that required graph, table, or image manipulation are troublesome being generated. Therefore, due to a lack of computer liberties that can create graphs, tables, or images dynamically, currently, we can only generate items that don't require graphs. Or, if it is an item with graphs, we can generate it traditionally without AIG.

Second, as described in figure 5 regarding generating options, it is required to write in computer programing language as a function or subroutine. Therefore, to effectively generate good items is expected that the test developers must have basic knowledge of a computer programing language. This condition is concerning for some test developers. They have required not only experts in the contents of the test, but also, are expected to know programing language. In this project, the basic knowledge of programming hypertext preprocessor (PHP) is necessitated for the test developers.

Third, the use of the item model changes the scope of how to construct test items. Traditionally, for a given constructed item the item writer only paid attention to that item. On the other hand, using the item model all items produced must meet the expected item quality.

Because of those limitations, AIG can be considered as a supplement tool where not all items can be created effectively and not all test developers know basic programing language. Nevertheless, this study shows that many math items can be generated automatically. Some future research is needed to develop math libraries and graphical editors that are able to create graphs, tables, or images dynamically.

ACKNOWLEDGEMENTS

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RELATIONSHIP BETWEEN ORGANIZATIONAL LEARNING, ORGANIZATIONAL INNOVATION, KNOWLEDGE MANAGEMENT, AND BUSINESS ORGANIZATIONAL PERFORMANCE

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Abstract

This empirical research aims to determine the relationship between organizational learning, organizational innovation, knowledge management, and organizational performance in manufacturing and service companies. 197 data that can be analyzed using SPSS. The findings of this study: organizational learning has a direct and positive effect on knowledge management in manufacturing and service companies. Organizational learning and knowledge management directly influence organizational innovation. While organizational learning and organizational innovation directly affect organizational performance. Knowledge management and organizational learning affect organizational performance indirectly through organizational innovation.

Keywords: Organizational learning, Organizational innovation, Knowledge management, Organizational performance.

1   INTRODUCTION

Currently, to increase the company's competitive advantage, the management literature emphasizes the key roles, namely organizational learning, organizational innovation, and knowledge management. Several studies suggest that organizational learning and its output, organizational knowledge, are antecedents of innovation (Baker and Sinkula, 1999). The basic assumption is that learning plays a key role in enabling companies to achieve speed and flexibility in the innovation process (Brown and Eisenhard, 1995).

Organizational learning, organizational innovation, knowledge management, and organizational performance are positively related to each other. Research that studies the relationship between the four concepts simultaneously is still rare. Previous research has focused on corporate innovation, which says the degree to which organizational culture promotes and supports innovation (Keskin, 2006) or analyzes only one type of innovation, namely product innovation (Salavou and Lioukas, 2003). So previous research provides only a partial explanation of the phenomenon of innovation.

Similarly, several organizational learning studies adopt a cultural perspective to measure the concept. Very few studies analyze organizational learning processes. When cultural values are more difficult to change than specific actions, a focus on process may be of more help to the practitioner. This study

seeks to address the shortcomings of previous research and analyze the relationship between organizational learning, organizational innovation, knowledge management, and organizational performance simultaneously in one model. This study focuses on the organizational learning process and uses a complete measurement of organizational innovation and knowledge management.

Organizational learning is the ability within the organization to maintain and improve performance based on experience. These activities include knowledge acquisition (development or creation of skills, views, and relationships), knowledge sharing (dissemination of what others gain by someone), and knowledge utilization (integration of learning and generalizability to new environments). Organizational learning is the process by which organizations increase the knowledge created by

 individuals in an organized way and transform this knowledge in part of the organization's knowledge system.

Several studies support the relationship between organizational learning and innovation (Bueno, et al., 2010). The difference between learning and innovation is also linked. The literature also emphasizes the importance of organizational learning and innovation for corporate survival and effective performance. Organizational learning is a major component in various efforts to improve organizational performance and strengthen competitive advantage. Development of new knowledge, derived from organizational learning. Various researchers have also shown that innovation is important to improve performance and that innovation plays a role in improving organizational performance.

This research was conducted on business organizations because the sustainability of business organizations in a business environment full of uncertainty and dynamic is determined by increasing organizational performance to achieve competitive advantage. The practices of organizational learning, organizational innovation, knowledge management exist in business organizations, researchers try to analyze the relationship between these practices and organizational performance.

The concept of organizational learning, organizational innovation is still relevant to improving organizational performance. This is a lot of studies that have been carried out by researchers in the field of management. Knowledge management has also been widely studied to have a positive and significant relationship to organizational performance. Knowledge management can also mediate the

relationship between organizational learning and organizational innovation. It is necessary to do empirical research.

Several previous studies that examined organizational learning, organizational innovation, knowledge management, and organizational performance were still separately. It is very rare for research to combine three or four concepts simultaneously. This study tries to combine these four concepts simultaneously in one model.

2 METHODOLOGY

This study was conducted to achieve the research objectives that have been set, namely to determine the relationship between organizational learning, organizational innovation, knowledge management, and organizational performance so that the design of this study is an exploratory study that aims to obtain as much information or data as possible from respondents who are cross sectional. This research is in the form of quantitative research and the research environment is a field study.

The research was conducted in Yogayakarta with staff, supervisors, section heads, and managers of manufacturing and service companies as respondents. Research time starting from preparation, implementation, seminar on research results to making reports and research articles is 10 months starting from March 2020 to December 2020.

In this study the data source used is primary data. The primary data collection method is using a survey, namely asking questions to respondents using a questionnaire instrument and recording the answers for analysis. Questionnaires were distributed to staff respondents, supervisors, section heads, and managers of manufacturing and service companies. This questionnaire is closed, which means that respondents only choose the available answers that are considered appropriate. The distribution of the questionnaires was carried out directly by the research team.

The research instrument or data collection tool that will be used in this study is based on previous research from the results of the review literature. The organizational learning instrument was adopted from Gracia-Morales et al., (2007). Consists of 4 items. Each item was answered using a Likert scale of 1 – 5 where 1 = strongly disagree and 5 = strongly agree.

The knowledge management instrument was adopted from Gold et al., (2001). Consists of 4 interrelated processes: knowledge acquisition, knowledge transfer, knowledge integration, and

knowledge conversion. Each item was answered using a Likert scale of 1 – 5 where 1 = strongly disagree and 5 = strongly agree.

To measure innovation in manufacturing and service companies adopted from Miller and Friesen (1983). Consists of 3 items. Each item was answered using a Likert scale of 1 – 5 where 1 = strongly disagree and 5 = strongly agree. The organizational performance instrument was adopted from Cho et al., (2008). Consists of 4 items. Each item is answered using a Likert scale of 1 – 5 where 1 = very bad and 5 = very good.

This research data uses primary data sources. Primary data were taken from staff, supervisors, section heads, and managers of manufacturing and service companies using a questionnaire designed to determine the perceptions of staff, supervisors, section heads, and managers on the four constructs studied.

To analyze the data obtained from the respondents, the researcher conducted a reliability analysis using Cronbach Alpha to determine the reliability of the factors studied. Statistical Product and Service Solution (SPSS) version 23 to analyze the relationship between organizational learning, organizational innovation, knowledge management and organizational performance.

3   FINDINGS AND DISCUSSION

The empirical model of this study shows that organizational learning has a positive effect on organizational innovation in manufacturing and service companies. This finding is consistent with the previous findings of Aragon-Correa et al, (2007), Alberto et al, (2007), and Liao et al, (2008). The results show that knowledge management has a positive relationship with organizational innovation in manufacturing and service companies. This finding is consistent with research by Davenport and Prusak (1998), Darroch (2005), and Liao and Wu (2010). Knowledge management is an important antecedent of innovation (Liao and Wu, 2010). The application of knowledge management strategies will enable the creation and application of new behaviors and policies in manufacturing and service companies.

In addition, the results show that organizational learning and knowledge management positively and indirectly affect organizational performance through organizational innovation. Organizational innovation plays the role of a bridge linking organizational learning and knowledge management with organizational performance. As previous research, organizational innovation directly affects organizational performance. Hurley and Hult (1998) argue that organizations with high innovation will get better results from the environment, acquire the skills needed to improve organizational performance and can easily maintain competitive advantage.

Another important finding in this study is the relationship between organizational learning and organizational performance. This study suggests that the level of organizational learning in an organization will be one of the important criteria to determine its development and success. So organizations that show greater organizational learning have higher levels of performance. In addition, it is in manufacturing and service companies that learning and learning quickly acquire strategic capabilities that enable companies to remain in a competitive advantage situation and improve long-term performance (Senge, 1990). In general, these findings indicate that organizational learning shows an important part of performance, success, and competitive advantage for manufacturing and service companies

4   CONCLUSION

The results of this study indicate that organizational learning affects organizational performance directly or indirectly through knowledge management and organizational innovation. According to the results of path analysis, knowledge management has an indirect effect on organizational performance through organizational innovation. In this study, organizational innovation was also found to be positively related to organizational performance. In general, this study shows the importance of an integrated analysis of the direct and indirect effects of organizational characteristics on organizational performance.

 Further research is suggested to add transformational leadership constructs in relation to organizational learning, organizational innovation, knowledge management, and organizational performance because the role of leaders in organizations plays a very important role. Transformational leaders are central to integrating organizational learning processes. They are very strategic in producing environmental conditions that stimulate organizational learning disciplines and their interactions. Transformational leaders communicate the vision and create useful organizational

social contexts that can encourage subordinates to engage in higher-level knowledge management activities. Transformational leaders can enhance innovation within the organizational context and can use inspirational motivation and intellectual stimulation which are important factors of organizational innovation.

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UNIVERSITAS TERBUKA'S STUDENT PREFERENCE ON THE "FREEDOM TO LEARN INDEPENDENT CAMPUS (MBKM)" PROGRAM

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Abstract

The Indonesian government through the Ministry of Education, Culture, Research and Technology (MoECRT) continues to strive to improve the competence of university graduates by providing opportunities for students to study or gain experience outside university. MoECRT then issued a policy of "Freedom to Learn-Independent Campus" (Merdeka Belajar-Kampus Merdeka/MBKM). For Universitas Terbuka (UT), which operates with a distance learning system, it is very feasible to implement the MBKM policy. The MBKM program was offered to students starting in 2021. The purpose of the study is to analyze student preferences toward MBKM program. Student preferences are focused on the scheme of MBKM organized by UT and MoECRT. The research uses a quantitative approach. The research population covers all UT students. Samples were taken from all study programs derived from 37 UT's regional offices based on the following criteria: a) 4th semester students in 2021/22.1 for those students who take semester-based package system scheme or those who has taken a minimum of 70 credits (for students who do not take semester- based package system scheme); b) Minimum GPA 2.50. Data collection techniques were carried out through surveys and focus group discussions (FGD). The survey was conducted online to 600 students and there were 415 respondents who filled out the questionnaire. FGDs were conducted in three UT's regional offices (Jakarta, Bogor, and Yogyakarta) with 15 students in each office. To find out the relationship between variables, correlation analysis was performed. The results showed that most of the respondents (51.8%) did not know about MBKM. The MBKM scheme of MoECRT that most UT students's drawn to are Pertukaran Mahasiswa Merdeka and Kampus Mengajar (70.4). As for the MBKM program organized by UT, the most popular scheme are internships (72.5%), entrepreneurship (72.3%), and student exchange (65.3%). Based on student's work status, those who are already working (70.2%) and not working (70.9%) have the same tendency to take part in student exchanges at other universities. Moreover, students who have a GPA of less than 2.75 and more than 2.75 have different interests to participate in Bangkit program.

Keywords: independent learning, preferences, distance learning, MBKM.

1 INTRODUCTION

The increasing advances in the rapidly evolving technologies on education as well as competition amongst expertise in science and technology sector in Indonesia have required the university graduates to have the competencies demanded by the market and society. The Indonesian government through the Ministry of Education, Culture, Research and Technology (MoECRT) continues to strive to improve the competence of university graduates thus they are ready to be accepted by the market and society in the midst of strong competition. One of them is by providing opportunities for students to study or gain experience outside university. Therefore, universities must offer or design a

curriculum of study programs in which some of the learning outcomes of the courses can be obtained from other universities.

The MoECRT then issued a policy of "Freedom to Learn-Independent Campus" (Merdeka Belajar-Kampus Merdeka/MBKM) to accommodate the achievement of learning outcomes in other universities. The basis for the MBKM policy is Minister's regulation No. 3 of 2020 concerning National Higher Education Standards; Minister's regulation No. 4 of 2020 concerning the change of state university to state university with legal entities (PTN-BH); Minister's regulation No. 6 of 2020 concerning New Student Admissions for Undergraduate Programs at state university; Minister's regulation No. 7 of 2020 concerning Changes, Dissolution of state university and private university. The MBKM policy was implemented in universities starting in 2020. The MBKM policy will be implemented through lecture programs or non-lecture programs. These programs can be implemented through 8 schemes: a) Student exchange (lectures); b) Work practice/internship; c) Community service; d) Teaching Assistants in the Education Unit; e) Research; f) Entrepreneurial activities; g) Independent study/project; h) Humanitarian projects (MoECRT, 2020).

In UT itself, the MBKM program was implemented in 2021. It refers to 8 programs offered by the MoECRT, by selecting and determining programs in accordance with UT's students characteristic and nature as an open and distance higher education institution. Simultaneously, socialization and surveys were carried out to students to find out and analyze student preferences about MBKM. The purpose of the study is to analyze student preferences toward MBKM program. Student preferences are focused on the scheme of MBKM organized by UT and MoECRT. Data on student preferences is useful as one of UT's considerations for determining the programs that will be offered to students.

2   METHODOLOGY

The research uses a quantitative approach. The research population is all UT students. Samples were taken from all study programs from 37 UT's Regional offices based on the following criteria: a) 4th semester students in 2021/22.1 for those students who take semester-based package system scheme or those who has taken a minimum of 70 credits (for students who do not take semester-based package system scheme); b) Minimum GPA of 2.50.

Data collection techniques were carried out through surveys and focus group discussions (FGD). The survey was conducted online to 600 students and there were 415 respondents who filled out the

questionnaire. FGDs were conducted in three UT's regional offices, namely UT's Regional offices of Jakarta, Bogor, and Yogyakarta. At each UT's regional offices, FGD was conducted on 15 students.

The development of research instruments is carried out by referring to the indicators in the MBKM program. Instrument testing was conducted on 60 respondents, but only 30 respondents were responded. From the results of the trial, improvements were made to the question items in the questionnaire, including the following.

1. Eliminate questions about name and NIM because they contain sensitive elements (private confidentiality),

2. Added "not yet taken the test" category to questions about TOEFL scores,

4. Outline the questions into separate items for questions about the form of MBKM organized by MoECRT, the form of MBKM organized by UT, student interest in the form of MBKM organized by MoECRT, student interest in the form of MBKM organized by UT,

3. Added answer categories "outside the province" and "outside the country" for item questions about the selected location regarding the MBKM program.

Data analysis was carried out descriptively by displaying data in tables, graphs, and descriptions. To find out the relationship between variables, correlation analysis was performed.

3   FINDINGS AND DISCUSSION

Characteristics of Respondents

The results on the survey of respondent characteristics (Table 1) show that most of the respondents (73.5%) are working, with almost all (94.5%) having a GPA 2.75, and most of them

(88.7%) have never taken the TOEFL test. Respondents are dominated by students who are already working. Universitas Terbuka which provides distance education is very suitable for students who are already working (Rusli, 2004). Several other studies also show the same result (Utami et al, 2020).

Most respondents have a GPA 2.75. This characteristic is in accordance with the requirements of students to be involved in the MBKM program, namely having a minimum GPA of 2.75 on a scale

of 4.00 (Universitas Terbuka, 2021). Most of the respondents have never taken the TOEFL test thus the respondents in this study have not fully described as prospective students who are involved in the MBKM program, considering that another requirement in the MBKM program is to have English language skills (especially for those who will take edX courses) as evidenced by certificate for english proficiency test, minimum TOEFL 475, or other equivalent test (ICE Institute, 2021).

Table1. Characteristics of Respondents

No	Characteristics of Respondents	Frequency (N=415)	Percentage
1	**Employment status**		
	Working	305	73.5
	Not yet working	110	26.5
2	**GPA**		
	< 2.75	23	5.5
	2.75	392	94.5
3	**TOEFL score**		
	< 475	22	5.3
	475	25	6.0
	Never taken the test	368	88.7

Knowledge of MBKM

Based on survey results, it is known that most of the respondents (51.8%) did not know about MBKM (Table 2). This condition became one of the evaluation aspects for UT related to the effectiveness of the MBKM program socialization to students. It is known that knowledge is an important domain in the formation of open behavior (Donsu, 2017), which is very much needed in the successful implementation of new programs. Increased knowledge cannot merely be obtained from formal education, but can also be obtained from non-formal education. In addition, knowledge of an object also determines a person's attitude, whether its positive or negative aspects. The more positive aspects and objects that are known, the more positive attitudes will be towards certain objects (Notoatmojo, 2014). Therefore, the implementation of the MBKM program needs to be supported by good knowledge of students about MBKM so that they are able to achieve the positive attitude expected of students. Efforts that can be made to increase knowledge about MBKM are through promoting widespread dissemination of MBKM to students through various media and involving various stakeholders. This is also consistent with the results of this study that most students get information about MBKM from social media, UT's Regional offices, the UT website, and MoECRT website.

Table 2. Student Knowledge about the Form of MBKM

No	Knowledge of MBKM	Frequency (N=415)	Percentage
1	**Know about MBKM**		
	Yes	200	48.2
	Not	215	51.8
2	**MBKM Information Source**		
	Social media	102	23.0
	UT's Service point	22	5.0
	Friends/Relatives	47	10.6
	UT's Regional Offices	82	18.5
	MoECRT website	68	15.3
	UT website	71	16.0
	UT's Headquarter	51	11.6

Student Knowledge about the Scheme of MBKM

Dissemination of information related to MBKM to students is very important so that students are well aware about the forms of MBKM offered. Currently, there are 8 MBKM schemes offered, namely Student exchange, Internship, Community service, Teaching Assistants in the Education Unit, Research, Entrepreneurial activities, Independent study/project, and Humanitarian projects. The most familiar form of MBKM by UT students is Internship (88%), Student Exchange (86.5%), Research (77.5%) and followed by Teaching Assistance (77%), Entrepreneurial activities (70%), Community services (66%) and Humanitarian Projects (63%) (Table 3). The high level of student knowledge on internships, student exchanges and research is understandable considering that these three activities were common among students even before the government's MBKM program was introduced. Many students have done internships in companies to practice the theory they have learned during their studies in the world of work. There also been student exchange between universities within Indonesia and abroad, as well as involving students in research activities. The lack of students' knowledge of other MBKM schemes such as Teaching Assistance, Entrepreneurship, Community Service Program and the Humanitarian Project indicates the need for more intense socialization to students to introduce these activities more.

Table 3. Student Knowledge about the Scheme of MBKM

No	Knowledge of MBKM Scheme	Frequency (N=200)	Percentage
1	Student exchange		
	Yes	173	86.5
	Not	27	13.5
2	Internship		
	Yes	176	88.0
	Not	24	12.0
3	Entrepreneurship		
	Yes	140	70.0
	Not	60	30.0
4	Research		
	Yes	155	77.5
	Not	45	22.5
5	Community Service		
	Yes	132	66.0
	Not	68	34.0
6	Humanitarian Project		
	Yes	126	63.0
	Not	74	37.0
7	Independent Study		
	Yes	143	71.5
	Not	57	28.5
8	Teaching Assistant		
	Yes	154	77.0
	Not	46	23.0

Student Knowledge about the Scheme of MBKM by MoECRT

Currently, there are several forms of MBKM offered by MoECRT regarding the 8 schemes provided. Pertukaran Mahasiswa Merdeka remains the most widely known form of MBKM by students (91%) (Table 4). Furthermore, program of the Kampus Mengajar (90.5%), ICE (70.5%), Kredensial Mikro Mahasiswa Indonesia (KMMI) (66.5%) and Sekolah Ekspor (60.5%), which had previously been socialized by UT through the dissemination of information on social media and webinars, turned out to be sufficient to provide insight to students. Moreover, Bangkit and UIF programs are currently being promoted to students and it is proven that at the opening of registration for Bangkit program for 2022 in November 2021, as many as 1,000 UT students have registered.

Table 4. Student Knowledge about the Scheme of MBKM by MoECRT

No	Knowledge of MBKM by MoECRT	Frequency (N=200)	Percentage
1	**Pertukaran Mahasiswa Merdeka**		
	Yes	182	91.0
	Not	18	9.0
2	**ICE Program**		
	Yes	141	70.5
	Not	59	29.5
3	**Permata Sari**		
	Yes	64	32.0
	Not	136	68.0
4	**Permata Sakti**		
	Yes	68	34.0
	Not	132	66.0
5	**Bangkit**		
	Yes	85	42.5
	Not	115	57.5
6	**UIF**		
	Yes	106	53.0
	Not	94	47.0
7	**Kampus Mengajar**		
	Yes	181	90.5
	Not	19	9.5
8	**Sekolah Ekspor**		
	Yes	121	60.5
	Not	79	39.5
9	**BPN**		
	Yes	100	50.0
	Not	100	50.0
10	**Kredensial Mikro Mahasiswa Indonesia (KMMI)**		
	Yes	133	66.5
	Not	67	33.5

Student Knowledge about the Scheme of MBKM by Universitas Terbuka

At Universitas Terbuka itself, not all MBKM schemes are offered to students because it depends on the nature of the study program. The schemes that have been offered are in the form of student exchanges, internships, entrepreneurship and Community service. The results showed that most respondents chose internships as the MBKM scheme that students knew best (80.5%) (Table 5). This may be correlated with the profile of UT students, which most of whom are already working, both as workers and as entrepreneurs.

Table 5. Student Knowledge of UT's MBKM Scheme

No	Knowledge of MBKM UT	Frequency (N=200)	Percentage
1	Student exchange		
	Yes	143	71.5
	Not	57	28.5
2	Internship		
	Yes	161	80.5

Student Preferences for Participating in MBKM of MoECRT

Out of 10 forms of MBKM MoECRT offered, the programs that most UT students's drawn to are Pertukaran Mahasiswa Merdeka and Kampus Mengajar (70.4) (Table 6). Kampus Mengajar program is quite interesting for UT students, considering that most of UT students are dominated by students from Faculty of Education and Teacher Training. In fact, quite a number of UT's students from other faculty are even interested in joining this program, with some quite interesting arguments:

we know about learning in other places, in the village there is not much understanding about various things, it can helps elementary school children and nurture them.

(I'm interested in) teaching in school, (because I'm) happy around small children.

Furthermore, Kredensial Mikro Mahasiswa Indonesia (KMMI) and ICE programs are quite attractive to UT students. In 2021, there are 961 UT students participating in ICE program. Likewise with Sekolah Ekspor and internships at BPN whereis in 2021, there will be 21 UT students participating in Sekolah Ekspor and 48 students interning at BPN.

For Bangkit program, where its activities are more focused on the IT field, it turns out that there are even more enthusiasts from study programs that do not have much contact with IT, namely students from study program of management, accounting, law and communication.

Table 6. Student Preferences for Participating in MBKM of MoECRT

No	The form of MBKM MoECRT wants to follow	Frequency (N=415)	Percentage
1	Pertukaran Mahasiswa Merdeka		
	Yes	292	70.4
	Not	123	29.6
2	ICE Program		
	Yes	259	62.4
	Not	156	37.6
3	Permata Sari		
	Yes	126	30.4
	Not	289	69.6
4	Permata Sakti		

Student Preferences to Join Universitas Terbuka MBKM

Starting from semester 2020/21.2, UT has offered several MBKM programs, both lectures (student exchanges) and non-lectures (internships, community services, and entrepreneurship). The results of survey to students about the activities to be followed in MBKM, resulted that students are most interested in is internship, with the percentage of respondents with 72.5%, then entrepreneurship (72.3%), and 65.3% student exchange (Table 7). This is good, since by participating in internships and entrepreneurship, it can bring students closer to the business and industrial world thus making it easier for students to get jobs.

Table 7. Interests of UT Students in the Form of MBKM

No	The form of UT MBKM you want to follow	Frequency (N=415)	Percentage
1	**Student exchange**		
	Yes	271	65.3
	Not	144	34.7
2	**Internship**		
	Yes	301	72.5
	Not	114	27.5
3	**Entrepreneurship**		
	Yes	300	72.3
	Not	115	27.7
4	**Research**		
	Yes	259	62.4
	Not	156	37.6
5	**Community Service**		
	Yes	258	62.2
	Not	157	37.8

Student exchange is useful for students to provide learning experiences at other universities, besides UT. This experience can provide new insights for students about learning culture and academic culture at other universities. Currently, UT has partnerships with Indonesia Cyber Education Institute (ICE-I) and universities that already have a cooperation agreement with UT. ICE-I collaborates with a consortium of universities Indonesia and several universities abroad that offer courses through Open edX.

Relationship Between Variables

The research will also look at some patterns of relationships that occur between variables. The pattern of relationships that will be studied thoroughly include: the relationship between student work status and their tendency to choose the scheme of MBKM, the relationship between student GPA and their tendency to choose the scheme of MBKM, student GPA with student work status, student domicile and their tendency of college choice, as well as the relationship between work status and the college that will be selected for the student exchange program.

The Relationship Between Student Work Status and Scheme of MBKM by MoECRT that Student Want to Follow

There is a relationship between work status and student's tendency to participate in MBKM in the form of student exchange (Table 8). Respondents who are already working tend not to participate in MBKM program of student exchange, whilst those who are not employed yet tend to participate in this program. However, if we compare the percentages between those who are already working and not, it is relatively not much different (70.2% versus 70.9%). So it can be said that even though there is a relationship, the correlation between work status and the tendency to participate in MBKM of student

exchange is indeed very weak. The same pattern also occurs in various forms of MBKM by MoECRT, wherein there is a relationship between work status and the tendency to participate in MBKM program. The strength of the relationship is also relatively the same. So it can be said that the relationship between work status and the tendency to participate in MBKM by MoECRT is also very weak. Referring to the trend of the data in Table 8, it can be seen that students tend to participate in MBKM program by MoECRT, except for Permata Sari and Permata Sakti programs. In this

relationship, both students who are not working and those who are already working tend not to take part in Permata Sari and Permata Sakti programs. The results of the research reveal that students are more interested in participating in student exchange organized by ICE Institute.

Yes, I really want to join ICE program, because they are offering courses from abroad universities like Harvard. It's cool if you can attend Harvard, even if it's only one course.

Table 8. Relationship between Employment Status and Scheme of MBKM MoECRT
(n: 415)

No	The form of MBKM MoECRT	Employment status		Total
		Working	Not yet working	
1	Pertukaran Mahasiswa Merdeka			
	Yes	214 (70.2%)	78 (70.9%)	292 (70.4%)
	Not	91 (29.8%)	32 (29.1%)	123 (29.6%)
2	ICE Program			
	Yes	185 (60.7%)	74 (67.3%)	259 (62.4%)
	Not	120 (39.3%)	36 (32.7%)	156 (37.6%)
3	Permata Sari			
	Yes	92 (30.2%)	34 (30.9%)	126 (30.4%)
	Not	213 (69.8%)	76 (69.1%)	289 (69.6%)
4	Permata Sakti			
	Yes	98 (32.1%)	34 (30.9%)	132 (31.8%)
	Not	207 (67.9%)	76 (69.1%)	283 (68.2%)
5	Bangkit			
	Yes	144 (47.2%)	61 (55.5%)	205 (49.4%)
	Not	161 (52.8%)	49 (44.5%)	210 (50.6%)
6	UIF			
	Yes	161 (52.8%)	61 (55.5%)	222 (53.5%)
	Not	144 (47.2%)	49 (44.5%)	193 (46.5%)
7	Kampus Mengajar			
	Yes	209 (68.5%)	83 (75.5%)	292 (70.4%)
	Not	96 (31.5%)	27 (24.5%)	123 (29.6%)
8	Sekolah Ekspor			
	Yes	174 (57.0%)	71 (64.5%)	245 (59.0%)
	Not	131 (43.0%)	39 (35.5%)	170 (41.0%)
9	BPN			
	Yes	173 (56.7%)	69 (62.7%)	242 (58.3%)
	Not	132 (43.3%)	41 (37.3%)	173 (41.7%)

10	Kredensial Mikro Mahasiswa Indonesia (KMMI)			
	Yes	189 (62.0%)	74 (67.3%)	263 (63.4%)
	Not	116 (38.0%)	36 (32.7%)	152 (36.6%)

Furthermore, the data in Table 9 shows the pattern of the relationship between student work status and MBKM by MoECRT that students most want to participate in. If in Table 8 students are given the opportunity to choose whether they want to join all the existing MBKM program, then in Table 9 students are only asked to choose one of the programs organized by MoECRT. The data in Table 9 shows that students both working and not working have a tendency to participate in student exchange programs organized by MoECRT, Kampus Mengajar, and internship programs organized by BPN. Other programs tend to be unattractive to students, both those who are already working and those who have not worked. The tendency of students to take part in student exchange programs is because they want to have a learning experience at other universities besides Universitas Terbuka. There is a desire to experience face-to-face learning patterns organized by other universities.

I really want to experience what it's like to learn face-to-face, since we've been learning online. Of course, we also take a face-to-face tutorial, but it's a different atmosphere, if you go to face-to-face lectures. I just want to know.

Respondents who choose Kampus Mengajar programs are based on their liking for children, and their desire to teach children in need.

Yes, basically because I really like children, so when there is an offer to teach children, I like it. Especially since it's in underdeveloped areas.

For respondents who chose the program organized by BPN, they did have an interest in knowing more about land issues, and some of them had participated in a similar program while studying in high school.

Table 9. Relationship of Work Status with the Most Followed Scheme of MBKM by MoECRT (n: 415)

			Pertukaran Mahasiswa Merdeka	ICE Program	Perm ata Sakti	Bang kit	UIF	Kampus Mengajar	Sekolah Ekspor	Badan Pertanahan Nasional	KM MI	Sekolah Pertahanan	Entre prene urshi p	Appren ticeship	Total
			The form of MBKM MoECRT Most Want to Follow												Total
Employment status	Working	Count	107	31	1	1	16	63	18	41	25	0	1	1	305
		% within working status	35.1%	10.2%	0.3%	0.3%	5.2%	20.7%	5.9%	13.4%	8.2%	0.0%	0.3%	0.3%	100.0%
	Not yet working	Count	40	6	0	3	9	16	5	21	9	1	0	0	110
		% within working status	36.4%	5.5%	0.0%	2.7%	8.2%	14.5%	4.5%	19.1%	8.2%	0.9%	0.0%	0.0%	100.0%
Total		Count	147	37	1	4	25	79	23	62	34	1	1	1	415
		% within working status	35.4%	8.9%	0.2%	1.0%	6.0%	19.0%	5.5%	14.9%	8.2%	0.2%	0.2%	0.2%	100.0%

The relationship between GPA and Scheme of MBKM by MoECRT that students want to follow

Students whose GPA is less than 2.75 tend to join MBKM program in any form organized by MoECRT, while students whose GPA is more than 2.75 tend not to participate (Table 10). This condition is interesting, because theoretically, students who have a high GPA usually tend to take part in various programs offered, but the opposite condition occurs in the respondents who are sampled. From the search results, this condition occurs because those students who have GPA of less than 2.75, see this as an opportunity to improve their GPA.

If I'm not mistaken, if we join MBKM, we'll be freed for 20 credits and doesn't have to take any courses in our university. Then the grades will be taken from MBKM program. So if the grades are good, it can improve our GPA.

Table 10 also shows us that of all MBKM programs by MoECRT, a significant difference is in the MBKM program of Bangkit (60.9% versus 48.7%), while for other MBKM programs there is relatively no difference between students who have a GPA of less than 2.75 and those who have more than 2.75. This occurs because Bangkit program is better known among students since this was the initial program organized by MoECRT.

We know Bangkit. We have heard about it a lot. While others, not so much information.

Table 10. Relationship between GPA and Scheme of MBKM by MoECRT student wants to participate in (n: 415)

No	The form of MBKM by MoECRT	GPA		Total
		<2.75	2.75	
1	**Pertukaran Mahasiswa Merdeka**			
	Yes	17 (73.9%)	275 (70.2%)	292 (70.4%)
	Not	6 (26.1%)	117 (29.8%)	123 (29.6%)
2	**ICE Program**			
	Yes	16 (69.6%)	243 (62.0%)	259 (62.4%)
	Not	7 (30.4%)	149 (38.0%)	156 (37.6%)
3	**Permata Sari**			
	Yes	9 (39.1%)	117 (29.8%)	126 (30.4%)
	Not	14 (60.9%)	275 (70.2%)	289 (69.6%)
4	**Permata Sakti**			
	Yes	8 (34.8%)	124 (31.6%)	132 (31.8%)
	Not	15 (65.2%)	268 (68.4%)	283 (68.2%)
5	**Bangkit**			
	Yes	14 (60.9%)	191 (48.7%)	205 (49.4%)
	Not	9 (39.1%)	201 (51.3%)	210 (50.6%)
6	**UIF**			
	Yes	13 (56.5%)	209 (53.3%)	222 (53.5%)
	Not	10 (43.5%)	183 (46.7%)	193 (46.5%)
7	**Kampus Mengajar**			
	Yes	18 (78.3%)	274 (69.9%)	292 (70.4%)
	Not	5 (21.7%)	118 (30.1%)	123 (29.6%)
8	**Sekolah Ekspor**			
	Yes	14 (60.9%)	231 (58.9%)	245 (59.0%)
	Not	9 (39.1%)	161 (41.1%)	170 (41.0%)
9	**BPN**			
	Yes	14 (60.9%)	228 (58.2%)	242 (58.3%)
	Not	9 (39.1%)	164 (41.8%)	173 (41.7%)
10	**Kredensial Mikro Mahasiswa Indonesia (KMMI)**			
	Yes	18 (78.3%)	245 (62.5%)	263 (63.4%)
	Not	5 (21.7%)	147 (37.5%)	152 (36.6%)

Students who have GPA of less than 2.75 are more dominant in joining Pertukaran Mahasiswa Merdeka and Kampus Mengajar. The same condition also applies to students who have GPA of more than 2.75 (Table 11). The desire of students to join Pertukaran Mahasiswa Merdeka program is based on their desire to know a different experience from what they have experienced while studying at UT through online, even though learning at other universities is actually also done online.

Table 11. Relationship between IPK and scheme of MBKM by MoECRT student wants to participate in (n: 415)

			The form of MBKM MoECRT Student Most Want to Follow												Total
			Pertukaran Mahasiswa Merdeka	ICE Program	Permata Sakti	Bangkit	UIF	Kampus Mengajar	Sekolah Ekspor	BPN	KMMI	Sekolah Pertahanan	entrepreneurship	Apprenticeship	
GPA	< 2.75	Count	10	4	0	0	0	4	1	3	1	0	0	0	23
		% within GPA	43.5%	17.4%	0.0%	0.0%	0.0%	17.4%	4.3%	13.0%	4.3%	0.0%	0.0%	0.0%	100.0%
	2.75	Count	137	33	1	4	25	75	22	59	33	1	1	1	392
		% within GPA	34.9%	8.4%	0.3%	1.0%	6.4%	19.1%	5.6%	15.1%	8.4%	0.3%	0.3%	0.3%	100.0%
Total		Count	147	37	1	4	25	79	23	62	34	1	1	1	415
		% within GPA	35.4%	8.9%	0.2%	1.0%	6.0%	19.0%	5.5%	14.9%	8.2%	0.2%	0.2%	0.2%	100.0%

4   CONCLUSION

Most of the respondents did not know about MBKM. Many students have done internships in companies to practice the theory they have learned during their studies in the world of work. The high level of student knowledge on internships, student exchanges and research is understandable considering that these three activities were common among students even before the government's MBKM program was introduced.

Pertukaran Mahasiswa Merdeka remains the most widely known form of MBKM by students. The schemes that have been offered are in the form of student exchanges, internships, entrepreneurship and Community service. The results showed that most respondents chose internships as the MBKM scheme that students knew best. Out of 10 forms of MBKM MoECRT offered, the programs that most UT students's drawn to are Pertukaran Mahasiswa Merdeka and Kampus Mengajar.

The pattern of relationships that will be studied thoroughly include: the relationship between student work status and their tendency to choose the scheme of MBKM, the relationship between student GPA and their tendency to choose the scheme of MBKM, student GPA with student work status, student domicile and their tendency of college choice, as well as the relationship between work status and the college that will be selected for the student exchange program.

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services here, especially legal practitioners. The services of legal practitioners in developed countries are needed, not only regarding individual personal issues but also the needs of corporations. The need for legal practitioners is not only related to the judicial process (adjudication) but also related to individual needs outside the judicial process (anadjudication). The services of legal practitioners are selling well in developed countries such as America. America as one of the developed countries recorded about 1 million advocates who to perform legal services on 31.65 million people or with a scale ratio of 1:310, every 310 people there is 1 lawyer (Boy Yendra Tamin. 2011).

The development of technology requires each individual to be able to adapt, technological advances have an impact on various sectors of life. The more advanced a civilization is followed by a rapid and practical pattern of life. These advances have an impact on the mindset of individuals who want practical things so that they can maximize time with other potential activities. This is what makes the need for practitioner services in developed countries increasing, the need for services here, especially legal practitioners. The services of legal practitioners in developed countries are needed, not only regarding individual personal issues but also the needs of corporations. The need for legal practitioners is not only related to the judicial process (adjudication) but also related to individual needs outside the judicial process (anadjudication). The services of legal practitioners are selling well in developed countries such as America. America as one of the developed countries recorded about 1 million advocates who to perform legal services on 31.65 million people or with a scale ratio of 1:310, every 310 people there is 1 lawyer (Boy Yendra Tamin. 2011).

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But efforts to produce reliable legal practitioners are not easy. It is necessary to make improvements and improvements to the existing curriculum system, so that legal education at the university is not solely academically based but leads to the experience of practicing law students. The fact that many college graduates have not been able to be absorbed into the world of work because they graduates do not have the skills needed by the job market, even ironically many labor vacancies are not absorbed due to the limited qualifications of undergraduates (zamroni (Sartono Sahlan. 2013). As a result, there are many unemployed people who hold the status of a Bachelor, because they do not have the competencies needed in the world of work.

From data from the Central Statistics Agency (BPS) shows, as of February 2022 the unemployment rate in Indonesia is recorded at 5.38% of the total working-age population of

208.54 million people and an astonishing 14% of the 208.54 million people are diploma and Bachelor graduates (Fautinus Nua.2022). One of the factors that causes the increasing number of unemployed undergraduates in Indonesia is the incompatibility of scientific competencies with the needs in the world of work and the qualifications they have. The qualification in question is an inappropriate ability, such as a scholar with low competence, so as to get a job with an inappropriate level. The competence factor of graduates also plays a role in this one problem (yusrinto sepu. 2019).

The curriculum model, which is only based on academic theoretical knowledge, makes the competencies of college graduates not well honed. Many of the students are only reliable in mastering theoretical material but lack practical experience. The curriculum improvements that have been carried out have not produced good results for students in an effort to add competencies and capabilities that are actually needed by a legal practitioner. For this reason, a special class program is needed that focuses on the practice of law rather than just a legal theory class.

From the assessment of the aforementioned issues, we raised a paper about the moocs program of the virtual reality-based legal profession.

2 METHODOLOGY

Themethodology used in writing this article is a reference method , namely the development of articles using certain references that correspond to the objects studied in the article. The reference or reference can come from print or electronic media. In addition, referrals can also come from the research results of certain institutions. (Johan Wahyudi. 2022).

3 FINDINGS AND DISCUSSION

If it is true that our legal education is to meet the needs of the market, then the market that needs the most legal experts is those related to the judiciary, being judges, prosecutors or advocates and being part of the law in companies or being government employees. (Maqdir Ismail)

Judging from this, it is indeed very necessary to provide facilities so that graduates are ready to use in the world of work.

However, the problem is that the curriculum of the UT law study program has not explicitly accommodated the practical needs needed by Law graduates to be able to be competent in the market world. The curriculum offered still prioritizes the needs of academic theory to be mastered by graduates. For details, you can see the following curriculum table:

Tabel 1. Katalog Kurikulum Prodi Hukum Universitas Terbuka

No.	Mata Kuliah Kode	Mata Kuliah Nama	sks	Waktu Ujian	Bahan Ajar Kode	Bahan Ajar Nama	1	2	3	4	5	6	7	8	Ket
					MKWU4107	Pendidikan Agama Khonghucu 2022.1									
4	ISIP4130	Pengantar Ilmu Hukum/PTHI	4	II.1	ISIP4130	Pengantar Ilmu Hukum/PTHI (Edisi 3)	4								T
5	MKWI4201	Bahasa Inggris	3	II.2	MKDU4107 / MKWI4201	Bahasa Inggris 1 (Edisi 3) 2021.2 / Bahasa Inggris 2022.1	3								T
6	MKWU4108	Bahasa Indonesia	3	II.3	MKWU4108	Bahasa Indonesia 2021.2 (Edisi 1) 2022.1 (Edisi 2)	3								
7	HKUM4205	Kriminologi	3	I.1	SOSI4302	Teori Kriminologi (Edisi 2)		3							T
8	HKUM4209	Ilmu Negara	2	II.1	HKUM4209	Ilmu Negara		2							
9	ISIP4131	Sistem Hukum Indonesia	3	II.2	ISIP4131	Sistem Hukum Indonesia (Edisi 2)		3							
10	HKUM4403	Ilmu Perundang-Undangan	3	II.3	HKUM4403	Ilmu Perundang-Undangan 2021.2 (Edisi 1) 2022.1 (Edisi 2)		3							
11	MKDU4111	Pendidikan Kewarganegaraan	3	II.4	MKDU4111	Pendidikan Kewarganegaraan (Edisi 2)		3							T
12	ADPU4332	Hukum Administrasi Negara	3	II.5	ADPU4332	Hukum Administrasi Negara (Edisi 2)		3							T
13	HKUM4407	Hukum Pajak dan Acara Perpajakan	3	I.2	HKUM4407	Hukum Pajak dan Acara Perpajakan			3						T
14	HKUM4210	Hukum Lingkungan	2	I.3	HKUM4210	Hukum Lingkungan			2						
15	HKUM4201	Hukum Tata Negara	3	II.1	HKUM4201	Hukum Tata Negara (Edisi 2)			3						
16	HKUM4312	Hukum Perlindungan Konsumen	3	II.2	HKUM4312	Hukum Perlindungan Konsumen 2021.2 (Edisi 1) 2022.1 (Edisi 2)			3						T

No.	Kode	Nama	sks	Waktu Ujian	Kode	Nama	1	2	3	4	5	6	7	8	Ket
17	HKUM4301	Hukum Telematika	3	II.3	HKUM4301	Hukum Telematika (Edisi 2)			3						T
18	ADBI4336	Hukum Ketenagakerjaan	3	II.4	ADBI4336	Hukum Ketenagakerjaan (Edisi 2)			3						
19	HKUM4103	Filsafat Hukum dan Etika Profesi	3	I.1	HKUM4103	Filsafat Hukum dan Etika Profesi				3					
20	HKUM4206	Hukum Internasional	4	I.2	HKUM4206	Hukum Internasional				4					
21	HKUM4202	Hukum Perdata	4	I.4	HKUM4202	Hukum Perdata				4					T
22	HKUM4203	Hukum Pidana	4	I.5	HKUM4203	Hukum Pidana				4					T
23	HKUM4306	Metode Penelitian Hukum	3	II.2	HKUM4306	Metode Penelitian Hukum				3					T
24	HKUM4102	Hukum dan Masyarakat	3	II.4	SOSI4416	Sosiologi Hukum (Edisi 3)				3					
25	HKUM4401	Interpretasi dan Penalaran Hukum	3	I.1	HKUM4401	Interpretasi dan Penalaran Hukum					3				T
26	HKUM4402	Hukum Perjanjian	3	I.2	HKUM4402	Hukum Perjanjian					3				T
27	HKUM4101	Bahasa dan Terminologi Hukum	3	I.3	HKUM4101	Bahasa dan Terminologi Hukum					3				
28	HKUM4304	Hukum Perdata International	3	I.4	HKUM4304	Hukum Perdata Internasional (Edisi 2)					3				
29	HKUM4208	Hukum dan Hak Asasi Manusia	3	II.3	HKUM4208	Hukum dan Hak Asasi Manusia					3				
30	HKUM4207	Hukum Dagang dan Kepailitan	4	II.5	HKUM4207	Hukum Dagang dan Kepailitan					4				T
31	HKUM4405	Hukum Acara Perdata	4	I.1	HKUM4405	Hukum Acara Perdata 2021.2 (Edisi 1) 2022.1 (Edisi 2)						4			T
32	HKUM4406	Hukum Acara Pidana	4	I.4	HKUM4406	Hukum Acara Pidana						4			T
33	HKUM4204	Hukum Adat	3	I.5	HKUM4204	Hukum Adat 2021.2 (Edisi 1) 2022.1 (Edisi 2)						3			

No.	Kode	Nama	sks	Waktu Ujian	Kode	Nama	1	2	3	4	5	6	7	8	Ket
34	HKUM4409	Arbitrase, Mediasi dan Negosiasi	3	II.3	HKUM4409	Arbitrase, Mediasi dan Negosiasi						3			T
35	HKUM4410	Praktik Pengalaman Beracara	4	9.9	HKUM4410	Panduan Praktik Pengalaman Beracara						4			Pr
36	HKUM4404	Teori Perundang-Undangan	3	I.2	HKUM4404	Teori Perundang-Undangan							3		T
37	HKUM4302	Hak Kekayaan Intelektual	3	I.3	HKUM4302	Hak Kekayaan Intelektual 2021.2 (Edisi 1) 2022.1 (Edisi 2)							3		T
38	HKUM4303	Hukum Perusahaan	3	I.4	HKUM4303	Hukum Perusahaan							3		
39	HKUM4408	Hukum Islam dan Acara Peradilan Agama	3	II.2	HKUM4408	Hukum Islam dan Acara Peradilan Agama							3		T
40	HKUM4305	Hukum Pidana Internasional	3	II.5	HKUM4305	Hukum Pidana Internasional							3		
41	HKUM4309	Tindak Pidana Khusus	3	I.1	HKUM4309	Tindak Pidana Khusus								3	T
42	HKUM4311	Hukum Pidana Ekonomi	3	II.1	HKUM4311	Hukum Pidana Ekonomi								3	
43	HKUM4308	Hukum Perbankan dan Tindak Pidana Pencucian Uang	3	II.2	HKUM4308	Hukum Perbankan dan Tindak Pidana Pencucian Uang								3	T
44	HKUM4307	Hukum Persaingan Usaha	3	II.4	HKUM4307	Hukum Persaingan Usaha								3	T
45	HKUM4310	Tindak Pidana Korupsi	3	II.5	HKUM4310	Tindak Pidana Korupsi								3	
TAP 4 sks															
1	HKUM4500	Tugas Akhir Program (TAP)**	4	0.2	ISIP4500	Panduan TAP FHISIP							4		E
2	HKUM4560	Karya Ilmiah	0	-	-	-							0		Bw
	Total sks		145				19	17	17	21	19	18	19	15	

Keterangan :

T : Tutorial kelas

Pr : Praktik/Praktikum Bw: Bimbingan Wajib

Sumber : Katalog Kurikulum UT

From the data presented in the table above, it shows that of the 45 courses offered, there is only 1 course that is based on practical experience, be it direct or practical experience through online media. It turns out that not only the Open University, other universities that also have law faculties have the same obstacles in terms of the composition of the Courses offered to students. The composition of the courses offered to students so far has only strengthened students' intellectual capabilities but is still lacking in terms of practice, even though the competencies needed by the job market are practical abilities compared to academic theoretical abilities.

Referencing the problem, we offer a certified course-based law practice program. This program can be attended by UT / Non UT students, the general public or non-legal professionals who want to add skills in the field of law practice.

This course program is known as moocs (masive open online courses). Massive Open Online Courses (MOOCs) are one of the fruits of the 21st Century higher education revolution. MOOCs have developed and been used in many countries, specificallyya Europe and America. However, it has not been widely used in Asia, especially in Indonesia. MOOCs come by providing new learning models and opportunities for prospective students in faculties and universities to be able to move actively in learning (Jazimatul Husna. 2019). The moocs program is designed not only based on elearning but also combined with VR (Virtual reality) to strengthen the atmosphere of practice in the moocs classroom created. With the combination of moocs and VR gives a new sensation in the learning process, real practice as if in an actual practical space.

In addition to the development of technology-based course programs, also in the implementation stage involves the competent authority to issue professional certificates. Moocs participants in addition to getting a certificate as a sign of graduation from a provider in this case the Open University, are also entitled to a professional certificate from a professional organization such as PERADI for advocate professional organizations, ASAHI as one of the providers of legal auditor professional training, PMN as one of the legal mediator professional training providers in Indonesia.

With the implementation of moocs activities of the legal profession, this is a step to increase the number of legal practitioners. The birth of competent legal practitioners in the field of law in order to answer the challenges of today's market needs.

4   CONCLUSION

With the implementation of VR-based moocs (virtual reality) in collaboration with institutions or authorities authorized to organize programs and issue legal profession certificates. Opening up opportunities for the birth of legal practitioners who are reliable and able to contribute in terms of servicing the increasingly high legal needs of the community.

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THE USE OF CONSTRUCTIVISM-BASED ONLINE LEARNING TO ENHANCE STUDENTS' LEARNING ACHIEVEMENT

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Abstract

The aim of this study is to elaborate the use of constructivism based on online learning program. The learners' interaction with learning resources intensively is believed as one of the factors that will facilitate them to attain the course learning goals. There are various online learning resources that can be used by the students to construct learned course substance. Universitas Terbuka (UT), a state higher education that implements open and distant learning system, has to find a better learning approach that can be used to increase students level of interaction with online learning resources. One of the learning approaches that has potential to enhance students learning interaction is constructivism learning theory. Constructivism is defined as a theory that says learners construct knowledge rather than just passively take in information. Learners experience the world and reflect upon those experiences. They build their own representations and incorporate new information into their pre- existing schemas. The use of constructivism learning has the following consequences: 1) Students learn best when engaged in learning experiences rather passively receiving information, 2) Learning is inherently a social process because it is embedded within a social context as students and teachers work together to build knowledge, 3) Because knowledge cannot be directly imparted to students, the goal of teaching is to provide experiences that facilitate the construction of knowledge. This present study involve 35 respondents and used the one group pre-test and post-test experimental design. The result of the study indicated that there was significant difference between pre and post-test scores of the respondents. The use of constructictivism learning theory improved students learning achievement in online learning.

Key Words: Constructivism learning theory, online learning, learning achievement.

1   INTRODUCTION

The advancement of computer and network technology provides a significant impact on the way people learn knowledge and skills. Today the process of learning is very different from the previous time. With the abundance of knowledge and information available on the web, people can easily get the required knowledge and information to achieve the predetermined learning competencies. The use of computer and network technology triggers some new modes of learning. The online and blended learning modes were used to deliver learning substances that can be learned by the students.

Universitas Terbuka (UT), a higher education that employs the open and distant learning mode, used an online learning system to support its student's learning process. UT conducts online learning, which is called online tutorials for all of the offered courses. The ultimate aim of this online tutorial is to facilitate the student's learning process to study the course content..

The students have to enroll in the online tutorial to interact actively with the tutor, the college students, and the course content. It is believed that the active learning interaction will enhance the

students' comprehend the course content that is learned. Two ways of communication or learning interaction between the tutor and students, among the students, and between the students and the course content will provide a better chance for the students to internalize the course substances they learned.

Online tutorial mode which is used as the students learning support by UT provides better possibilities for the students to comprehend the substances of the course. The present article will elaborate on the use of constructivism learning theory as a base for conducting the online tutorial program of the Universitas Terbuka.

The study Purposes

The purpose of the study is to find the alternative approach or learning theory that can facilitate the open and distance learning students to attain the objective of the Research Methodology course – the students must be able to write a research proposal that is based on their study and research interest.

Research questions

This research and development study proposes the following research questions such as:

1   How do the students gain knowledge and skills to be learned through online learning?

2   Is the constructivism approach or learning theory integrated into online learning able to facilitate the students to attain the course learning objectives effectively?

2   METHODOLOGY

Thirty five respondents were engaged in quasi experimental research design. The one group pre and post-test design was implemented in this present study. The online quasi learning constructive-based program was uses as a treatment of their experimental research design.

Pre and post session were conducted to get information regarding the gain score result or the impact of the constructivism based-online learning. T test analysis was used to get information regarding the significant change of the program.

2.1   Literature Review

2.1.1   Online Learning.

Dwyer, Barbieri, and Doerr, (1995) noted that online and web-based learning provides significant new functionality in conveying knowledge and information to the student. In addition, online and web-based learning provides students with forums for exchanging information and knowledge. The

web is revolutionizing some areas of study through increased possibilities for learning and alternative formats for gaining required knowledge and information.

The term online learning is used to describe the distance or correspondence courses that deliver the content through the Internet. Online learning program covers a wide range of subjects, audiences, and prices. This educational model is growing in popularity as a cost- effective method of providing access to education for a large population.

Universitas Terbuka provides wide access for the students to learn the course substances through online learning. All of the Universitas Terbuka courses are offered through the online learning program. Online learning is not the main learning activity for students. It is aimed as a learning support system that can facilitate the student's learning process to attain the course learning objectives.

By participating in an online learning program the student will interact with the online learning program offers a chance for the students to build and explore the content of the offered course. The learning interactions that occur in the online program enable the student to build and construct their knowledge and skills to achieve the predetermined competencies of the courses.

Aspilera (2010) noted the nine potential benefits of the online learning program as (1) schedule flexibility; (2) ease of accessibility; (3) range of options; (4) students control of study time; (5) chance for learning interaction; (6) online communications; (7) time to absorb material; (8) money saving option; (9) no more expensive textbooks. (https://www.worldwidelearn.com/education-articles/benefits-of-online learning.htm).

In addition, Heap (2017) stated the following learning advantages for the students who participate in an online learning environment:

3   Studying online gives the students more flexibility in learning;

4   The students experience a flexible schedule and environment;

5   The students pay the financial cost of studying;

6   The students implement self-discipline and responsibility;

7   The students can focus on the learned subject and substance.

Besides providing some advantages for the students participating in online learning also provides some of the following disadvantages. Hutt (2017) noted some disadvantages of online learning such as:

1 Online education requires immense self-discipline;

2 Lack of direct interaction with the instructor;

3 Lack of company from other students;

4 The workload is bigger than in traditional education;

5 The online learning institution might not be accredited.

To implement the online learning program effectively, the Universitas Terbuka must design and develop a program that uses the appropriate theory and approach that enables the students to construct knowledge and skills.

2.2   Constructivism approach

Constructivism is an approach to teaching and learning which is based on the view that cognition or learning is considered the result of "mental construction." In this matter, the students learn by integrating new knowledge and information with the knowledge and information they already know. Constructivists believe that learning is caused by the context in which the knowledge and skills are taught as well as by students' beliefs and attitudes.

Constructivism learning theory explains how people might acquire knowledge and learn. This theory, therefore, has direct application to education. The constructivism learning theory suggests that humans construct knowledge and meaning from their experiences. It is not a specific pedagogy. Piaget's noted that Constructivist learning has had a wide-ranging impact on learning and teaching activities. It is considered an education reform movement.

Constructivism is a theory that is based on observation and scientific study, about how people learn. Bereiter (1994) says that people construct their understanding and knowledge of the world, through experiencing things and reflecting on those experiences. When we encounter something new, we have to reconcile it with our previous ideas and experience, maybe changing what we believe, or maybe discarding the new information as irrelevant. In any case, we are active creators of our knowledge.

To create new knowledge and skill, the learner must ask questions, explore, and assess what they know. In the classroom, the constructivist view of learning can point toward several different teaching practices. In the most general sense, it usually means encouraging students to use active techniques (experiments, real-world problem solving) to create more knowledge and then to reflect

on and talk about what they are doing and how their understanding is changing. The teacher and instructor have to make sure he/she understands the students' pre- existing conceptions and guides the activity to address them and then build on them (Oliver, 2000).

Constructivism as a paradigm or worldview proposes that learning is an active, and constructive process. The learner is an information constructor. They actively construct or create their subjective representations of objective reality. The new information is linked to the prior knowledge to build new comprehension of the concepts or knowledge.

3   FINDINGS AND DISCUSSION

The use of the constructivism learning approach in online learning of the research methodology course encourages the students to elaborate on the course content. Besides, the constructivism-based online learning program also enhances the knowledge and students' learning achievement in the research methodology course.

The characteristics of the constructivism learning theory such as active learning, scaffolding, too-way-learning interaction, and spiral curriculum, were implemented to produce a constructivism-based online tutorial program that aimed not only to increase the student's learning achievement but also their learning motivation.

The formative evaluation of the program which employed the three evaluation stages of the program indicated the positive results of the study. The result of the one-to-one evaluation step of the program showed that the students as the respondents enjoy online learning with the constructivism theory-based used as the instructional strategy.

The small group evaluation with the eight students or respondents indicated that the use of the constructivism approach in online tutorials provides the students to actively interact with tutors, colleagues, and course materials.

At the field try-out session, the revised program which implemented the constructivism approach showed a significant impact on students' learning achievement in the research methodology course.

The one group pre-and post test design was used in the program field try out a fre -test was conducted before the respondents received treatment-learning with constructivism-based oline learning. I was found that the program of constructivism online learning has a significant impact on respondents learning achievement. The students learned better with constructivism based online learning The result of the study can be shown in Table 1.

Table 1. The formative evaluation results of the study.

Formative evaluation step	Data gathering method	Evaluation results
One-to-one evaluation stage	Focus group discussion with three students who use the constructivism-based online learning program	The students as the respondents enjoy learning with the program of constructivism theory-based online learning.
Small group evaluation stage	Program try out with 8 respondents who use the constructivism-based online learning program	The use of the constructivism-based online learning program enhances students' learning motivation. They enjoy learning interactively with tutors, colleagues, and course content in both synchronous and asynchronous modes.
Field try out	Program try out with 32 respondents who use the constructivism-based online learning program	The constructivism-based online learning program significantly gave a significant impact on the student's learning achievement. The students were able to achieve the predetermined learning objectives.

4 CONCLUSION

Implementing the constructivism learning approach to an online tutorial program enhances the student's learning achievement in the research methodology course. The use of the constructivism approach in online learning enables distant learners to elaborate on course content actively. In addition, by actively participating in the constructivism online learning program the students will do interactive learning with the tutor, colleagues, and the course substances. The learning interaction between the students and tutor and among the students is done both synchronously and asynchronously.

The constructivism approach used in online tutorials provides some benefits for the student in studying the research methodology course. It gives the students more flexibility in learning, the students experience the flexible schedule and environment, the students implement self-discipline and responsibility in learning, and it can focus the students on the learned subject and substance.

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THE ROLE OF UNIVERSITAS TERBUKA-INDONESIA IN IMPROVING HIGHER EDUCATION SERVICES IN INDONESIA

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Abstract

The era of globalization has had a significant impact on various aspects of life, including the demands of higher education. The implementation of quality higher education and ease of accessibility in obtaining higher education has always been a concern for observers and higher education authorities. Open and distance education is the main choice to improve the accessibility and quality of education for the community. Universitas Terbuka-Indonesia (UT) has an important role in improving the accessibility and quality of education in Indonesia because of its cost effectiveness and flexibility in the implementation of learning. This article presents UT's experiences and lessons in an effort to expand the quantity and improve the quality of higher education in Indonesia.

Keywords: Open and distance education, accessibility of education, improving the quality of higher education.

1   INTRODUCTION

Access to education as a human right and an important tool for inclusive and sustainable economic recovery (Kompas, 19 November 2022), was emphasized in the declaration of heads of state at the G20 Summit (Summit) in Bali in the field of education on 16 November 2022. There is a shared solidarity commitment, in particular to helping developing countries rebuild more resilient, technological, accessible and effective education systems. The statement made in the Bali declaration is important considering that the world, including Indonesia as a developing country, has experienced impacts in almost all areas of life, including education.

The challenges and problems faced by various countries, especially in developing countries, especially Indonesia, both during the Covid-19 pandemic and after the Covid-19 pandemic became increasingly severe. However, the need for relevant and sustainable higher education services to respond to future challenges is a necessity that must be responded to appropriately and quickly (Belawati and Nizam, 2020). The crisis has pushed people to make changes to their daily lives and try to adapt to new things caused by these changes. The impetus for this change was also felt in the midst of the coronavirus disease (Covid-19) pandemic crisis which began to be felt in Indonesia in March 2020. Every sector was affected and required to adapt, including higher education (Dwiartama & Ahmad, 2020).

One of the challenges during the Covid-19 pandemic related to improving the quality of education that needed to be addressed was the increasing use of technology (Indrawati, 2020). Access

difficulties in online learning are one of the problems faced by students. This condition has an impact on universities to provide services in the learning process for students. Various findings show that many students in remote areas lack connectivity. They also have limited access to the equipment needed to use educational technology tools even though the use of technology by students is actually an easy thing because they are a generation that is sophisticated in the use of devices (technology savvy) (Sari, 2020). However, the main challenges in the cyber technology sector are dependence on information technology and securing data from economic and social power attacks through cyberspace. In the future, 100 billion devices will be connected to the internet from various aspects of human life, thus changing the way humans work and live. The presence of a global network of smart machines will also dominate people's lives (Santoso, 2020).

With the spread of access to education and the conditions in Indonesia's territory that vary from one region to another, this requires more optimal attention in the use of technology to support the delivery of quality education. The importance of using technology was expressed by Blaschke (2012) who said that We also have an opportunity to support students in using technology to develop specific skills and networks that can later be transferred to working environments for lifelong learning. Education in its development cannot be separated from the influence of the development of globalization, in which science and technology are developing rapidly. The development of this technology has an impact on the learning process including the erosion of local culture and the weakening of control of education by the state and the emergence of fast-paced traditions (Setyawati, et al., 2021). The importance of quality in the implementation of higher education for educational stakeholders, both the community and institutions, has encouraged the government to establish a national accreditation and quality assurance agency. Public and institutional stakeholders seeking accountability in higher education have encouraged governments to establish national quality assurance and accreditation agencies (Belawati & Amin, 2007). The main obstacle faced by Indonesian education, especially in the outermost and most isolated areas, is how to ensure that education in Indonesia is evenly distributed and can be enjoyed by all parties (Syamsuar, 2018).

From the discussion that has been described previously, this article will then examine how the role of Universitas Terbuka-Indonesia in improving higher education services in Indonesia.

2 METHODOLOGY

The research method used is qualitative research with a type of literacy study. Literacy studies relate to methods of collecting library data, reading, taking notes, and managing research materials by collecting several previous studies to analyze the role of Universitas Terbuka- Indonesia in improving higher education services in Indonesia. Library sources in the form of documents, books and journal articles that are relevant to the topic of this study. Analysis is carried out on the data obtained and then poured into chapters and sub-chapters so that they answer the topic of the problem.

3 FINDINGS AND DISCUSSION

With UT's work since 1984, the role of the Open University is very important in improving higher education services in Indonesia. The rapid progress of science and technology in the field of education, both concerning information, communication and instructional fields, has made it possible to provide new ways of providing educational services in addition to the conventional face-to-face methods that have been known so far. With the help of technology that has advanced rapidly, the way of delivering education and the learning process has improved so as to allow increased flexibility and accessibility for users or students. The Open University as an open and distance education institution (PTJJ), which is currently developing very rapidly, can be an alternative learning process in meeting the needs of stakeholders in terms of the availability of education, especially at the higher education level. The Open University has a very important role in optimizing the field of higher education both in terms of quantity and quality aspects, including aspects of Higher Education Services, increasing the outreach of higher education, and Quality assurance (QA).

3.1 The Role of Universitas Terbuka-Indonesia

3.1.1 *Higher Education Services*

Various regulations in the field of higher education in Indonesia have been made in the framework of increasing the number of students as well as equitable access to higher education, as well as improving the quality of higher education to produce graduates who can play a role and contribute to improving the welfare of society and the national economy. Ninety (90) percent of future jobs will require digital skills, spread across system architecture or digital technology expertise, technicians, and operators. (Santoso, 2020). To be able to produce productive Human Resources with adequate digital literacy skills, a learning system that is adaptive to advances in technology

and a learning culture that promotes flexibility of learning methods for students and the community is needed.

The system and implementation of higher education in Indonesia refers to the mandate of the 1945 Constitution to educate the nation's life, which is then technically spelled out in various laws and regulations starting from Law no. 20 of 2003 concerning the National Education System, Law no. 12 of 2012 concerning Higher Education, PP No.4 of 2014 concerning Implementation of Higher Education and Management of Higher Education, and Permendikbud No. 3 of 2020 concerning National Higher Education Standards. The essence of the goals of higher education is increasing and equalizing access to higher education, as well as improving the quality of higher education to produce graduates who can contribute to improving the welfare of society and the national economy (Belawati & Nizam, 2020).

Higher education as a formal educational institution has a very important role in producing quality human resources who are ready to face the challenges of the world of work. Intense competition in the world of work has made people more careful in choosing a university and they are sure that the university chosen will meet their expectations. The demand for the quality of higher education services requires higher education institutions to always try to improve the quality of higher education. The implementation of good higher education services for students will be able to describe the quality of the tertiary institution. Quality of service in the administration of higher education can be considered as one of the ways to achieve higher education excellence because the success of a tertiary institution is largely determined by the quality of the service provided, where quality service can be seen from customer satisfaction, in this case student satisfaction (Agustika, et al., 2017).

Higher education is an industry that interacts directly between service providers and service users. Academic services provided by tertiary institutions are educational services that are directly related to students from tertiary institutions. Academic services are said to be of quality if they are in accordance with the needs of their customers. The quality of academic services is the value given by the customer to what extent the academic services are provided. Customers, in this case students, will say that the academic services provided by higher education institutions are of high quality if they meet their specifications. (Amin, 2017).

3.1.2 *Increasing the Outreach of Higher Education*

The Distance Higher Education system is able to serve a larger number of students, is more flexible, and also cheaper, who previously could not participate in the learning process at face-to-face

educational institutions. Thus developing countries whose education sector is still below developed countries can catch up through these distance universities. The development of quality human resources in developing countries can be carried out through the Distance Higher Education system (Nugraheni, 2009).

Indonesia's vast territory of 5,193,250 km² (land area 1,919,440 km² and ocean area 3,273,810 km²) with Indonesia's geographical conditions being separated by sea, area size and population distribution is material for consideration for the government that increasing access to higher education This height must be done remotely (distance education). One of the goals of establishing Universitas Terbuka (UT) is to increase the reach or improve community access to tertiary institutions (Soleiman, 2010). The vision and mission of UT provide opportunities for self-development through education, provide on-site learning opportunities without having to come to a particular school and develop professional academic education programs. The UT implements an open and distance learning system that has proven effective in increasing the reach and equity of quality higher education opportunities for all Indonesian citizens, including those who live in very remote areas (Afnidar, et al., 2014).

One of UT's development efforts involves increasing the reach of educational services without being limited by place and time. In addition to regional coverage, the main focus of development in this field is expanding service access points, improving service quality, improving partnership networks, and enhancing UT's image in society. Access to UT services has been extended to the sub-district level, including through collaboration with various stakeholders. Other collaborations are carried out by expanding UT's partnership network with various government and private agencies, as well as with other universities in Indonesia and international institutions in Asia and the World, with the main objective of increasing student enrollment rates (Kusmawan, 2011).

UT which implements the Distance Higher Education system was established by the Government of Indonesia to carry out the mission of expanding coverage or increasing opportunities for access to higher education. It is hoped that the presence of an online learning model can increase community involvement in a larger number. Through online learning as its main mode, the Distance Higher Education can serve a larger and more equitable number of students (Darojat, 2019). The distance education system, is an innovation of the 21st century based on ICT. The distance education system is an education system that has broad reach across space, time, and socio-economics. The PJJ system opens access to education for anyone, anywhere, anytime, learn with anything, and learn in any way. With these characteristics, the distance education system is often

considered as a solution to various educational problems, especially those related to equity and democratization of education, as well as expanding access to quality education for all levels of society across time and space (Warsihna, 2013).

3.1.3   *Quality assurance (QA).*

Quality assurance in the implementation of distance higher education is an important aspect for UT in implementing quality education services. The application of QA as an innovative management strategy is an effective approach to achieve excellence and quality of higher education services. (Belawati & Amin, 2007). The determining factors in efforts to improve the quality of tertiary institutions in facing the ASEAN Community include: vision and mission; rule; governance guidelines; student bodies; human Resources; infrastructure; university tri dharma; international cooperation; visiting lectures; and Asian issues.

In addition to its broad reach, the quality aspect of education is also very important. Long Distance Open Education Institutions must also fulfill their duties in delivering education to students with good quality, through planning a good learning process, which includes products, delivery methods, processes, and services to students, these educational services can meet the needs of their customers. Quality has become an important consideration for stakeholders in selecting educational institutions. Thus the PTJJ institution must respond appropriately to the changing needs of the community, among others by implementing a quality assurance system. Quality assurance is a process of continuous improvement that is systematic and comprehensive in meeting stakeholder expectations (Nugraheni, 2009). If related to quality regionally, the determining factors in efforts to improve the quality of tertiary institutions in facing the ASEAN Community include: vision and mission; rule; governance guidelines; student bodies; human Resources; infrastructure; university tri dharma; international cooperation; visiting lectures; and Asean issues (Nulhaqim, et al., 2016).

Quality assurance (QA) aspect is very important in improving organizational efficiency and effectiveness as well as public accountability. Organizations must be ready and able to adapt, change, and innovate in implementing QA in a clear and transparent manner, so as to be able to meet customer expectations. The application of a QA system and clear procedures and well-defined activities means that UT educational institutions can meet high standards of quality standards. Two important aspects of QA are the importance of implementing internal and external audits which must be carried out so that institutions can track performance, overcome weaknesses in achieving organizational success. UT must be fully responsible to all stakeholders whether they are government officials, taxpayers, employees or students. UT as an ODL institution must be open to

change and innovation, and ready to adapt and engage in partnerships and global competition (Belawati & Amin, 2007). The existence of information technology must be able to bridge access to learning while maintaining the quality of higher education. Utilization of Information and Communication Technology for learning in Higher Education will further encourage the progress of learning in Indonesia (Santoso, 2020).

In carrying out quality assurance, various efforts have been made by UT regarding academic aspects and educational services. High-tech learning models and quality assurance systems can be implemented based on ICT. The quality assurance system can be supported by human resources who also have high skills in the ICT field. The quality circle approach can be applied. It is important to employ the quality circle approach in developing DE courses and learning materials. The quality circle consists of the course writer who is a subject matter expert, a subject matter specialist who is another subject matter expert who peer reviews the soundness of the course and its contents, an instructional designer who ensures the presentation of material is effective, a a media specialist who recommends appropriate delivery mediums, and a language editor who performs copy and substantive editing. In sum, whatever the technology used to deliver instructional content, the 'quality circle approach' to course development should be standard practice (Pena-Bandalaria, 2007).

4 CONCLUSION

Like other developing countries, Indonesia still faces challenges in implementing higher education. Universitas Terbuka-Indonesia (UT) as an institution that organizes a distance education system has a duty to improve higher education services both in terms of quantity and quality. UT can play a role in improving higher education services in Indonesia in terms of Higher Education Services, increasing the outreach of higher education, and Quality assurance (QA). The use of technology is very important in helping improve higher education services in Indonesia considering that Indonesia's territory is very large.

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EVALUATION OF ONLINE TUTORIAL LEARNING HUMAN RESOURCE MANAGEMENT COURSE

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Abstract

This study aims to evaluate the tutorial online learning program in the Human Resource Management course at the Universitas Terbuka. Research respondents or sources of information include the Head of Business Administration Study Program, Head of Management Study Program, External Tutors for Human Resource Management Courses, Lecturers who work at the head office as internal Tutors and students of Universitas Terbuka. This study uses a qualitative approach through the CIPP evaluation model (Context, Input, Process and Product). The data collected using interview techniques, observation and document reviews. The results of this study is the recommendations to the improvement of the Human Resource Management courses Tutorial Online Program and also feedback for Policy improvement of Online tutorial Programmes for Universitas Terbuka.

Keywoords : Evaluation, Human Resource Management course, online tutorial.

1 INTRODUCTION

As a leader in online learning, Universitas Terbuka (UT) has disrupted universities in Indonesia, which generally teach face-to-face. UT has innovated with learning programs through online tutorials or what is called the UT e-learning system. One of the online tutorial lessons at UT at the Faculty of Economics in the management study program and the FHISIP Business Administration Study Program is the human resource management / HRM course. Some of the HRM materials taught in UT's online tutorial courses include:

(1) Basic Concepts of Human Resource Management (MSDM); (2) Global Human Capital and Competitive Advantage; (3) Legal Aspects in Human Resource Management;

(4) Job Analysis and Design; (5) Planning for Appointment and Termination of Employment (6) Compensation and Rewards; (7) Performance Assessment and Career Development; (8) Training and Development. The online tutorial learning process at the Universitas Terbuka is carried out in eight meetings. The meeting was divided into several forums, namely introductions, enrichment materials, and assignment forums, namely discussions, assignments and quizzes. The introductory forum is held at the beginning of the meeting as a forum for participants to get to know one another. Then at each meeting there are learning materials in various forms such as word files, pdf or

video. Furthermore, assignment forums include discussions and quizzes which are carried out at each meeting while assignments are carried out at meetings 3, 5 and 7. To see whether the materials taught in online learning will be able to achieve the learning objectives, an evaluation of online tutorial learning at the Universitas Terbuka is needed. in this case especially in human resource management courses. In the process of ongoing Online Tutorial activities, in general there are still some problems, such as less than optimal planning of learning programs, or implementation that is not fully consistent; the tutors' teaching preparation activities were not optimal; not yet optimal function of supervision, monitoring and evaluation as a component of quality control; so that the learning program has never been evaluated or the evaluation results per semester have not been socialized in a transparent manner. According to (Kirkpatrick & Kirpatrick, 2011) several requirements must be met for the program to run effectively, namely: (a) the program is based on the needs or problems faced by the organization; (b) the program is based on the learning objectives or achievements by the participants; (c) the implementation schedule is well arranged; (d) the background of the participants is in accordance with the competency of the program to be carried out; (e) tutors have good qualifications and are competent in the field they are conducting; (f) the program is implemented in a comfortable place equipped with adequate supporting facilities; (g) the program uses methods and media that are relevant to the competence being carried out; the program is capable of facilitating participants to have the necessary competencies; the program must be able to satisfy program participants; and (j) the program needs to be evaluated on an ongoing basis. In order to obtain learning outcomes that are in accordance with the stated objectives, program objectives must be formulated based on needs, problems, assets, opportunities, paying attention to legal aspects, then a plan is made, implemented, and the results achieved again is used as input material for the next program. According to (Dessler, 2011) in the systematics of the learning process consists of 4 stages, namely: need analysis step, instructional step, implement the program step, and evaluation step. An almost the same opinion was put forward by Anthony, Kacmar and Perrewe (2010), that the learning process is divided into three stages, namely the assessment stage, the training stage, and the evaluation stage. Based on the opinions mentioned above, both of them begin with needs activities and end with an evaluation stage. Evaluation is useful as feedback from the entire process carried out evaluation, based on the definition put forward by (Bennett, 2003). It is generally assumed that evaluation is the application of research methods to elucidate a problem of action. looked at in this way, evaluation is not strikingly different from research. Evaluation is an extension of research, sharing its methods and methodology and demanding similar skills and qualities from its practitioners. It is generally assumed that evaluation is the application of research methods to explain the action of a problem. It is seen in this way that

evaluation is no different from research. Evaluation is an extension of research, sharing its methods and methodologies and demanding similar skills and qualities from practitioners. Furthermore, what is meant by program evaluation is related to the limitations of the program starting from the sequence of steps, procedures or actions that must be carried out systematically planning within a certain period of time to achieve a desired goal. In line with some of the meanings mentioned above, wirawan, stated that a program is an activity or activities designed to carry out policies and implemented for an unlimited time. The definition of program evaluation according to (stufflebeam, 2000) suggests the following: "program evaluation is the systematic assessment of a program or policy using absolute (merit-based) or relative (worth-based) criteria". The definition of program evaluation explains that program evaluation is a systematic process of assessing a program or policy based on absolute (merit-based) or relative (worth-based) criteria. In program evaluation, the CIPP evaluation model is known. According to (widoyoko, 2012) the CIPP evaluation model in implementation is more widely used by evaluators, this is because this evaluation model is more comprehensive when compared to other evaluation models. The concept of evaluating the CIPP model (Context, Input, Process Product) was first offered by (stufflebeam, 2000) as a result of its efforts to evaluate ESEA-9 (the elementary and secondary education act). CIPP stands for, context evaluation: evaluation of context; input evaluation: evaluation of input; process evaluation: evaluation of the process; product evaluation: evaluation of the results. The four abbreviations for CIPP are the components of the evaluation activities in this study.

2   METHODOLOGY

The approach used in this study is an evaluative qualitative approach with the CIPP evaluation model, namely a model that evaluates programs based on context, input, process and product or Context, Input, Process, and Product. This evaluation research belongs to the summative evaluative form, carried out externally, retrospectively, with the aim of evaluating an online tutorial learning program for the Human Resource Management course organized by the Universitas Terbuka. Evaluation research is useful for program managers where the results serve as a basis or reference in decision making and program accountability. The CIPP model is a process of describing, obtaining, and providing useful information for determining decision alternatives (the process of delineating, obtaining, and providing useful information for judging decision alternatives). With the CIPP evaluation model used in this study, it is hoped that more comprehensive and effective data will be obtained in describing and presenting information that is useful for assessing alternative decisions. The respondents in this study were study program leaders, HRM tutors and

students who were participants in the HRM class tutoring lessons. The data collection method is by conducting interviews, observation, and document review.

3 FINDINGS AND DISCUSSION

In the evaluation stage of the background components of the program, describes a summary of data based on data collection, analysis of conformity with evaluation criteria, assessments and decisions as findings/results of evaluation research on two things, namely the program's vision and mission and program objectives. The data summarized from interviews with the Head of ADBI Study Program, Tuton and students are as follows.

3.1 Program Context Evaluation (Evaluation of Context)

Based on the results of the interviews that the main needs are the basis for the need to organize an online UT tutorial learning program because UT students are expected to be able to study independently. The independent learning method requires students to learn on their own initiative. Thus, the main requirement is the basis for the need to organize the UT online tutorial learning program to save time, because online tutorial learning can be done anywhere and anytime. So far the learning program has been appropriate. The development of HRM teaching materials refers to the HRM BMP (Basic Materials) ADBI4438. The entire BMP UT has gone through various review and editing processes which all refer to the goals, vision and mission of the institution.

The vision and mission of the online tutorial learning program refer to the vision and mission of the organization. Vision: To become a world-class open and long-distance university (PTTJJ), Mission:

1 provide access to world-quality higher education for all levels of society through the implementation of various PTTJJ programs to produce highly competitive graduates;

2 review and develop the PTTJJ system to support the implementation of the distance learning system in Indonesia; and

3 Utilizing and disseminating the results of scientific, institutional, and distance higher education studies to answer the challenges of national development needs.

The statement obtained from the HRM course tuton states that through the online HRM tutorial learning program, graduates will be produced. as well as to support the implementation of distance learning in Indonesia, as well as how UT responds to the challenges of national development needs in educating the nation's children. The main requirement of this online tutorial learning program is to facilitate learning so that it can be reached by anyone without having to come to campus.

Based on a document study conducted by researchers, that the UT online tutorial learning program refers to UT's vision and mission. With this mission, UT is able to provide access to world-class higher education for all levels of society.

The formulation of the vision and mission describes the level of UT's ability to provide distance education, in addition to supporting the implementation of distance education and being able to respond to future challenges.

Based on interviews with informants, related to socialization activities regarding the vision and mission of the program, that the UT online tutorial learning program in the HRMcourse is a derivative of UT's vision and mission, where the online tutorial learning program according to the Head of the Business Administration Study Program has been socialized in writing to printed and virtual catalogs, besides that it can be accessed through the UT website which contains information about UT elearning

Based on data collection between the results of interviews and document studies compared with the existing evaluation criteria, it can be concluded as follows: a) activities to socialize the vision and mission of the program to stakeholders have been carried out at leadership meetings, while special and specific socialization activities for each tutor have not yet been carried out, so it needs to be optimized.

ADBI's tuton risk analysis has been carried out and has been submitted to related parties, but it is quite difficult due to the limited number of human resources and the required human resource competencies need to be improved. There are 44 HRM classes for this semester, many aspects must be considered such as the implementation of the new system, the suitability of the tutor's competencies with the HRM courses, Making a master class that requires carefulness and accuracy so that there are no mistakes.

Based on data collection between the results of interviews and document studies compared with the existing evaluation criteria, it can be concluded as follows: a) the program already has a written strategy formulation, contained in the online tutorial learning procedure (according to the criteria); b) strategy formulation in accordance with program objectives (according to criteria); c) the strategy is translated into three strategies, namely adding teachers, choosing p articipation and cooperation with other parties (according to the criteria);

and d) the formulation of the strategy can be operationalized (according to the criteria). Thus, the assessment is in the good category (100%), namely the formulation of the program strategy has partially complied with the criteria.

The document is SE WR 1 related to Learning Assistance Services, this is also explained in the UT catalog and UT website. Based on the results of an interview with the Head of the Business Administration Study Program, that an understanding of online learning can be found in the printed catalog and can also be accessed on the ut.ac.id web page, also open online services about elearning

Based on data collection between the results of interviews and document studies compared with the existing evaluation criteria, it can be concluded as follows: a) the program already has a written design, namely following the applicable procedures (according to the criteria);

b) the design formulation is in accordance with the target program requirements (according to the criteria); c) the program design has been described clearly and in detail into several stages of activity: needs analysis, staff training, improvement/fulfillment of competency standards, online tutorial learning program (according to criteria); and d) the program design can be operationalized (according to the criteria).

3.2   Program Input Evaluation (Input Evaluation)

Based on the results of interviews that the program has a clear curriculum, it is evaluated annually. Curriculum is a learning plan that needs to be provided as a reference for semester learning, which is compiled based on the following criteria: learning outcomes, materials to be taught and references to be used. Curriculum objectives are the goals to be achieved by each online tutorial learning program, which are related to the various abilities that have been formulated. According to the Head of the Study Program, stated that the UT Online Tutorial Learning Program implemented by the ADBI Study Program has a clear curriculum. According to the tuton who is in charge of the HRM course, in carrying out teaching in the HRMcourse, tuton is in charge of 8 meetings, the implementation of the tuton is 8 times of discussion and three tutorial assignments carried out at meetings 3, 5 and 7.

Based on data collection, it can be concluded as follows: a) the program already has a curriculum (according to the criteria); b) relevant according to program objectives (according to criteria); c) composed completely and in detail (according to the criteria); and d) the curriculum is still valid and can be operationalized (according to the criteria).

Based on interviews that the learning program plan is an elaboration of the curriculum, so it is compiled according to the program design used. Based on interviews with the Head of Study Program, stated that a plan has been made which is carried out every semester. The tutors also conveyed the same thing that the program has a plan for online learning. This was conveyed by the study program to tutors via electronic mail, mail and group info.

Based on data collection between the results of interviews and document studies compared with the existing evaluation criteria, it can be concluded as follows: a) a written teaching program plan already exists (according to the criteria); and b) the learning program plan can be operationalized (according to the criteria).

According to information from the head of study program, the learning program calendar is the timing of online tutorial learning activities in the semester period. Based on the document study, it is known that the Head of Study Program has prepared a tutorial learning calendar which contains important components and is explained in a clear and detailed manner, so that it becomes a guideline/reference in preparing the next program. This is reinforced by the explanation of the tutors that the learning program has a learning plan or calendar. This is conveyed in group info and can be accessed on the UT website.

Based on data collection, it can be concluded as follows: a) the training calendar is written in writing (according to the criteria); b) prepared before learning (according to the criteria); c) explained clearly and in detail (according to the criteria); and d) can be operationalized (according to the criteria).

Based on the document study, in the Procedure for Implementing the Online Tutorial Learning Program, it is stated that in order to achieve the program objectives as expected, one of the strategies is to get the number of participants according to the target. In order to get a good number of students as expected, it is necessary to stipulate provisions/requirements that are set to recruit prospective students.

3.3 Process Evaluation

Evaluation of process components, aims to determine the suitability of program implementation activities with the plans that have been made. In the evaluation stage of program implementation, describes a summary of data based on data collection, analysis of conformity with evaluation criteria, judgments and decisions as findings/results of evaluation of two things, namely the implementation of learning programs and learning activity activities.

For semester 2020.1 there are 38 classes, currently there are 44 classes. For HRM Tutors, old and experienced tutors are selected and master HRM content. Strived to be linear in the field of HRM. Internal tutors are only subject tutors, namely Ms. Irma and Cherly.

In general, the implementation of Tutor Tuton Performance at this time was quite good. The tutor's involvement is going well and the dynamic tutoring material is quite manageable by the HRM Tutor. Warek 1 and Warek 3, are the main stakeholders related to Tuton. Every Tuton season, there is always a new policy. There are also some big problems that usually occur in the current tuton season. When the pandemic occurred, tuton became 100% of the learning outcomes assessment instrument at the Universitas Terbuka. UT always strives for innovation in tuton learning, even though in practice there are problems that must be addressed immediately such as the health condition of personnel, readiness for technological change, limited competence.

The curriculum, in this case the learning design, contains the goals to be achieved in the online tutorial learning program, so its implementation is guided by the curriculum/program design used in 2020.

The evaluation success criteria for indicators of the implementation of the learning curriculum are that there are actual activities for implementing the online learning curriculum carried out consistently in accordance with the learning program plan.

Based on data collection between the results of interviews and document studies compared with the existing evaluation criteria, it can be concluded that the implementation of the online tutorial learning program curriculum is as follows: a) the online tutorial learning program curriculum is implemented consistently (according to the criteria); b) the framework of the main lesson is carried out consistently (according to the criteria).

The implementation of learning is intended to carry out learning processes/activities in a systematic, effective and efficient manner. Based on interviews with the Head of Study Program, it was stated that the implementation of learning was carried out twice a year.

Based on data collection between the results of interviews and observation studies compared with the existing evaluation criteria, it can be concluded that the implementation of learning, as follows: a) learning activities have been carried out (according to the criteria).

The learning calendar functions as a guideline for achieving effectiveness and efficiency in the learning process, by setting the time of learning activities within a certain period of time. Based on the results of the interviews, regarding the activities of implementing the Learning calendar, all

informants stated that the learning calendar had been carried out consistently in accordance with the plans that had been made, and that all subject matter (types of activities; number of days and number of study hours) were carried out properly according to the plans made .

Based on data collection between the results of interviews and observation studies, it can be concluded that the implementation of the learning calendar is as follows: a) there are actual activities for implementing the learning calendar (according to the criteria); b) the learning calendar is implemented consistently, according to the learning program plan (according to the criteria).

3.4 Evaluation of Results

Evaluation of results or product evaluation is an evaluation carried out on the results or products that have been produced by the program. In essence, the product is the objective of the program. How the program initially determined the goals and objectives desired by the organization.

At this stage we can determine or provide recommendations for the implementation of a policy, whether this policy produces results that will continue to be developed or modified, or even discontinued. The aspects that are assessed related to the evaluation of results are the resulting performance, by looking at aspects: graduates.

The pandemic and implementation of the new system have prevented related parties, namely PBB / and UPP, from being able to provide proper training for tutors. At Fhisip there are 8000 classes, assisted by 1 IT person, this condition makes preparation for Tuton activities quite tiring. This tutorial is activities that take a long time to prepare, even throughout the year. Starting from making master classes, identifying tutors, class permission, guiding tutors to assess discussions, assignments, etc. Payment for tutors, a payment system that sometimes has errors. Submission of payment can be made by 2 Heads of Study Programs, in this case problems can occur when the payment has not been received by the Tuton. Complaints from tutors must also be handled. There is plagiarism detection software in the Tuton class, so that the tutor's work is lighter and students are also taught the values of honesty and integrity. The participation of internal lecturers in Study Programs is optimal, but study program lecturers outside the Faculty who are given additional assignments cannot be too involved.

In evaluating program results, describes the summary of data based on data collection, analysis of conformity with evaluation criteria, assessments and decisions as findings/evaluation results on two things, namely program achievement results, and side effects (side effects) of program achievements.

Based on the results of interviews with the Head of Study Program, it gives an overview of the learning outcomes in achieving student competence, namely: a) Pass score > 60 so that this aspect is in line with program objectives. Based on the study of documents on learning outcomes for aspects of mastery of knowledge are presented below:

4 CONCLUSIONS AND RECOMMENDATIONS

Universitas Terbuka's online learning is a strategic and superior program that needs to be continuously improved and updated regularly. Evaluation activities at every level is need to be designed periodically so that program effectiveness, quality and innovation are maintained in a sustainable manner.

4.1 Conclusion

4.1.1 Program Background Evaluation (Context Evaluation)

As for the basis for organizing learning programs because UT students are expected to be able to study independently. The independent learning method requires students to learn on their own initiative. Independent learning can be done alone or in groups, both in study groups and in tutorial groups. Thus, the main requirement is the basis for the need to organize/partner the UT online tutorial learning program to save time, because online tutorial learning can be done anywhere and anytime, besides that it's not easy to get tired because it can save energy. So far the learning program has been appropriate. The development of HRMteaching materials refers to the HRMBMP (Basic Materials) ADBI4438. The entire BMP UT has gone through various review and editing processes which all refer to the goals, vision and mission of the institution.

4.1.2 Evaluation of Input (Input)

Evaluation of Input (input) in the online tutorial learning program, received an assessment in the good category (100% fulfilled according to the criteria). In evaluating inputs in general, the formulation of learning strategies, program designs, learning program plans and preparation of program resources (HR, infrastructure and facilities, and budget) have been guided by the vision and mission and program objectives that have been set.

4.1.3 Process Evaluation

Implementation of learning programs and learning activities, with a good category (100% fulfill according to the criteria). The learning program is implemented according to plan, using the curriculum/program design.

4.1.4   Evaluation Results (Product Evaluation)

The results of learning outcomes in achieving student competence in online learning programs for HRM courses: a) Understanding of basic knowledge in HRM courses; b) increasing competence and knowledge of human resources; c) understanding in HRM processes. The average value of knowledge is > 60 so that this aspect is in accordance with the program objectives.

4.2   Recommendations

Based on the conclusions above, it is recommended for the Universitas Terbuka to improve the optimization of the Online Tutorial Learning Program for HRM Subjects through:

Based on an evaluation of the background, input, process and program results or products, it is recommended that UT implement the following improvement efforts:

1   Conduct socialization regarding the vision and mission in a more specific and sustainable manner, in line with Study Programs, Faculties and Universities.
2   It is recommended to reformulate program objectives based on more specific and concrete needs, related to the type of program.
3   Recommended to reformulate the program strategy by accommodating facilities, infrastructure/facilities and budget as one of the strategies in achieving program objectives.
4   It is recommended to compile and complete planning documents, including: 1) elaboration of the program, which is used as a guide for carrying out learning; 2) prepare a monitoring and evaluation plan, which will be used as a means of program quality control; 3) complete the administrative and student requirements documents, teaching staff and administrators
5   Improving the consistency of program implementation and consistency of budget support in accordance with the planned time schedule (on time);
6   It is recommended to increase the readiness of infrastructure and facilities, support program implementation.
7   Carry out monitoring and evaluation activities in a programmed and well-documented manner as a form of quality control and assurance activities in learning.
8   Based on the evaluation of program results, it is recommended that UT carry out continuous coaching and empowerment of students

ACKNOWLEDGEMENTS

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ANALYSIS OF THE NEED FOR THE DEVELOPMENT OF VIRTUAL REALITY-BASED TEACHING MATERIALS IN THE EARLY CHILDHOOD EDUCATION STUDY PROGRAM

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Abstract

The purpose of this study was to analyze the needs of students of the Open University Early Childhood Education Teacher Education Study Program for lecture materials that will be developed for games based on Virtual Reality technology. This analytical research is part of the development research stage with the ADDIE model. Stages of analysis on the ADDIE model were carried out by interviewing and documenting and distributing questionnaires through the google form application with 200 respondents from the PGPAUD study program. Data analysis is described quantitatively. The results showed that 31.41% or 158 students chose the Development Activity Management course to be a much-needed course to be visualized through virtual reality technology and 26.93% or 143 students chose BCCT circle time material as material that was needed for a media virtual reality.

Keywords: virtual reality, circle time, analysis

1   INTRODUCTION

Technology is increasingly developing and is becoming a reference for universities in improving the quality of student learning because technology has become a tool for humans to continue to innovate (Maritsa et al., 2021). This is also what the Universitas Terbuka does. Being a Cyber University, the Universitas Terbuka continues to innovate in developing its learning materials using various technologies, one of which is virtual reality technology. The Early Childhood Education Study Program is one of the study programs with the most students at the Universitas Terbuka, so it requires learning innovations that various students can use. Therefore, developing module teaching materials using Virtual Reality technology is a creative step in supporting the independent learning process. So far, the Early Childhood Education study program has developed forty-five modules as the main teaching materials for its students. The knowledge is theoretical and practical concepts that students must master to become professional early childhood education teachers. Therefore, it is necessary to innovate teaching materials to improve student competence in mastering practical materials in Early Childhood Education institutions.

The selection of Virtual Reality technology as a medium for visualizing the concept of lecture material refers to the following literature. Sutherland stated that virtual reality is a technology with a concept like a window so users can feel, see and hear in a real virtual world (Cipresso et al., 2018). Virtual Reality is called the same as telephone or television, a conductor or medium (Steure, 1993). According to other experts, it was also stated that the virtual world could stimulate

learning comprehensively so that it can be understood better because the virtual world provides experiences as well as symbolic information (Pantelidis, 2010). It is also mentioned that virtual reality can increase students' knowledge, skills, creativity, and constructivist mindset (Rachmatullah & Sukihananto, 2020) (Rohmah & Russanti, 2021). Based on this description, the selection of virtual reality as the technology base for developing teaching materials is appropriate because this technology can be a medium for students to experience different learning experiences and real learning situations.

As a first step in the development of media based on virtual reality technology, it is necessary to select and determine modules (basic teaching materials) and the concept of appropriate lecture materials with student needs, so the purpose of this study is to analyze student needs in developing virtual reality-based teaching materials.

2 METHODOLOGY

This study uses a type of development research with the ADDIE model. The ADDIE research model is an instructional process centered on individual learning that goes through 5 phases, which are the analysis phase, the design phase, the development phase, the implementation phase, and the evaluation phase, which are carried out dynamically (Cahyadi, 2019; Hidayat & Nizar, 2021). According to the developers Reiser and Molenda, the analysis phase aims to identify possible gaps in the learning process or other necessary needs (Hidayat & Nizar, 2021). For this analysis phase, the researcher carried out several stages of analysis, such as curriculum analysis, module analysis, and material concept analysis. For the curriculum analysis stage, interviews and documentation were carried out with lecturers and the head of the Early Childhood Education study program, while for module analysis and material concept analysis using the survey method and distributing questionnaires via Google Form to 200 Early Childhood Education students in term 3 and term 9, then the results were analyzed by descriptively quantitative.

3 FINDINGS AND DISCUSSION

The results of this study are divided into three parts. The first part is the curriculum analysis stage. This stage analyzes the curriculum containing all Early Childhood Education study program courses. This analysis is used to see the suitability of the lecture module with the demands of the graduate profile. This stage produces four courses that will be proposed for the development of virtual reality game media, namely the courses (1) Management of Early Childhood Development Activities, (2) Language Development Methods, (3) Physical Development Methods, (4) Curriculum and Materials Kindergarten Learning, (5) Moral Development Methods & Religious

Values. As for the concept of the module material for each of these courses, they are (1) Circle time-BCCT management, (2) Visual media and language development, (3) a combination of basic movements, (4) Models of development activities, (5) Development Kohlberg's theory.

Curriculum analysis is the first step in this research stage because the curriculum is a summary of the expectations of an educational institution for the quality of its output. The curriculum contains all the knowledge and skills that the learner must master. This is what makes the curriculum referred to as a learning implementation guide (Fatih et al., 2022; Kurniaman et al., 2013; Purwadhi, 2019). Therefore, the selection of virtual reality materials cannot just be choosing teaching materials but must be following the demands of the Early Childhood Education study program curriculum in Universitas Terbuka and, of course, considering other indicators such as the level of difficulty of teaching materials, the benefits for students and demands from school institutions in the field.

The second and third stages analyze student needs for the five modules and five material concepts that have been determined in the previous stage. The module requirements analysis uses quantitative description, which is described with the criteria obtained from the conversion of the minimum benchmark criteria according to the calculation of statistical data. Obtaining research results are analyzed with the following criteria:

Obtaining research results are analyzed with the following criteria:

Table 1. Criteria

| Average Percentage	Criteria
$\geq 25\ \%$	Very Necessary
$16 \geq 25\ \%$	Necessary
$7 \geq 16\ \%$	Less Necessary
$\leq 7\ \%$	Not Necessary

Based on the table of requirements criteria above, the decision-making on the results of the questionnaire distribution obtained the following results.

Table 2. Analysis of the needs of the Visualization Module
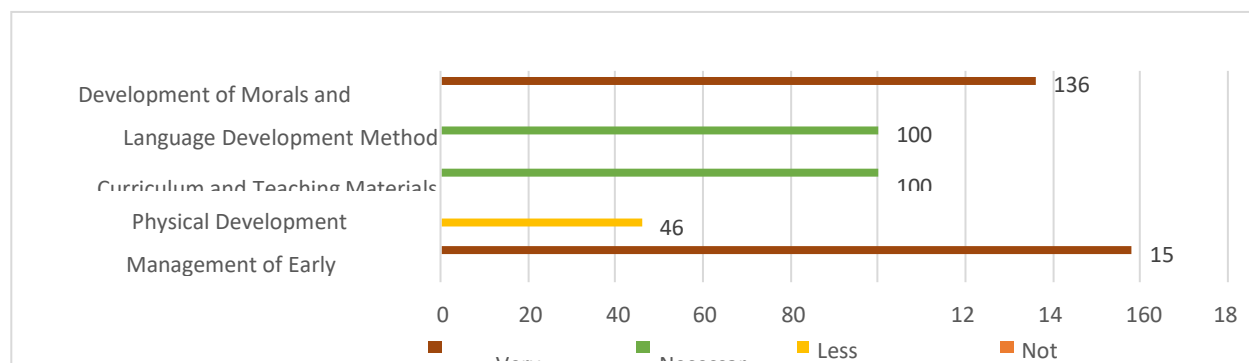
The criteria used were obtained from the conversion of the minimum benchmark criteria following the calculation of statistical data. From the diagram of the results of the research on the visual needs of the module, 158 people (31,41%) are interested in the indicators for the management of early childhood development activities. Next, as many as 46 people (8.51%) are interested in physical development methods. Furthermore, as many as 100 people (19.8%) are interested in curriculum and teaching materials as many as. Meanwhile, the language development method has 100 people (19.8%) interested. Lastly, as many as 136 people (25.65%) are interested in developing morals and religious values. It can be understood that based on the research data, the most needed module is the Module with titled Management of Early Childhood Development Activities and Methods for Development of Morals and Religious Values.

Table 3. Analysis of the need for Visualization of Lecture Materials
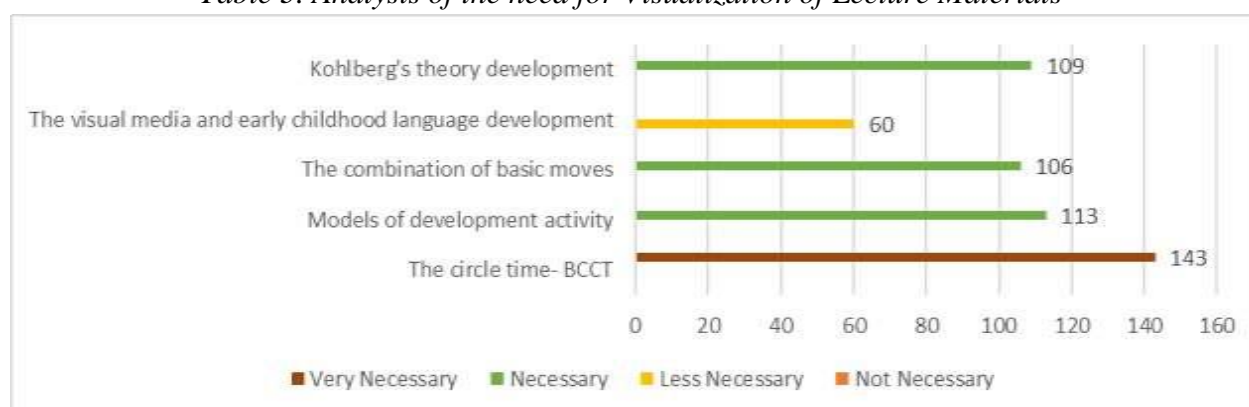
The criteria used were obtained from the conversion of the minimum benchmark criteria following the calculation of statistical data. From the diagram of the research results on material visualization needs, it can be seen that the interest in the Circle time - BCCT material indicator is 143 people (26.93%). Next, students who are interested in development models are 113 people (21.29%). Furthermore, a combination of basic movements interests 106 people (19.96%). Finally, in visual media and language development for Early Childhood, 60 people (15.9%) are

interested, while in the development of Kolhberg's theory, 109 people (20.52%) are interested. Therefore, it can be understood that material visualization is very much needed, which is the Circle time - BCCT material.

Learning management in the Beyond Centers and Circle Time (BCCT) model is one of the skills that a teacher must master because BCCT is an ideal model for early childhood learning. After all, it provides a fun challenge for early childhood (Fitri et al., 2022; Lestari, 2015). This learning departs from Vygotsky's scaffolding theory, where children are given a foothold to build the concept of rules, ideas, and knowledge of children to help them master their competencies. This model provides opportunities for children to choose their activities according to their interests and talents (Fitri et al., 2022; Hamzah, 2016; Lestari, 2015; Samad, Farida Alhaddad, 2016). Based on this description, it can be said that the management of circle time-BCCT in Early Childhood Education institutions must be the skill of every teacher to provide learning that can improve the development of their students. Early Childhood Education students need to explore this material so that when they graduate and become professional teachers, they can create fun learning while optimally stimulating their students.

4   CONCLUSION

It is concluded that Early Childhood Education students in Universitas Terbuka need to strengthen the concept of material from basic teaching materials/modules in the Management of Early Childhood Development Activities course, especially in the management of circle time-BCCT as material for developing teaching materials based on virtual reality technology.

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get deeper into the material, and making it easier for students to repeat learning or explore knowledge more optimally (Moore, 2009; Wiyanto & Hidayah, 2021; Shang, 2019; Rubery, 2008). This media is also sometimes considered a medium that helps those with physical disabilities (blind) to continue to learn and study the material using the listening senses they have. With the audiobook, it is hoped that anyone who has physical limitations can enjoy education as it should be (Putra et al., 2022; Sejpal, 2013).

Based on some of the benefits above, it is necessary to develop an audiobook media that can later help educational actors in carrying out a fun learning process. In its development, of course, we have to pay attention to several aspects related to whether this media really can be used effectively and becomes a new innovation in learning, especially in the context of open and distance learning. Therefore, this study aims to develop and see how the effectiveness of the audiobook media is used in the context of open and distance learning, especially at the Universitas Terbuka. The results of this study will later become the basis for strengthening that audiobook media can be used as an innovative and fun learning media and can be used for anyone without exception.

2 METHOD

This study uses a quantitative descriptive design that focuses on the description of the effectiveness of the audiobook media developed. This study involved 145 respondents who were selected using a purposive sampling technique (the characteristics of the respondents are presented in the results section). The procedure for carrying out this research was carried out in several stages, namely: 1) the team developed an audiobook media that was adjusted to the needs of the students; 2) the team tested the feasibility of the media to several experts to assess whether the media developed was in accordance with the characteristics of the students and could be used properly; 3) the team revised the media that had been assessed by the expert team; 4) the team conducted a trial on the audiobook media that had been developed; and 5) the team analyzed the results of the trial and made conclusions related to the effectiveness of the media developed.

be able to learn even in limited situations, and this audiobook can also be used for visually impaired students (Brauchli et al., 2020; Have & Pedersen, 2020; Srivastava et al., 2022).

Audiobooks have been proven to provide many benefits in the learning process, but in Indonesia, it is still uncommon for researchers to develop these media. Warsihna et al. (2021) tried to create audiobooks in the learning process in universities. The results of his research indicate that audiobooks have great urgency in supporting lecture activities in the context of distance learning. A study by Warsihna et al. (2021) succeeded in developing several audiobook materials for an Indonesian language learning course. However, information regarding the effectiveness of the use of audiobooks has not been carried out. Therefore, this study was conducted to determine the effectiveness of using audiobooks in open and distance learning.

2 METHODOLOGY

The design used in this study is descriptive quantitative. This design refers to an approach taken to identify descriptive data and provide a holistic interpretation according to the specified objectives (Ramdani et al., 2018). The use of this design is based on the assumption that researchers want to know how audiobooks are useful for respondents descriptively.

To get a complete picture of the research respondents, the researchers determined the characteristics of the research respondents as those who did distance learning. In this case, they get learning materials in the form of audiobooks developed by researchers. Respondents in this study were undergraduate students at several campuses that implemented distance learning. The taking of respondents is based on purposive sampling, where whomever they want to be a respondent and according to their characteristics, they are the research respondents (Ramdani et al., 2019). Those involved first fill out a willingness to become research respondents approved by the Research and Community Service Institute of Universitas Terbuka (LPPM-UT).

The instrument used in this study was a questionnaire with a Likert scale model developed by the researchers with reference to the theory of media effectiveness developed by Azar dan Nasiri (2014). The instrument consists of 3 aspects of media optimization, namely (1) media appearance and features, (2) utilization, and (3) materials and content provided. A total of 21 items measure the three aspects. The answer choices consist of strongly agree (score 4) to strongly disagree (score 1). For example, items of aspect 1, "the audiobook displays features that are easy to follow," aspect 2, "Audiobooks can be integrated with other learning media," and aspect 3, "The delivery of material in this audiobook is interesting and not boring."

The instrument used was tested first on 30 subjects to obtain objectivity from the measurements made. The test results show that the reliability of the scale used is 0.952 and the coefficient of difference for the 21 items used starts from a score of 0.6 to 0.8. These results indicate that the instrument used is psychometrically feasible (Creswell & Creswell, 2018). Meanwhile, to test the results of this descriptive study, researchers used the SPSS program with descriptive analysis.

3 FINDINGS AND DISCUSSION

The results showed that the response interest in participating in the study could be said to be quite high. A total of 145 respondents completed the research questionnaire according to the desired characteristics. To find out the distribution and other information about the respondents, the researchers present it in Table 1.

Table 1. Respondent Demography

	Category	Frequency	Percentage
Gender	Male	52	35.9%
	Female	93	64.1%
Age	20 – 30	71	49%
	31 – 40	7	4.8%
	41 – 50	7	4.8%
	51 – 60	1	0.7%
	under 20	59	40.7%
University origin	UT	27	18.6%
	Non-UT	118	81.4%
Study program type	Teacher Education	53	36.6%
	Non- Teacher Education	92	63.4%
Employment status	Employed	34	23.4%
	Unemployed	111	76.6%

Based on the data presented in Table 1 above, the demographic distribution of respondents in this study consists of gender, age, university origin, type of study program, and employment status. For gender, the research respondents were dominated by females as much as 64%, and the rest were male. In age data, there are two most common age categories, the age between 20-30 years and the age under 20 years. For university origin, most of the respondents who filled in the questionnaire were from campuses outside the Unversitas Terbuka, with a percentage of 81.4%.

In the data of the majors or study programs taken, most students were those from non-teaching programs, with as many as 92 people. The remaining 53 people were from teacher training programs. Meanwhile, for employment status data, those who do not work dominate the respondents, compared to students who work.

Next, the researchers identified to find out how many respondents considered that the audiobook could be used in the learning process. The results of respondents' satisfaction with the use of audiobooks are described in table 2. The categorization of satisfied or dissatisfied is based on the value obtained by each respondent, whether it is above average or below average.

Table 2. Respondents' Level of Satisfaction with the Effectiveness of Using Audiobooks.

	Category	Frequency	Percentage
Level of Respondent Satisfaction	Satisfied	78	54%
	Dissatisfied	67	36%
	Total	145	100%

Table 2 explains the position of respondents' satisfaction with the use of audiobooks in learning. By analyzing the average total score of the respondents, the categories were divided into two groups, namely satisfied and dissatisfied. The results showed that as many as 54% of respondents were satisfied with the use of audiobooks, while the remaining 36% expressed their dissatisfaction.

In the next analysis, the researchers did this by correlating each aspect of this study. The aim was to get more information about the usefulness of this audiobook. The results of the correlation can be seen in Table 3.

Table 3. Correlation between Aspects of Effectiveness of Using Audiobooks.

	Aspect 1	Aspect 2	Aspect 3
Aspect 1	1	0.843"	0.812"
Aspect 2	0.843"	1	0.786"
Aspect 3	0.812"	0.786"	1

Table 3 Notes. Aspect 1 (Audiobook Appearance and Features), Aspect 2 (Audiobook Usefulness), and Aspect 3 (Audiobook Material and Content).

If you look at Table 3, it can be illustrated that every aspect tested is strongly and significantly correlated. It is indicated by the correlation coefficient value of more than 0.3, and the correlation between the variables is also significant. It means that when one aspect increases, the other aspects also increase, and vice versa.

The results of the study, in general, provide quite in-depth information in explaining the effectiveness of audiobooks in learning. The researchers discussed first from the point of view of respondents' satisfaction with existing effectiveness. The final result mapped that the majority of respondents were satisfied with the existence of the audiobook developed by the researchers. From the current scores, almost 54% agree that audiobooks are very effective in supporting the learning process. It complies with previous researchers' statements about audiobooks' urgency and effectiveness in learning (Anwas, 2015; Ayunda, 2015; Camalia & Susanto, 2016).

The effectiveness of using audiobooks can be seen from the aspects contained in the audiobook. In line with the correlation results from the tested aspects, each aspect in the audiobook has a significant correlation in its use. The most powerful aspect of using audiobooks is the relationship between appearance and usability. Respondents considered that the more attractive and functional the appearance or feature of the audiobook would increase the usefulness of the existing audiobook. In addition, audiobooks are also considered to have material or content that is sufficiently understood so that this supports the learning process.

The effectiveness of using audiobooks is, of course, a crucial issue in this study. With limited research on audiobooks, it becomes a point of urgency for this study because it directly provides examples of audiobook media usage. In Indonesia, there are still very few studies that provide direct models of audiobooks. Future studies should further explore how the use of this audiobook can be used for all people, especially for those who have visual impairments. Studies exclusively for the visually impaired will further magnify the urgency of this audiobook.

4 CONCLUSION

The results of the study on the effectiveness of the use of audiobooks show quite significant information in the development of the audiobook itself. This descriptive study concluded that the presence of the audiobook developed by the researcher was effective enough to be used for the learning process. Respondents consider that the things that audiobooks currently have are deemed satisfactory and can be a reference for education to provide learning materials. Audiobooks are regarded as credible in terms of the instruments themselves and have indicators that can be

accounted for. However, for future research to be even better, it is vital to explore what makes a small number of respondents feel dissatisfied qualitatively with the existence of this audiobook.

ACKNOWLEDGEMENTS

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OPTIMIZATION OF SERVICES AND ACCESSIBILITY WEBINAR TUTORIALS ON SASTISFACTION USING THE MICROSOFT TEAMS APPLICATION FOR UNIVERSITAS TERBUKA STUDENTS

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Abstract

This research aims to determine the effect of webinar tutorial facilities and accessibility on student satisfaction in applying Microsoft Teams. This type of research is survey research that is quantitative with multiple linear regression analysis. Where the service and accessibility of the webinar tutorial are independent variables, and student satisfaction with using the Microsoft Teams application is the dependent variable. The research population is the Universitas Terbuka students in the 2022.2 academic years who follow the webinar tutorial for scientific papers. Obtained the sample from students of the public administration study program by filling out google forms. This study tries to show a positive influence between the service and accessibility of webinar tutorials on student satisfaction after applying Microsoft Teams. The study is expected to produce new findings on the benefits and accessibility of webinar tutorials to provide satisfaction to Universitas Terbuka students in using the Microsoft Teams application.

Keywords: Innovation, technology, research projects, etc.

1 INTRODUCTION

The era of the industrial revolution 4.0 has provided many significant changes in the development of information technology that can change the pattern of face-to-face teaching and learning activities becoming virtual or online. Universitas Terbuka, a pioneer of digital- based learning, provides space for students to access webinar tutorials (Tuweb). The education system designed by the Universitas Terbuka is long-distance by utilizing the internet network to deliver lecture services so that students can accept learning materials with a flexible schedule. Lecture services with webinar tutorials aim to assist students in completing their studies as well as accessibility in accessing webinar tutorial services using the Microsoft Teams application. The webinar tutorial service is part of the Universitas Terbuka e-learning system, where students create and activate accounts, usernames, and passwords, do login activities, and take webinar tutorial classes following learning activities mutually agreed upon between tutors and students. The webinar tutorial sessions are eight sessions with 14 learning activities in 14 weeks with four webinar tutorials. Students can learn the material through the available modules in e-learning. In e-learning, some assignments were submitted into three learning activities (task 1), five learning activities (task 2), seven learning activities (task 3), eight learning activities (task 3) continued, ten learning activities (task 3) 4), learning activities 11 (task 4) continued, and the last is publishing the final article on learning activities 14.

Student accessibility on the webinar tutorial service uses the Microsoft Teams application, which provides easy access and security of webinar tutorials to students and changes the lecture atmosphere from face-to-face to virtual. So that students can get webinar tutorial services with the Microsoft Teams application flexibly by utilizing internet connectivity. This system can help students improve their independent learning activities. The accessibility of the webinar tutorial makes it easy for students to attend lectures for one semester. The webinar tutorial service is carried out virtually in synchronous teaching, where students and tutors meet face-to-face virtually through the Microsoft Teams application. The webinar tutorial consists of scientific work courses with 4 meetings out of 14 learning activities, namely in learning activities 2, 6, 9, and 12. It aims to improve distance education learning services at the Universitas Terbuka. Webinar tutorials are learning activities included in the Universitas Terbuka academic calendar, providing opportunities for students to enhance their competence in scientific work courses. However, students must register as participants in the webinar tutorial class by activating. Because if it's too late, students will inevitably be able to take the tutorial webinar class. Accessibility, better known as the ease of accessing webinar tutorials, is a learning facility provided by the Universitas Terbuka to students who have a good agenda. The problem is often signal or wifi network problems, which can hinder students from accessing the webinar tutorial. In addition, other issues also happen due to the lack of student insight regarding the accessibility guidelines for webinar tutorials. Students who have registered in the tutorial webinar class expect to be able to follow the webinar tutorial process starting from learning activities 2, 6, 9 to 12. During 4 synchronous meetings, students should study learning modules and work on drafting scientific papers at the Universitas Terbuka.

The challenge for students as distance learners at the Universitas Terbuka is their readiness and toughness in implementing digital/online systems with the accessibility of webinar tutorial services as a place to provide mastery and understanding of scientific work courses via the internet and supporting tools such as laptops, computers, and tablet, and cell phones. The impact/influence of the webinar tutorial service and accessibility is as a means of digital/online learning, a service of the Universitas Terbuka distance education system to support the success of student's independent learning. The output of this research is to obtain data on how much satisfaction students have in using the Microsoft Teams application in a webinar tutorial for a scientific paper course. In addition, research held to determine the effect of the webinar tutorial facility and accessibility on students' satisfaction using the Microsoft Teams application. Satisfaction here is a form of giving aspirations from digital learning assistance provided by the Universitas Terbuka.

The results of this study are a reference in sharing enthusiasm for learning from students using digital learning facilities facilitated by the Universitas Terbuka.

Webinar Tutorial

The webinar tutorial is an online tutorial service facilitated by the Universitas Terbuka, which is synchronous and asynchronous, where the interaction between tutors and students is carried out simultaneously but in a different room/place. Learning activities are carried out through webinars connected to the internet. Webinar tutorials are virtual classes equipped with advanced features: attendance forms, assignments, tutorial materials, asynchronous facilities such as online tutorials, and other information. The pattern for the implementation of the webinar tutorial is as follows: a) for the diploma/bachelor program, it is carried out with a pattern of 1 presession and 8 meetings with 14 learning activities, b) for the master/doctoral program, 4 meetings are held as a complete requirement that integrated with 8 online tutorial sessions, tutorials Webinars are integrated with online tutorials.

The purpose of a webinar tutorial is to equip students to write scientific papers because every student is an academic person who should have competence in the field of writing scientific papers. Universitas Terbuka students throughout Indonesia and abroad can access this service through the internet network. According to V. J. Caiozzo, F. Haddad, S. Lee, M. Baker et al., (2019), webinars, namely seminars, workshops, presentations, and teaching that are held virtually, face-to-face virtual is delivered using internet media and attended by many people from various places, in the implementation of the webinar participants can communicate directly either through video or chat. Based on previous research from Zakirman & Rahayu (2022), obtained from the assessment of webinar participants by filling out evaluation questionnaires through the LMS, the results of the average evaluation score were as many as 54.68% of respondents stated that the webinar activities ran smoothly and satisfactorily. In addition, other research on webinars also shows positive results where the use of webinars as a means of communication is very effective and efficient in reaching all levels of society from various regions in Indonesia and abroad because of internet-based media (Gogali et al., 2020).

Accessibility

Accessibility, according to the Regulation of the Minister of Public Works of the Republic of Indonesia Number 30/PRT/M/2006 (Male et al., 2006), facilitated many people, both ordinary and people with disabilities and the elderly to realize equal opportunities in all aspects of life. In addition, it can also interpret as follows:

1   Ease can be interpreted as people - people can go to a place;
2   Usefulness means that people can use a place.
3   Safety, interpret that all building construction and the environment must pay attention to the safety of people.
4   Independence, where everyone can go, enter, and use all places without asking for help from others.

According to Prawira & Pranitasari (2020), accessibility is the ease of reaching one location to another with the transportation system. The size of something reached includes the ease of cost, duration, and effort to move from one place to another. Meanwhile, according to Prajalani (2017), accessibility is a convenience given to people with disabilities, actualized to the maximum, to achieve equal opportunities in various fields of life. So, equal access to life services consists of facilities and accessibility services for students with special needs. Then Sheth dan Sisodia (2012), explain that accessibility is the extent to which consumers can quickly obtain and use a product. It has 2 dimensions, namely: 1) availability, indicated by the supply factor relative to a demand for a product, then the extent to which a product stored in storage regarding products and services, and 2) convenience, indicated by the effort and time required to obtain the product. Product is the ease with which one can find a product in various locations and attractive packaging. From the experts' opinions above, it can conclude that accessibility is the ease of accessing a learning system, in this case accessing webinar tutorials on learning.ut.ac.id. This convenience expects to provide flexibility to students in learning so that they are comfortable and safe in education wherever they are without being bound by space and time.

Microsoft Teams Application

The rapid development of technology, information, and communication (ICT) in the current era has contributed significantly to long-distance upgrading. In addition, information technology is also a means of remote upgrading or better known through upgrading Microsoft Teams, Zoom, Google Meet, and Google Classroom. Those are some examples of applications used for remote or online upgrading (Nafisah & Fitrayati, 2021). In the current digital era, the Microsoft Teams application is one of the most appropriate videos conferencing applications to support the smooth running of various learning activities. This application can be obtained for free and is available for laptops, Mac computers, Windows 32 bits, Android smartphones, or iPhones (Fahri, 2020). According to Rakhmawati & Sulistianingsih (2020), the Microsoft Teams application is one of the many online learning platforms that facilitate lecturers and students to interact and collaborate during virtual learning. This is because the Microsoft Teams application has a chat menu and a learning video that is relatively easy to use. The advantages of the Microsoft Teams application

are that it is pretty easy to use by students and tutors, has an HD menu, and the audio is relatively good quality. In addition, the Microsoft Teams application maintains the confidentiality of data from its users (Sulz, 2020).

From the axioms of the experts described above, the Universitas Terbuka, a pioneer of distance or online learning, is very suitable to use the Microsoft Teams application because it follows the mission and vision of the Universitas Terbuka, and many advantages provided in this application compared to other applications. Thus, this application is in line with the implementation of webinar tutorials for scientific work courses that use synchronous and asynchronous modes.

2 METHODOLOGY

This research is survey research that functioned as quantitative with multiple linear regression analysis. The method used in collecting data is using a virtual questionnaire, namely google forms, which is presented and analyzes data from independent and dependent variables to obtain an appropriate description of events in numerical data. This data was obtained from respondents through a virtual questionnaire and used a likert scale to measure it. The time and place of the research are in 2022 at the Universitas Terbuka. The population of this study is Universitas Terbuka students in the 2022.2 academic years who follow the webinar tutorial for scientific papers. For the technique of taking and sampling data using random sampling. Examples from the community give equal rights in filling out the virtual questionnaire form. As for the research example, some active students participate in webinar tutorials and enter questionnaires on google forms, and as many as 20 students take scientific work courses. SPSS 25 was used to analyze the data.

3 FINDINGS AND DISCUSSION

3.1 Multiple Linear Regression Analysis

The opinion of Ghozali (2018), regarding the study of multiple linear regression is a model of regression by including more than one independent/independent variable. This analysis was carried out in an effort to find out how much influence the independent/independent variables have on the dependent/dependent variable. Multiple Linear Regression Analysis Webinar Tutorial Facilities and Ease of Satisfaction using the Microsoft Teams Universitas Terbuka Students are as follows:

Table 1. Results of Student Satisfaction Determination Coefficient of Regression

						Change Statistics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df 1	df2	Sig. F Change	Durbin-Watson
1	.901ª	.813	.791	3.34276	.813	36.862	2	17	.000	1.663

a. Predictors: (Constant), Accessibility (X2), Tuweb Service (X1)
b. Dependent Variable: Student Satisfaction using Microsoft Teams (Y)

Based on the results of the regression coefficient of determination test above, the number of the regression coefficient (*R-square*) = 0.813, it can be explained that the factor of the tutorial facility Webinars and convenience have an impact on the satisfaction factor of students in using the *Microsoft Teams* by 81.3%, while the remaining 18.7% is influenced by other factors outside of the variables from webinar tutorial services and student accessibility. This means that through the webinar tutorial service and accessibility that has been carried out by the Universitas Terbuka, it has had a major influence on student satisfaction using the *Microsoft Teams*. Thus webinar tutorial services and accessibility are effective in providing services to students in the virtual learning process.

3.2 Partial Test

Partially testing a regression or partial coefficient involves determining its meaning, in accordance with Fadhila Sena & Artikel (2011). Through the t test and a significance level of 5%, this test aims to be able to identify the partial impact between the independent variable and the dependent variable. T count is calculated by running the SPSS software on the coefficients. The coefficient of determination (R2) is another metric used in this study to assess a model's capacity to account for variance in the dependent variable. Additionally, a scale from 0 to 1 is used to determine the coefficient of determination's value. The conclusion is that the capacity of the independent components is severely constrained if R2 is low. However, the value is regarded as zero if the modified R2 value in the empirical test is negative. In other words, if the value of R2 = 1, then the value of adjusted R2 = R2, however a negative value will be assigned to adjusted R2 if the value of R2 = (1-k)/(if k>1).

Based on R = 0.901, this indicates that all independent factors, namely webinar tutorial services and student accessibility, have a strong relationship based on the correlation coefficient interpretation table with the degree of satisfaction of students using Microsoft. Based on R2 = 0.813, this indicates that the combined impact of these two factors is 81.3%; the remaining independent factors have no significant influence.

Table 2. Product of Service Regression Study Webinar Tutorial and Accessibility to Student Satisfaction using Microsoft Teams

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.093	9.869		.009	.993					
	Tuweb Service (X_1)	.208	.149	.217	1.403	.179	.752	.322	.147	.463	2.162
	Accessibility (X_2)	.905	.191	.731	4.732	.000	.889	.754	.497	.463	2.162

According to the study, the equation for multiple linear regression is Y = 0.093+0.208X1+0.905X2, which indicates that the convenience and webinar tutorial service have a positive impact on student satisfaction with Microsoft Teams. The converse is also true: if these two variables rise, student satisfaction with Microsoft Teams will rise as well. So as to be more clear:

1   0.093 indicates that the dependent variable (satisfaction with Microsoft Teams) has a value of 0.093 as well if the independent variable (webinar tutorial and accessibility services) has a value of 0 or is constant. The dependent/dependent variable may automatically rise by the same amount whenever the independent/independent variable increases by one unit;

2   The regression coefficient for the webinar tutorial service (X1) is 0.208, indicating a positive influence of the variable on the degree of happiness with using Microsoft Teams. If the variable's score rises, so will student satisfaction;

3   According to the regression coefficient of the accessibility dimensions (X2), which is 0.905, there is a positive relationship between accessibility and student happiness with Microsoft Teams. If the accessibility variable's score rises, this relationship will likewise rise.

3.3 Determination Coefficient

Philp (2002), states that in order to determine the extent of the influence of factor X on factor Y, one has to know the coefficient of determination, or (R^2). The size of the variable Y can be easily calculated after the impact of factor X is understood.

Table 3. Product of Calculation of Correlation and Coefficient of Determination Shown

	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	823.791	2	411.896	36.862	.000[b]
	Residual	189.959	17	11.174		
	Total	1013.750	19			

a.   Dependent Variable: Student Satisfaction using Microsoft Teams (Y)

b. Predictors: (Constant), Accessibility (X2), Tuweb Service (X1)

According to the analysis's known points, F = 36,775 has a sig 0.00 (<0.05) that shows the two variables simultaneously have a positive and relevant impact on students' satisfaction with using Microsoft Teams. In other words, as both variables rise, student satisfaction with using Microsoft Teams will follow, and vice versa.

4   CONCLUSION

The following are the study's findings:

1. Student satisfaction with using Microsoft Teams is positively impacted by webinar services and accessibility training. Thus, if the accessibility tutorials and webinar service levels both improve at the same time, student happiness with utilizing Microsoft Teams will likewise rise;

2. The webinar tutorial service has a limited positive impact on students' Microsoft Teams usage happiness;

3. Student satisfaction with utilizing Microsoft Teams is partially influenced by accessibility, simplicity, and security in accessing webinar tutorials.

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ANALYSIS OF LEARNING ASSISTANCE SERVICES WEBINAR TUTORIALS IN THE COVID-19 PANDEMIC

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Abstract

Universitas Terbuka (UT) as a State University which is the pioneer of Distance Education (PJJ) in Indonesia. UT has provided two kinds of learning service assistance namely face-to-face tutorials and online tutorials. UT provides alternative learning assistance services such as webinar tutorial (TUWEB) as an option for learning assistance services for face-to-face tutorials are not possible during the pandemic, therefore it is important to thoroughly analyze and evaluate the webinar tutorial learning assistance service, both from the evaluation of teaching staff (tutors), user experience and user satisfaction of students towards TUWEB as well as comparisons of academic achievements of students participating in TUWEB and other learning assistance services organized by UT as material for evaluation and improvement in the implementation of TUWEB in the future. This study is conducted purposively with 1.185 students and 222 tutors as the respondents. It is analyzed descriptively and quantitatively by using multiple linear regression analysis. Based on the result, it was found that the performance of TUWEB UPBJJ-UT Bengkulu tutors generally had met the expected quality standard criteria so that it was recommended to return to teaching the same subjects. As many as 71% of respondents get a good user experience and 77% of respondents get high user satisfaction with TUWEB learning services assistant while the variables that have a significant effect on user satisfaction of TUWEB learning aid services are dependability and stimulation. The average value of the cumulative achievement index of all respondents is the highest average GPA obtained by TUWEB service users which is 3.56, the smallest is the average GPA of TMK service users of 3.21, and the average GPA of Tuton learning assistance service users is 3.40.

Keywords:. Learning Service Assistant, TUWEB, Pandemic

1   INTRODUCTION

Universitas Terbuka (UT) is a credible institution and is trusted by the government to equalize education rights for Indonesian all over the country, is fully committed to carrying out this mandate. UT has consistently and constructively shown its commitment to being the best in providing educational services through an open and distance higher education system (PTTJJ) PTTJJ (Pendidikan Tinggi Terbuka dan Jarak Jauh) adapted to the needs of industry and technological developments (Universitas Terbuka, 2015)

UT students are expected to be able to study independently based on their initiation as individual or group tutorials. UT provides teaching materials that are designed to be studied independently. In addition to using teaching materials provided by UT. On the other side, students can also take the initiative to use other reading materials in the library following tutorials, either face-to-face or via the internet, radio, and television; and utilize other learning resources such as computer-assisted teaching materials and audio/video programs. If they have learning difficulties, students

can request information about study assistance from the local Office Regency (Universitas Terbuka, 2015).

.For creating a balance between the learning process and learning achievement, UT has provided two types of learning assistance in the form of tutorial services, namely face-toface tutorials. However, unexpected circumstances hit, the spread of Covid 19 in the world, including in Indonesia, caused a tremendous impact on all levels of society, as well as destroying all sectors. The Indonesian government has also taken a policy aimed at breaking the chain of transmission of the Covid-19 pandemic. One of them is the implementation of social distancing policies, where residents must carry out all activities at home, such as working, worshiping, and studying at home. So that UT as soon as possible provides alternative learning assistance services such as tutorial webinar (TUWEB) as an option for learning assistance services because face-to-face tutorials are not possible as learning assistance services (Mikaresti et al.,2021)

TUWEB is a service in the form of synchronous tutorial activities which use webinar technology in its delivery. TUWEB is bidirectional and multi-user. TUWEB is guided by teaching staff (tutors) who are taken from the field of science and are expected to supervise and motivate the course of learning assistant services properly. Tutor evaluation is very important to do to find out the extent of the tutor's competence to accompany the student's independent learning process.

User experience analysis is aimed to see appraisal and user experience through software service (Cerejo, 2012). Furthermore, it is expected to see which indicators affect user satisfaction. This is done to find out what indicators affect the satisfaction of users of a learning service assistant.

Related to the above description, it is important to do an evaluation and full analysis of TUWEB as a learning assistance service. It started with the evaluation of teaching staff (tutors), user experience, and student user satisfaction with TUWEB as well as the comparison of the academic achievement of the students by using TUWEB with another learning assistance service organized by UT. This is material for evaluation and improvement in the implementation of TUWEB in the future.

2 METHODOLOGY

The research will be conducted intentionally (purposive). The sample size is the number of samples to be taken from a population. According to Arikunto (2012), if the total population is below 100, it is necessary to study it as a whole, but if it is more, it can take 10% -30%. Requirements to become a population are students who have participated in TUWEB. The total population is 11,854 students, so from the data obtained the following sample size: n = 11,854

(10%) = 1185 student respondents and 222 tutor respondents taken by the census. Analyzed descriptively and quantitatively using multiple linear regression.

In analyzing *user experience* and *user satisfication* data obtained from questionnaires, the Likert Scale is used. According to Nazir (2014) that the Likert Scale is a psychometric scale used in questionnaires and is one of the techniques that can be used in the evaluation of a program or planning policy. For Assessment of each indicator = Total Score per Indicator/Number of Respondents. Questionnaires are obtained from various literature studies that will be sent to each user of the TUWEB learning assistance service.

2.1 Tutor Evaluation

Tutor Evaluation by Students

In the table below are some aspects that are assessed by students on the performance of tutors during the implementation of the tutorial, namely.

Assessment criteria: 1 strongly disagree; 2 Disagree; 3 Agree; 4 Very Agree

Tabel 1. Aspects of the Evaluated Tutor

No.	Aspects of the Evaluated Tutor	Assessment			
		1	2	3	4
1	At the first meeting outline the rules of the tutorial clearly				
2	Each meeting clearly outlines the objectives and material benefits of the course				
3	Deciphering the material clearly and interestingly				
4	Providing additional material outside of modules and easy-tounderstand examples				
5	Use easy-to-understand language				
6	Be polite in carrying out the tutorial				
7	Motivate students to actively participate				
Giving assign8	ments/exercises to students at the end of each meeting				
9	Discusses assignments/exercises given in the previous week				

10	Encourage all students to actively participate in discussions/tutorials				
11	Provide opportunities for all students to answer questions / respond to other students' answers in tutorials				
12	Assigning tutorial assignments on the 3rd, 5th, 7th meeting				
13	Provide feedback on the results of student assignments in detail so that students know the advantages and disadvantages				
14	Invite students to make conclusions about the material that has been discussed				
15	Start and end tutorial meetings on time				

2.2   Tutor Evaluation by UPBJJ

Some aspects assessed by UPBJJ on tutor performance ranging from preparation, implementation, to reporting are summarized in the table below

Tabel.2. Assessment Aspects by UPBJJ

No.	Assessment Aspects	Fulfilled	
		Yes	No
1.	Submit a recapitulation of values in a predetermined format in a timely manner		
2.	Submit sample results of 3 tutorial assignments that have been given grades and feedback (highest and lowest task values)		
3.	Carry out the tutorial according to a predetermined schedule (8 x meetings)		
4.	Submitting RAT and SAT		
5.	Record tutorial meetings on the Tutorial Meeting Notes form consistently		

After the tutor evaluation questionnaire by students and UPBJJ-UT has been filled in, it is then recapitulated and processed per tutor per course. The result of appraisal category as follow :

1. The categories of assessment results by students (maximum score of 4.00) are as follows:

    a. *score* less than 2.50;

    b. *score* between 2.50 and 3.00;

    c. *score* greater than 3.00.

2. Categories of assessment results by UPBJJ-UT (maximum value meets 5 aspects)

    a. Required all aspects of tutoring

b. Required aspects 1 and 2 of the tutor assessment;

c. Unrequired aspects 1 and 2 of the tutor's assessment.

After obtaining the results of the Tutor evaluation questionnaire assessment are categorized, then recommend the follow-up of the results based on the following criteria below:

User Experience

Table.3. Questionnaire table of user experience learning assistance service UPBJJ-UT Bengkulu

No	*User Experience* component	Score						
		1	2	3	4	5	6	7
1	*Attractiveness* (Daya Tarik)	Not Interesting/ Interesting						
		Disliked / PleasantNot comfortable to use / Convenient to use						
		User-Friendly/ Not user-friendly						
2	*Dependability* (Ketepatan)	Not as expected / as expected Slow/ Fast						
		Subjective/Objective						
		Unclear/clear						
3	*Efficiency* (Efisiensi)	Inefficient / Efficient						
		Not practical / Practical						
		Complicated / Simple						
		Not Useful/ Helpful						
4	*Novelty* (Kebaruan)	Conventional / Innovative						
		Not creative / Creative						
		Boring / Interesting						
		Legacy / Renewable						
5	*Perspicuity* (Kejelasan)	Difficult / Easy Control / Very clear						
		Unorganized / Organized						
		(Material) Non-Conforming / (Material) Appropriate						
6	*Stimulation* (Stimulasi)	Difficult / Easy Control / Very clear						
		Unorganized / Organized						

	(Material) Non-Conforming / (Material) Appropriate

Source : Siregar, 2019 and Wijaya, 2021

The assessment criteria are as follows:

1 = very not good

2 = less

3 = slightly less

4 = enough

5 = fairly good

6 = good

7 = very good

User Satisfication

Table. 4. Questionnaire table user satisfication learning assistance service UPBJJ-UT Bengkulu

No	Komponen *User Satisfication*	SS	Score			
			S	RG	TS	STS
1	*Content*	C1 : does the learning assistance service you choose provide the learning motivation you need? C2: is the content of the material / learning motivation in accordance with what you need? C3 : does the learning assistance service you choose provide the same benefits as you need? C4 : does the learning assistance service you choose provide sufficient learning material / motivation?				
2	*Accuracy*	A1 : is the learning assistance service you choose accurate? A2 : Are you satisfied with the accuracy of the learning assistant service you choose?				
3	*Format*	F1 : do you feel that the resulting output is already in an easy-to-use format? F2 : is the material / learning motivation provided clear?				
4	*Ease of Use*	E1 : is the learning assistance service you choose that is used *user friendly*? E2 : is the learning assistant service you choose easy to use?				
5	*Timeliness*	Q1 : do you get the material / motivation needed to learn on time you need it?				

Q2: does the learning assistance service you choose provide
up to date learning material / motivation?

Source : Wisudiawan, 2013

Notes:

Strongly Agree (SS)	: 5
Agree (A)	: 4
Doubt (RG)	: 3
Disagree (TS)	: 2
Strongly Disagree (STS)	: 1

3 FINDINGS AND DISCUSSION

3.1 Respondents Characteristic

The characteristics of respondents in this study will describe the respondent's age, gender, working status, and marital status. This is intended to determine the distribution of data and the diversity of students who use the learning assistant service.

3.1.1 Respondent Age

According to Nasir and Masrur (2010) there is a link between age and academic achievement mediated by emotional intelligence. The distribution of respondents by age can be seen in the table as follows:'

Table. 5. Age of respondents who use the study assistance service at UPBJJ-UT Bengkulu

No	Ages	Total (people)	Percentage
1.	18-25	799	67
2.	26-35	257	22
3.	36-45	117	10
4.	46-55	12	1
	Total	1185	100

Source: Primary Data, 2022.

The age categories according to the Ministry of Health are as follows: 1) Toddlerhood: 0–5 Years; 2) Childhood: 5–11 Years; 3) Early Adolescence: 12–16 Years; 4) Late Adolescence: 17–25

Years; 5) Early Adulthood: 26–35 Years; 6) Late Adulthood: 36–45 Years; 7) Early Seniors: 46–55 Years; 8) Late Age: 56–65 Years; and 9) Tenure: > 65 Years (Hakim, 2020).

 Based on the table above, it shows that out of 1185 respondents. 26 to 35 years of age as much as 257 or 22% is early adulthood, 36 to 45 years old is 117 or 10% of late adulthood, and 45 to 55 years old as many as 12 people or 1% are early elderly. Meanwhile, the majority of respondents aged 18 to 25 years as many as 799 people with a percentage of 67% being in late adolescence. At this time the individual begins to stabilize and begins to understand the direction of life and realize from the purpose of his life and have a certain stance based on one clear pattern (Lerner, 2020).

3.1.2   Gender

Men and women have different ways of thinking or views. So that activities in achieving academic achievement also have the potential to have differences. The distribution of respondents by gender can be seen in the table as follows:

Table. 6 Gender of users of learning assistance services at UPBJJ-UT Bengkulu

No	Gender	Total (people)	Percentage (%)
1	Male	210	18
2	Female	975	82
	Total	1185	100

Source: Primary Data, 2022.

 Based on the table above, it can be seen that the number of female respondents is more dominant than male respondents with a total of 975 or a percentage of 82% while men number 210 or a percentage of 18% of the total number of respondents 1185 people. According to Nasir and Masrur (2010) there is a link between gender and academic achievement mediated by emotional intelligence.

3.1.3   Working Status

UT students are facilitated with online and remote learning services that allow some students to work together. The distribution of respondents based on working status can be seen in the table as follows:

Table. 7 Working Status of users of study assistance services at UPBJJ-UT Bengkulu No

Employment Status   Number (Persons)   Percentage (%)

No	Employment Status	Number	Percentage (%)
1	**Work**	**736**	**62**
2	**Not Work**	**449**	**38**
	Total	**1185**	**100**

Source: Primary Data, 2022.

Based on the table above, it can be seen that the number of respondents who have working status is more than the number of respondents who have not worked with 736 or the percentage is 62% while those who have not worked are 449 or the percentage is 38% of the total number of respondents 1185 people.

3.1.4 Marital Status

A person with marital status will have more activities and future planning than someone who is not married. This has the potential to influence respondents in their achievements on their academic performance. The distribution of respondents based on marital status can be seen in the table as follows:

Table. 8 Marital Status of learning assistance service users at UPBJJ-UT Bengkulu

No	EMPLOYMENT STATUS	NUMBER (PERSONS)	PERCENTAGE (%)
1	Married	746	63
2	Single	439	37
	Total	1185	100

Source: Primary Data, 2022.

Based on the table above, it can be seen that the number of respondents who have mating status is more than the unmarried respondents with a total of 746 or the percentage is 63% while the unmarried ones are 439 or the percentage is 37% of the total number of respondents 1185 people.

3.2 Evaluation Result

Based on the results of the evaluation that has been carried out by the Manager of Tutorials and Teaching Materials along with staff in the field of Tutorials and Teaching Materials, it can be concluded:

A total of 222 Tutors in 2022.1 received an assessment of the results of the evaluation questionnaire by students with a score of more than or equal to 3 and received the results of the evaluation by UPBJJ with an assessment meeting all aspects of the tutor's assessment. So that the follow-up results based on this evaluation are the Tutors are reassigned for the same course.

A total of 7 tutors in the 2022.1 period received an assessment of the results of the evaluation questionnaire by students with a score of more than or equal to 3 and received the results of the evaluation by UPBJJ with an assessment meeting the assessment aspects

of 1 and 2 tutor assessments. So that the follow-up results based on this evaluation are the Tutors are reassigned with improvements in administrative fulfillment in the next semester.

A total of 2 tutors in 2022.1 received an assessment of the results of the evaluation questionnaire by students with a score of more than or equal to 3 and received the results of the evaluation by UPBJJ with an assessment that did not meet aspects 1 and 2 of the tutor's assessment. So that the follow-up results based on this evaluation are Tutors Not Assigned Anymore.

Based on the data above that has been carried out, it can be concluded that the performance of the UPBJJ-UT Bengkulu TUWEB Tutors has broadly met the expected quality standard criteria so that it is recommended to return to teaching the same course. For Tutors who meet the assessment aspects 1 and 2 of the tutor assessment so that they are reassigned with the improvement of the next semester's administrative fulfillment and are given verbal and personal guidance by each Person in Charge of the tutor report examiner to be more disciplined again in terms of tutorial administration. Meanwhile, for Tutors who do not meet the assessment aspects of tutor evaluation by UPBJJ, the Tutors are not reassigned by UPBJJ-UT Bengkulu.

3.3 *User Experience* and *User Satisfication* Analysis of TUWEB Learning Assistance Service

Analysis of *User Experience* and *User Satisfication on* TUWEB was carried out to find out how the student experience and satisfaction after attending the TUWEB learning assistance service. TUWEB is a virtual tutor-assisted learning service. Performed for 2 hours on schedule every week within a period of two months using the MS Teams application. Students can discuss and ask tutors about courses virtually. Based on the processing of primary data, the following information is obtained;

Table. 9. Data User Experience Help Help Learning Tutorials Web-Based Tutorials

No.	Category	Range (*User Experience Value*)	Number of Respondents (People)	Percentage (%)
1	Less	24 - 72	37	3%
2	Enough	73 – 120	311	26%
3	Good	121 – 168	837	71%
Total			**1185**	**100**

Source; Primary data processed, 2022

Based on the table above, it is known that the number of students who have user experience in the category is less than 37 people or only 1.67%. The good category dominates, with 71% indicating that users respond positively to TUWEB's learning assistance service. Based on the information in the questionnaire, these three respondents said that signal constraints were the biggest obstacles so that they could not receive the material optimally. The *user experience value* consists of 6 indicators, namely, attractiveness, *dependability, efficiency, novelty, perspicuity, stimulation.* Judging from 180 respondents, *the dependability* indicator obtained the lowest average value (23) and *perspicuity* (23.8) obtained the highest average value. *Dependability* describes the clarity of TUWEB; not as expected / as expected, slow / fast, subjective / objective, or unclear / clear. *Perspicuity* describes the precision of TUWEB ; difficult / easy, confusing / very clear, disorganized / organized, (material) inappropriate / (material) appropriate.

Table. 10. Data User Satisfication Web-Based Tutorials Learning Help

No.	Category	Range (*User Satisfication Value*)	Number of Respondents (People)	Percentage (%)
1	Rendah	12-28	39	3%

2	Sedang	29-44	231	19%
3	Tinggi	45-60	915	77%
	Jumlah		**1185**	**100**

Source; Primary data processed, 2022

Based on the data above, it is known that the number of students with user satisfaction in the low category amounted to 39 people or only 1.67%. The high category dominates, namely 77% of students feel satisfied after participating in TUWEB. Satisfaction assessment or *User Satisfication* comes from several indicators as follows; *content, accuracy, format, ease of use* and *timeliness. Ease of use obtained the highest score of (8.8).* Students consider TUWEB to be one of the best learning service assistances during a pandemic (easy and practical), because students can easily discuss directly with tutors through video conferences. This service is appropriately chosen for courses that are difficult to learn independently and require more intense guidance. 71% of 1185 respondents said network constraints were a major problem, especially during bad weather, rain and students in rural areas. Information was also obtained regarding the need for a large quota for TUWEB learning assistance services.

3.4 Factors Influencing User Satisfaction Towards Learning Assistance Services TUWEB

User satisfication of TUWEB is measured by the user's assessment of *attractiveness, dependability, efficiency, novelty, perspicuity, stimulation.* Meanwhile, *user satisfication* of TUWEB is measured based on user satisfaction with *content, accuracy, format, ease of use* and *timeliness.* To determine the influence of the variables *attractiveness, dependability, efficiency, novelty, perspicuity, stimulation* on the magnitude of tuweb *user satisfication*, data processing is carried out using multiple linear regression as follows;

Table 11. Regression data of factors influencing user satisfaction towards web-based tutorial learning help services.

R Square			**F**	**Sig.**	
.772			97.525	.000[a]	

Model	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
	B	**Std. Error**	**Beta**		
1 (Constant)	13.732	1.631		8.417	.000

X1 (*attractiveness*)	-.043	.151	-.026	-.282	.778
X2 (*dependability*)	**.421**	**.172**	**.242**	**2.444**	**.016**
X3 (*efficiency*)	-.006	.189	-.004	-.032	.974
X4 (*novelty*)	-.084	.175	-.048	-.477	.634
X5 (*perspicuity*)	.156	.173	.086	.903	.368
X6 (*stimulation*)	**1.154**	**.156**	**.659**	**7.379**	**.000**

F table: 2.150

T table: 1.653

Source; Primary data 2022

Based on the table above, the value of R^2 or R square is 0.772 or equal to (77.2%). This illustrates that the magnitude of the contribution of an independent variable to its dependent variable is 77.2% or it can be said that the variation of its independent variable used in this model can explain by 77.2% to the variation in its dependent variable. While the remaining 22.8% is explained or influenced by some variables that are not contained and are not included in this model.

The test used to determine the overall influence of independent variables on dependent variables is the F test. With the level of significance obtained by 0.000 and the calculated F value>F table (97.525>2.150) and it can be concluded that these factors have a simultaneous effect on the satisfication user of the TUWEB learning assistance service.

Based on the output generated in the table above, it can be seen that there are 2 variables that have a significant effect on *the user satisfication* of the TUWEB learning assistance service. These variables are X2 (*dependability) and* X6 (*stimulation).* In the variable X2 (*Dependability)* obtained the value of T counting > T table (2,444 > 1,653) and the significance value (0.016 < 0.05), it can be concluded that variable X2 (*Dependability)* affects *the user satisfication* of the TUWEB learning assistance service. The variable X6 (*stimulation)* has a calculated T value > t table (7,379> 1,653) and a significance value (0.000 < 0.05), so it can be concluded that the variable X6 (*stimulation)* affects *the user satisfication* of the TUWEB learning assistance service. Meanwhile, several other variables such as X1 (*attractiveness), X3 (efficiency), X4 (novelty), X5 (perspicuity)* did not have a significant effect on the *user satisfication* of the TUWEB learning assistance service. So in an effort to increase user satisfaction with TUWEB's learning assistance services, managers can increase *dependability* and *stimulation.*

3.5 Comparison of the academic achievements of users of the TUWEB learning assistance service with other learning assistance services.

TUWEB or webinar tutorial is a learning assistant service where students can meet face-to-face virtually and have two-way communication with tutors. While tuton is a learning assistance service where students are guided online through the Open University elearning website, students can discuss and do questions and answers via the website. While TMK or course assignments are learning assistance services in the form of assignments. Students who do not take the tuton and TUWEB study assistance services will be automatically netted by this learning assistance service. The following is a comparison of the academic achievement index of 1185 students who use the learning service.

Table 12. Comparison of academic achievements of users of study assistance services

Types of Learning Assistance Services	Highest GPA	Lowest GPA	Average GPA
TUWEB	3.95	1.54	3.56
TUTON	3.93	2.00	3.40
TMK	3.80	2.00	3.21

Source: Primary Data, 2022.

From table above, the result of accumulative academic achievement index as the highest score is TUWEB (3,95) while TUTON and TMK are 3,93 and 3,80. The lowest academic achievement index is 1,54 of TUWEB while TUTON and TMK is 2,0. The highest average score of accumulative academic achievement index among of all students is TUWEB of 3,56 and the lowest is TMK with 3,21.

TUWEB is assumed to be effective because students meet virtually, making discussion and gaining answer directly on the obstacle of certain major but TUWEB needs a good signal and network for accessing Microsoft Teams as virtual application. TUTON is able to acomodate 2 ways communication neverthless ineffective as TUWEB because tutors is not always accessing e-learning at the same time, it needs more effort in monitoring e-learning to discuss with tutor. For TMK, there's no 2 ways communication, the students are directed and instructed to do task 1,2 and 3 then must be corrected as trial to face Semester Test (final test).

In spite of being a medium for studying and practicing in the face of the final exam, these three learning assistance services also have their own grade contribution to the final grade with certain terms and conditions. The height must reach a value of 30% and above in order to get a value that contributes to the final value. TUWEB contributed 50%, tutons by 30% and TMK by 20%.

4 CONCLUSION

1   The performance of TUWEB tutors in UPBJJ-UT Bengkulu has fulfilled quality standard then recommended to re-teach at the same courses.

2   71 percent of respondents has good experience and 77 percent of respondents has been fully satisfied toward learning assistant of TUWEB where the significant variable affecting user satisfaction namely dependability and stimulation.

3 For average achievement index accumulation (IPK) from whole respondent, with the highest IPK is 3,56 and the smallest is 3,21 from TMK service whereas average IPK for TUTON is 3,40

SUGGESTION

For UT leaders, the advice that can be conveyed is to minimize obstacles in TUWEB learning assistance services, it is necessary to provide access to TUWEB recordings so that students who cannot follow because of signal constraints can play back the conference video. To overcome the large use of quotas, managers can consider using *conference* applications that are more quota-efficient and variable which has a significant effect on the user satisfication of TUWEB learning assistance services, namely dependability and stimulation, then in an effort to increase user satisfaction with TUWEB learning assistance services, managers can increase dependability and stimulation.

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SUPERVISION TECHNICAL GUIDANCE FOR ARCHIEVE UNIVERSITAS TERBUKA

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Abstract

The study was made to measure the implementation of archive management in accordance with applicable laws at the Universitas Terbuka (UT), it is necessary to identify the implementation of archive management in accordance with the rules of archival science. The research with the title of internal archival supervision is a descriptive study that aims to describe the implementation of archiving management within the Universitas Terbuka Processing Unit including archive management at UT central and UT region (UPBJJ). Sources of data can be obtained from Information Archives who handle archives in the Central UT Processing unit, namely LPPMB and LPPM because these units manage large archives and UPBJJ, namely UPBJJ-UT Jakarta and UPBJJ-UT Bogor, manage large archives. Sources of data obtained from the implementation of the Archives Supervision of the Universitas Terbuka have been going well because the results of the Archival Supervision results show good, very good, satisfying and very satisfying scores. However, to achieve a perfect score, it is still necessary to improve the management of the inactive archive maintenance section, and the management of vital records.

Keywords: standardization; Archive Management; Archive Control; Archive Management Distance Learning.

1   INTRODUCING

1.1   Background

The Liang Gie states that an archive is a collection of documents that are stored systematically because they have a function so that whenever needed they can be quickly retrieved (The Liang Gie, 1992:118). The International Standard Organization defines records as information that is created, received, managed as evidence or used by both organizations and individuals to fulfill legal obligations or business transactions (Sukoco, 2007:82).

Archives according to Law number 43 of 2009 are records of activities or events in various forms and media in accordance with information and communication technology developments made and received by state agencies, local governments, educational institutions, companies, political organizations, community organizations and individuals in implementation of social, national and state life.

Law Number 43 of 2009 concerning Archives states that the organization of archives aims to ensure the creation of archives, the availability of authentic and reliable archives, the realization of reliable archive management, the protection of state interests and civil rights, the safety and security of archives, the safety of national assets and dynamically organize the national archives, as well as improve the quality of public services.

Archive Management that conforms to International Standards in the field of archives, namely ISO 15489-1: 2016 concerning Documentation: Concepts And Principles – Records Management. Archive management according to international standards is very important for an organization in order to create authentic, reliable, intact and usable records, so that they can support organizational performance.

The Open University as an Educational Institution and State University has independence in managing records, this is stated in law no. 43 of 2009 article 27 paragraph (1) and paragraph (2) where the management of higher education archives is carried out by the Higher Education Archives Institution (LKPT), so that the existence of an LKPT is mandatory for all state

Archives supervision is supervision over the implementation of archives management and enforcement of laws and regulations in the field of archives. Supervision of archives management includes supervising the implementation of archival policy stipulations, archiving management and archives management. While supervision of the enforcement of laws and regulations is the obedience and compliance of archive creators, structural and functional officials and archive managers in implementing archival laws and regulations.

The type of archival supervision consists of external archival supervision by ANRI as the Central Archival Institution and internal archival supervision. Internal archival supervision carried out through audits of the internal filing system in Archival work units II and Administration Subdivision, BBLBA and Student Affairs and Registration and Examinations as Processing Units was carried out by the Open University Internal Archive Supervisory Team which was formed by the Chancellor of the Open University based on a letter Decree of the Chancellor of Tebuka University Regarding the Establishment of the Open University Archive Supervisory Team and facilitated by the Open University Archive Unit as Archival Unit I acting as the Higher Education Archive Institution.

The Open University Archive Unit which was formed in accordance with the Open University Chancellor's Regulation Number 48 of 2018 dated February 7 2018. In this regulation the purpose of establishing the Archive Unit in the UT Environment is that the management and administration of archives in the UT Environment is carried out in accordance with the provisions of the applicable laws and regulations .

1.2 Purpose and Objectives

It is very important to carry out archival monitoring activities in the Open University environment to evaluate how far the dynamic archive management process has been organized, structured and filing active and inactive archives in accordance with archival rules. The implementation of archival supervision is coordinated by the UT Archives Technical Implementation Unit which has the duties and functions of fostering archives within UT.

the audit of the internal filing system of the central work unit and UPT UPBJJ UT as the Archive Unit II and Administration Subdivision, BBLBA and Student Affairs and the Registration and Examination Sector as the Processing Unit are for:

1) Supervision of the implementation of filings within the Open University;

2) Supervision of the enforcement of archival laws and regulations within the Open University; as well as

3) Test compliance with archiving laws and regulations in the management of dynamic archives carried out within the Open University environment effectively and efficiently.

1.3 Scope

1) Aspects of Dynamic Records Management. Namely conducting testing or verification of dynamic archive management starting from the creation of archives, the use of archives, maintenance of inactive archives, depreciation of archives, as well as archive services and access;
2) Archival Human Resources Aspect. That is carrying out testing or verification of archival human resources and archival infrastructure and facilities;
3) Aspects of infrastructure and filing facilities. Namely carrying out tests or verification of available archival infrastructure and facilities.

2 METHODOLOGY

Implementation of Archive Monitoring Activities in Universitas Terbuka environment is carried out through monitoring objects Internal filing system audits are carried out in the Universitas Terbuka environment with monitoring objects validating using the Archive Audit form instrument contained in the Decree of the Head of ANRI NO 53 of 2018 concerning the Second Amendment to the Decree of the Head of ANRI NO 32 2016 concerning Archival Audit Instruments and Archival Human Resources

3 FINDINGS AND DISCUSSION

3.1 Archive Supervision includes

3.1.1 Monitoring Object

In accordance with the Archival Audit Work Plan, sampling was carried out on 4 (four) monitoring objects at UT Central Units and UT Region with the aim of assessing the resultsof the guidance carried out by the archival unit on Archival Unit II and processing units in their environment. An internal filing system audit is carried out on UT Region with 4 (four) monitoring objects, namely as follows:

A. Secretariat in the work unit of the UPT UPBJJ-UT Center as the Archives Unit II. Obtain an assessment of by category.

NO	ASPECT/SUB ASPECT		Score Standard	Score Sub Aspect	%	CATEGORY
(1)	(2)		(3)	(4)	(5) = (4)/(3) X100	(6)
1	DYNAMIC ARCHIVE MANAGEMENT		590	440	75	Very good
	1.1	Creation	80	80	100	Very satisfy
	1.2.	Inactive Archive Processing	50	50	100	Very satisfy
	1.3.	Maintenance of Inactive Archives	70	60	86	Satisfy
	1.4.	Services and Dynamic Archives	80	70	88	Satisfy
	1.5.	Extermination	190	180	95	Very satisfy
	1.6.	Submission	120	0	0	Very Less
2.	HUMAN RESOURCES ARCHIVES		120	25	21	Very Less
	2.1	Archivist	80	0	0	Very Less
	2.2.	Archives Manager	40	25	63	Good
3.	ARCHIVES INFRASTRUCTURE AND FACILITIES		170	90	53	Enough
	TOTAL		880	555	63	Good

B. Administrative Subdivision as Processing Unit. Obtain an assessment of by category :

NO	ASPECT/SUB ASPECT		Score Standard	Score Sub Aspect	%	CATEGORY
(1)	(2)		(3)	(4)	(5) = (4)/(3) X100	(6)
1	DYNAMIC ARCHIVE MANAGEMENT		590	440	75	Very Good
	1.1	Creation	80	80	100	Very Satisfy
	1.2.	Inactive Archive Processing	50	50	100	Very Satisfy
	1.3.	Maintenance of Inactive Archives	70	60	86	Satisfy

NO	ASPECT/SUB ASPECT		Score Standard	Score Sub Aspect	%	CATEGORY
(1)	(2)		(3)	(4)	(5) = (4)/(3) X100	(6)
	1.4.	Services and Dynamic Archives	80	70	88	Satisfy
	1.5.	Extermination	190	180	95	**Very Satisfy**
	1.6.	Submission	120	0	0	**Very Less**
2.	**HUMAN RESOURCES ARCHIVES**		**120**	**25**	**21**	**Very Less**
	2.1	Archivist	80	0	0	**Very Less**
	2.2.	Archives Manager	40	25	63	**Good**
3.	**ARCHIVES INFRASTRUCTURE AND FACILITIES**		170	90	53	**Enough**
	TOTAL		**880**	**555**	**63**	**Good**

C. Registration and Examination as Processing Unit . Obtained an assessment of the category:

NO	ASPECT/SUB ASPECT		Score Standard	Score Sub Aspect	%	CATEGORY
(1)	(2)		(3)	(4)	(5) = (4)/(3) X100	(6)
1	**DYNAMIC ARCHIVE MANAGEMENT**		**590**	**440**	**75**	**Very Good**
	1.1	Creation	80	80	100	**Very Satisfy**
	1.2.	Inactive Archive Processing	50	50	100	**Very Satisfy**
	1.3.	Maintenance of Inactive Archives	70	60	86	**Satisfy**
	1.4.	Services and Dynamic Archives	80	70	88	Satisfy
	1.5.	Extermination	190	180	95	**Very Satisfy**
	1.6.	Submission	120	0	0	**Very Less**
2.	**HUMAN RESOURCES ARCHIVES**		**120**	**25**	**21**	**Very Less**
	2.1	Archivist	80	0	0	**Very Less**
	2.2.	Archives Manager	40	25	63	**Good**
3.	**ARCHIVES INFRASTRUCTURE AND FACILITIES**		170	90	53	**Enough**
	TOTAL		**880**	**555**	**63**	**Good**

D. Study Assistance and Teaching Material Services as Processing Unit Obtained an assessment of the category:

NO	ASPECT/SUB ASPECT		Score Standard	Score Sub Aspect	%	CATEGORY
(1)	(2)		(3)	(4)	(5) = (4)/(3) X100	(6)
1	**DYNAMIC ARCHIVE MANAGEMENT**		**590**	**440**	**75**	**Very Good**
	1.1	Creation	80	80	100	**Very Satisfy**
	1.2.	Inactive Archive Processing	50	50	100	**Very Satisfy**
	1.3.	Maintenance of Inactive Archives	70	60	86	**Satisfy**
	1.4.	Services and Dynamic Archives	80	70	88	Satisfy
	1.5.	Extermination	190	180	95	**Very Satisfy**
	1.6.	Submission	120	0	0	**Very Less**
2.	**HUMAN RESOURCES ARCHIVES**		**120**	**25**	**21**	**Very Less**
	2.1	Archivist	80	0	0	**Very Less**
	2.2.	Archives Manager	40	25	63	**Good**
3.	**ARCHIVES INFRASTRUCTURE AND FACILITIES**		170	90	53	**Enough**
	TOTAL		**880**	**555**	**63**	**Good**

DESCRIPTION OF INTERNAL ARCHIVES SUPERVISION RESULTS ON THE PROCESSING UNIT

WORK UNITS AND UPBJJ OPEN UNIVERSITY

SUB KOORDINATOR BIDANG TATA USAHA

ASPECT/SUB-ASPECT	Factual Conditions	FULFILLMENT OF STANDARDS	AUDIT RECORDS	RECOMMENDATIONS
ASPECT OF DYNAMIC ARCHIVES MANAGEMENT				
1.1. ARCHIVE CREATION				
Availability of Official Manuscripts	1)			
Conformity in Making Official Documents	1) The Administration Sub-Coordinator at the Library UPT at the Library UPT in numbering official scripts, has used official script numbering in accordance with the official script numbering arrangement based on the official script arrangement for all official scripts made.	Attachment to Regulation of the Head of ANRI Number 2 of 2014 concerning Guidelines for Official Document Arrangement, Chapter II Part B: Numbering on official document is an important part in the process of creating archives. Therefore, the arrangement must be able to provide easy storage, security, retrieval, and archive evaluation.	It is appropriate but still needs to be perfected in the numbering of official letters such as the inclusion of letter degrees (SR, R, T and B)	

	2) Has included the archive classification code for all orders made as regulated in the applicable official document system.	Appendix to Regulation of the Head of ANRI Number 2 of 2014 concerning Guidelines for Official Manuscripts, Chapter II Part B number 1c: The order numbering arrangement/assignment letter is as follows: 1) Classification code; 2) Serial number of order/assignment letter; and 3) Year of publication.	Must always include a classification code that is appropriate to the context of the letter	
	3) Only some official letters include the archive classification code as stipulated in the applicable official document system.	Attachment to Regulation of the Head of ANRI Number 2 of 2014 concerning Guidelines for Official Document Arrangement, Chapter II Part B number 2: The composition of official letter numbers includes: 1) official letter security classification categories; 2) document number (order number in one calendar year); 3) archive classification code; 4 months; and 5) year of publication.		So that all official letters use the classification according to the official document numbering arrangement
	4) All official notes made include the archive classification code as stipulated in the applicable official document system.	Attachment to Regulation of the Head of ANRI Number 2 of 2014 concerning Guidelines for Official Manuscripts, Chapter II Part B number 3: Official notes are internal in nature, with the following numbering arrangement: a. official document number (order number in one calendar year); b. classification code; c. month (written in two digits); and D. publication Year.		
	5) The Administration Sub-Coordinator at the Library UPT at the Library UPT has used paper sizes in accordance with the paper size standards as stipulated in the applicable official document arrangements.	Attachment to Regulation of the Head of ANRI Number 2 of 2014 concerning Guidelines for Official Scripts, Chapter II Part C Number 1a paragraph 4): The paper used for official documents is sized according to the type of manuscript consisting of: a) Directed official documents use F4 paper measuring 210 x 330mm; b) Correspondence official documents use A4 paper measuring 297 x 210 mm (8¼ x 11¾ inches); c) Special official documents use A4 paper measuring 297 x 210 mm (8¼ x 11¾ inches); d)		

			The report uses A4 paper measuring 297 x 210 mm (8¼ x 11¾ inches); and e) Staff review on A4 paper measuring 297 x 210 mm (8¼ x 11¾ inches).		
	6)	has used paper in accordance with the grammage standard (weight) of paper as stipulated in the applicable official document system.	Attachment to Regulation of the Head of ANRI Number 2 of 2014 concerning Guidelines for Official Manuscripts, Chapter II Part C Number 1a: 1) The paper used for official activities is HVS of at least 70 grams, including for correspondence activities, duplicating and reporting documents. 2) Making official documents from draft to nett with initials may not use waste paper because the official document from draft to signature is an archival file. 3) Official document with secondary or permanent use value, must use paper with permanent paper standard: a) Minimum grammage of 70 gram/m2; b) Tear resistance of at least 350 mN c) Folding resistance of at least 2.42 (schopper method) or 2.18 (MIT method) d) pH in the range of 7.5-10 e) Alkali content of paper at least 0.4 mol acid/kg f) Oxidation resistance contains a kappa number of at least 5		

3.1.2 Archieve Control Team

The External Archives Monitoring Team (ANRI), and the Internal Archives Monitoring Team consist of Archival Expert Level HR. First, Young and Middle who were assigned from the Archives Unit I (UPT. Archives).

3.1.3 General Conditions of Archival Control Objects

The general conditions of the Central work units and UPT UPBJJ UT as the Archives Unit II, since 2019 have implemented archival management in accordance with applicable laws and regulations. With the aim of improving quality and supporting services on an ongoing basis so as to achieve continuous service improvement.

4 CONCLUSION

Based on the results of the audit, it can be concluded that the following 5 aspects:

1. Archive Creation

In the aspect of making official letters within the Open University environment, it has gone well in the sense that it is in accordance with the Official Document Procedures that apply at the Open University.

2. Filing

In the aspect of filing archives the Processing Unit in the work units of the Center and UPT UPBJJ has carried out archival filing in accordance with archival standards, namely archives are filed according to activities and classification codes, sorted according to chronology and using appropriate active archival filing equipment such as archive guides and folders /archive envelope,

a list of archives is made in the form of a list of files and a list of contents of the file and placed on the archive shelf.

3. Shrinkage

In terms of archive shrinkage, it is hoped that in the future, archives will be transferred to inactive archives in the Processing Unit in accordance with the procedures for transferring inactive archives, destroying inactive archives and being able to submit static archives to Archive Unit I.

4. Human Resources in the Field of Archives

Archival Human Resources Aspect, the Open University already has archivists from the level of Skilled Archivists, Supervising Archivists, First Young Expert Archivists, Junior Expert Archivists, and Associate Expert Archivists who are currently in the Archives Unit (UPT.Archives), and Units The work center at the University is expected to carry out active dynamic archive management consisting of active archives, inactive archives, vital archives and archive management who have competence or expertise in the archives field.

5. Archive Facilities and Infrastructure

Archival facilities and infrastructure, the Open University already has facilities for filing archives such as guides or archive partitions, folders, archive boxes, bindex and filing cabinets and already has an inactive archive storage room or record center.

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No. 43 of 2009 article 27 paragraph (1) and paragraph (2) Archive Management of Higher Education Institutions;

ISO 15489-1:2016, International Standard in the field of archiving, regarding Documentation: Concepts And Principles – Records Management;

Regulation of the Head of ANRI No. 37 of 2016 concerning Depreciation Guidelines;

Regulation of the Chancellor of the Open University Number 48 of 2018 dated 7 February 2018 concerning the Establishment of an Archive Unit within UT;

Regulation of the Head of ANRI No. 53 of 2018 concerning the Second Amendment to Decision of Head Anri No. 32 of 2016 concerning Archival Audit Instruments.

USE OF CONSTRUCTIVE FEEDBACK, TO IMPROVE CRITICAL THINKING SKILLS OF DISTANCE STUDENTS (UT)

Dewi Andriani[1], Susy Puspitasari[2], Titi Chandrawati[3]

Abstract

This study aims to describe the efforts of tutors in improving students thinking skills during online learning by providing structured feedback on the abilities to be developed. Providing feedback is one of the learning components that have a significant influence on maintaining student learning power online and can improve and develop student abilities in learning, especially the development of the ability to facilitate learning. Through providing feedback, students construct their thinking skills to solve problems, seek solution, ideas and make the right decisions to overcome existing problems. Providing feedback on every student activity in discussion forums and assignments is a wise investment to develop student interactivity and learning abilities. To find out the benefits and changes in learning experienced by students through the provision of feedback, an instrument was developed that is not only able to measure and explore mastery of concepts and learning skills but also able to develop low to high-level thinking skills during learning. Although learning has been designed in a such way to develop students abilities, higher-order thinking skills require other efforts during the online learning process. Providing feedback is one of the efforts in assessing as well as constructing students thinking abilities gradually from low to high-level abilities. This study also aims to describe the various types of feedback that can be used to develop the higherorder thinking skills that distance learning students should have. This present study uses qualitative analysis and observation to get information on student responses in discussion forums and assignments. This present study revealed and proved several benefits obtained and felt by students related to increasing the ability to facilitate learning, especially higher-order thinking skills. These findings indicate that providing feedback in various forms during the online learning period can increase the ability to facilitate learning and improve performance.

Keywords: Feedback, constructive thinking, distance learning

1 INTRODUCTION

Each university has the responsibility to provide knowledge and skills for their students. In the same time the lecturers in a study program have the responsibility to help the students to have a meaningful learning experience. It is hoped that by the help of all the lecturers and the university, all students can posses the essential knowledge and skills needed to enter their community, and at the end, the students can be successful in their chosen field. Therefore, the key of the students' success is how the study program can organise the learning process to prepare its students to get the expected knowledge and abilities.

The Final Assignment Program (TAP) course in the Educational Technology (ET) study program at the Universitas Terbuka (UT) is a course that must be taken by ET students who will complete their education in the Faculty of Education or FKIP-UT. After taking 125 credits, students are considered to have met the academic requirements to take this TAP course. Through the TAP course, students are guided and tested to understand problems and determine solutions by internalizing and connecting various theories in the field of educational technology that have been studied to facilitate the learning process.

It is hoped that by taking the TAP course the ET students are able to make decisions in order to develop and facilitate learning activities to improve their self performance as a learning facilitator. The study program has designed that by taking the TAP course, the ET students can get some competencies such as being able to analyze various educational and learning problems, find appropriate solutions to various learning and learning problems, use theories and principles in the field of educational technology in facilitating learning and use critical thinking in designing learning programs to make learning more effective and efficient.

The form of TAP examination is presented in the form of learning cases developed from educational and learning problems that occur in society. Through the learning cases, students are asked to answer questions related to learning activities and provide recommendations and provide solutions/solve learning problems that are appropriate to the case. The solution relates to the application of the field of educational technology and a systems approach to facilitate learning and performance improvement (definition of TP). This ability is related with the definition of educational technology (AECT 2004), moreover, this ability is also expected to be possessed by students of educational technology at UT. Through the TAP course, the ability to facilitate learning and increase performance is developed through the provision of learning case-based questions. These questions are designed to evaluate the ability of students in analyzing the learning problems and make decisions to determine the right solution to each learning problem which should be related with the theories of educational technology.

In taking the TAP course, students should learn through online tutorial (tuton). Therefore, all of the guidance and instruction from the online tutorial tutor will be in online tutorial form. The feedback given by the online tutorial tutor are aimed to guide the students to construct their knowledge. The TAP course tutor tries to guide the students with feedback that can make the students be involved in their learning via online tutorial. Therefore TAP course tutor needs strategy to developed an effective and efficient learning that can help the students to construct their knowledge to answer the examination questions given in TAP online course.

To answer the examination questions in TAP course, the students should be mastered the ET concepts. Also, the students should know and use relevant theories and principles in the field of Educational Technology (ET) as a solution to solve the learning problems..

The purpose of this study was to identify how the students can increase their ability to solve learning cases through feedback given by the online TAP course tutor. Through this research, the

researchers tried to investigate the effects of feedback given by the online tutor while the students taking TAP course.

2 METHODOLOGY

This study use qualitative approach with semi - structured interview. The respondents of the study were 9 students Educational Technology that has taken TAP courses in semesters 2021.2 and 2022.1. The interview questions were already by reviewed by an ET expert. The questions interview were developed to investigate what the students felt and experienced when they were taking the TAP online course. In fact this study is an away to investigate the meaningfulnees of the feedback given by a tutor.

LITERATURE REVIEW

Online learner maybe tend for get discouraged heart or frustration every time a problem no could resolved alone, and hopelessness and frustration in a manner direct will cause drop out from school. So feedback is very important for maintain students and improve satisfaction student .

Feedback is specific information received to help reflect back on each answer given and to improve student responses and improve skills needed in the world of work in the future. So far, in general, what feedback students feel is only in the form of comments on the answers to the assignments being assessed. According to Hattie & Timperley, 2007; Mory, 2004; Poulos & Mahony, 2008; Sadler, 1989 (in Design Using Free Technologies Jiangmei Yuan and Chan Min Kim) in previous research it has been confirmed that the great benefits of providing feedback in learning are providing information about the correctness of students' responses to learning assignments, the knowledge needed for correct solutions, Feedback can also increase students' self-confidence and motivation to learn because it shows recognition of the efforts and achievements of the learner. Learning theorists advocate providing immediate feedback. Gagne's learning events emphasize the importance of feedback for student success. However by having the feedback, the students who took TAP can receive meaningful feedback in many ways.

Benefits of feedback

a. Information to improve work

b. Develop students' ability to give better answers and

c. Brainstorm ideas, also to provide clarification of misconceptions on a broad scale, rather than private written/verbal consultation with individual students, which loses the element of comparison with peer responses

d. Give them time to reflect on the feedback they have received

e. Develop their confidence with the abilities and answers given

RESEARCH RESULTS

From the study, the researchers found that every student have different understanding _ in understanding the learning cases and the questions discussion. However, it showed that students said that they are helped by the feedback given by the tutor. The respondents said that the feedback given by the TAP course tutor are very important and help the respondents to understand the cases better. Therefore, the respondents found that the tutor's feedback in TAP examination is very important to help the respondents get success in taking the course.

The respondents also agreed that the feedback works as means to help the respondents in having some interest and enthusiasm in taking the TAP tutorials. Feedback given could be modified such in accordance with necessary abilities and with the material to be taught and appropriate students' condition.

Clear and meaningful feedback could help increase student involved in the learning process . No feedback either only give know what to _ they do but also provides advice, tips, and references as reference for increase quality Duty moment this or in the future . (Noura Badawi, EdD, Edna

Murugan , PhD, and Sen Padilla, DrPH, 2021 in https://www.facultyfocus.com/articles/philosophy-of-teaching/six-ways-to-fall-in-love-withteaching-again/ .

There is students' enhancement ability in finding and analyzing problem, ability to define and to decide solution in solving learning problems. Thus, the students can have an ability think in higher level.

It turns out that feedback is really good in developing the students' ability in answering the TAP questions as stated by Gagne & Briggs (2008) that explain that a study is a results necessary pair of stimulus and response given strengthening continuous reinforcement continuously. Learning strategy with a good feedback can develop students' ability including the ability to think more higher.

3 CONCLUSION

Analysis results show that feedback in TAP online tutorial has given the respondents some fun and meaningful learning experience that can help the respondents to construct their knowledge and ability to think more higher and then the feedback can help the students/respondents to improve their performance.

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accustomed to technological developments so that technology becomes part of their daily lives.

accustomed to using internet-based digital tools. It is undeniable that educators in Indonesia are currently dominated by digital immigrants and students from digital natives. Thus, there are differences in behavior and characteristics that characterize these two generations. According to the information the researchers obtained from several North Sumatra University students as source triangulation, they said that there were many students who did not activate the camera during the online teaching and learning process for various reasons. Students said the reason they turned off the camera during the lesson was because it saved internet quota, was on a trip and felt more comfortable when following the lesson by turning off the camera. However, this is one of the negative impacts of easy access to online learning, thus indicating an ethical shift in the ongoing communication process. Therefore, researchers want to see how the communication ethics are applied by digital immigrant generation lecturers in the online teaching and learning process for their students who come from the digital native generation. It is also based on behavior that is considered good by one generation, in fact it is not necessarily seen as good by another generation. Thus, the lecturers of the digital immigrant generation have an important role in the formation of virtuous ethics in students.

2   METHODOLOGY

This study uses the constructivism paradigm. Constructivism is a paradigm that holds that the experience of a person or group is constructed or organized into an interpretive scheme. Thus,this paradigm considers the subject as the main factor in the communication process and how social relations between communicators are formed (Morissan, 2013). The research method inthis study is qualitative with an interpretive approach. The interpretive qualitative focus is the subjective nature of the social world and understanding the frame of mind of the research object. The purpose of interpretive qualitative is to analyze a social reality that is formed and assume that access to this reality can only be realized through a construction (Sugiyono, 2015). The subjects in this study were digital immigrant generation lecturers born before 1980according to Marc Prensky's theory. The subject criteria set in this study are based on two characteristics, namely those who are still involved in the activity being researched and have the availability of time to be asked for information (Sugiyono, 2015). Data collection techniques were carried out in three ways, namely in-depth interviews, non-participant observation and documentation studies. Meanwhile, data analysis techniques were applied using the Miles and Huberman method such as data reduction, presenting narrative data and drawing conclusions.

Tabel 1. Data Informan

Name of Informant (With Initials)	Year of Birth
MZS	1968
L	1969
TM	1970
H	1960
A	1978
OA	1973

Source: 2021, Research

This study also used data validity techniques which were carried out using the source triangulation method, namely students. The purpose of data validity is to examine and compare subject information with triangulation opinions (Moleong, 2017). The framework that becomes the flow of analysis of this research is described in the following chart:

Figure 1. Thinking Framework
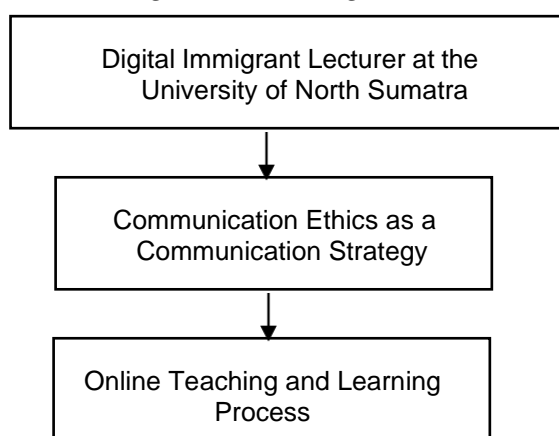
Source: 2021, Research

3 FINDINGS AND DISCUSSION

Activating the camera during online teaching and learning activities is the first communication ethics instilled by the informants. There is a study which explains that many students feel comfortable participating in online learning because they can turn off their cameras. This statement is supported by data 88% of students strongly agree and 12% agree. That is, students feel more comfortable listening without having to activate their cameras because the lecturer will not know what students are doing (Rachman, 2020).

The phenomenon of turning off the camera which was carried out by many students, caused a breakdown in ethics which was often complained about by many lecturers at universities. Ethical issues in communication are a major shock to the world of education in the current modernization

era. That is, the development of the era greatly influences aspects of human life, including ethical behavior with generations that should pay attention to how to communicate with them.

Informants L, TM, H and OA made regulations for students to activate the camera during the online teaching and learning process as a form of student presence. In addition, the purpose ofthis regulation is as a form of discipline, seriousness and ethics of respecting the presence of lecturers. The informants discipline students to obey the rules they form. This is in line with the results of a study which explains that one of the characteristics of Generation X is a group of people who obey rules and want other people to do the same thing as them (Bencsik,2016).

The interesting thing about the ethics of activating the camera happened to MZS and A. The two informants did not require students to do the same thing as other informants, because they considered students as adults and were able to distinguish between good and bad behavior. In addition, the two informants also considered the use of internet quota and the domicile of students who find it difficult to access the internet network if the camera is activated during online teaching and learning.

Researchers did not find any appeals to both lecturers and students to activate cameras for online activities in the Circular of the Chancellor of the University of North Sumatra. However, in the circular letter on pound A.1 sub pin c it explains that the implementation of online lectures can be carried out through voice recordings which are easily accessible to all communication participants. (https://fhut.usu.ac.id/images/PDF/Surat-edaran-pelbelajar- online.pdf, 2020). This policy was implemented by informant A, where discussion or questionand answer activities were carried out via video conference, it was enough to hear the voices of students as proof of their presence. This is because informant A uses the USU E-Learning platform, so one of the benefits of the features on the site is being able to see students who areonline and not during communication activities. Another application of ethics in communication enforced by digital immigrant lecturers is giving students a deadline to fill in attendance and join online classes. One of the advantages of the online learning system is the flexibility of space and time in its implementation (Pangondian et al, 2019). So, this showsthat communication between lecturers and students can still be carried out even though they are geographically separated. The availability of 24 hours in the online system allows studentsto respond to lecturer messages whenever and from wherever they are.

Utilizing chat columns or comments in video conferencing applications when students want permission is an application of other communication ethics by digital immigrant generation lecturers. Basically, the online learning system is not much different from the offline method. This

means that communication strategies that are usually applied by lecturers during offline learning can still be implemented in online classes. In offline classes, students will usually tellthe lecturer immediately when they want permission to leave and in fact this can still be applied to online classes. This was done as a form of respecting ethics and not interrupting the lecturer's conversation which indicated it would cause message distortion.

The various communication ethics established by this digital immigrant lecturer are because apart from the positive side provided by new media, it turns out that it has a negative impact from its presence. Setting aside communication ethics is one of the impacts of the presence of communication media (Herliani, 2015). In line with this, researchers see that differences in human generations include diversity of understanding in interactions as well. In certain things that are considered good and ethical by one generation, it is not certain that other generations do not see the same thing.

The phenomenon of the diversity of educational patterns and culture also causes gaps with what is considered good or not. If the fact of turning off the camera is done by students for reasons that are not due to saving quota or bad signal, the researchers see that the more advanced and developed technology, the more shifting style and ethics of communicationfrom one generation to another.

The declining morals and ethics of students are felt by most educators in the current online learning system. Therefore, many lecturers continue to cultivate ethical rules in communicating, so the researcher concludes that lecturers from the digital immigrant generation can be said to be generations who uphold ethics even though they are carried out through new internet-based media. In line with the opinion of researchers, a study explainsthat educators play a major role in fostering communication ethics, because they are considered capable of solving problems related to communication patterns between students and lecturers (Muali et al, 2010).

4   CONCLUSION

Based on the results and research that has been presented, it can be concluded that the digital immigrant generation of lecturers is a group of people who uphold ethics in the process of media communication as an online learning communication strategy. This is based on the erosion of student ethics in online teaching and learning activities. Thus, the lecturers form rules that must be obeyed by students in the form of activating the camera during online teaching and learning activities, setting a time limit for filling attendance and joining online discussion forums and using the comments column if students want permission. These three things are done with the aim of respecting the existence of lecturers, proof of attendance and seriousness of students in learning. Therefore, the researcher suggests conducting further research on how the communication ethics are applied by young lecturers who come from the digital native generation.

ACKNOWLEDGEMENTS

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IMPLEMENTATION OF THE OPEN UNIVERSITY DISTANCE LEARNING SYSTEM IN *MAMASA* CITY

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Abstract

Distance learning provides various patterns and programs to serve the community's needs and develop and encourage innovation across multiple learning processes with various learning resources. Public trust, government confidence, and legislators about the real benefits and contributions of distance learning in helping to educate the nation are explicitly stated in the legislation, namely the Law of the Republic of Indonesia Number 20 of 2003 concerning the National Education System. The tenth part of Article 31, paragraph 2, states that distance education provides educational services to community groups who cannot attend face-to-face or regular schooling. Educational programs that are always needed and ready to be selected can be selected so that they are genuinely relevant to personal and community needs they can overcome all academic problems. Distance learning provides the opportunity to learn on your own independently. Students are free to determine when to start when to finish, and which part of a module they want to know first. Distance learning is implemented in a web-based online way without leaving face-to-face activities. The product of the planning stage is a distance education project plan that can guide this stage of the distance education process. The coordinator arranges the implementation of distance learning even in the exam clinic, which officers have determined in each district. This will then be informed by the study group management so that all information can be conveyed to students, especially in Mamasa city.

Keywords: Implementation, Distance learning, Open University

1   INTRODUCTION

The Open University is the largest in Indonesia by implementing a distance learning system and competing for achievements with distance higher education with other countries. The Open University is the 45th university in Indonesia which was inaugurated by the President of the Republic of Indonesia on September 4, 1984, based on Presidential Decree No. 41 of 84 (UT catalogue 2009). Implementing Distance Learning (PJJ) at the Open University (UT) has been going on for 36 years. Since its inauguration on September 4, 1984, based on the Decree of the President of the Republic of Indonesia Number 41 of 1984. And it continued with the Minister of National Education 23/2007 concerning the status of the Open University. President Suharto inaugurated the establishment of UT at Bina Graha. At the inauguration ceremony, an inaugural lecture was also held, which was given by Prof. Dr Sumitro Djojohadikusumo. This inaugural lecture was broadcast throughout the country through TVRI and RRI. The next day at the Education and Culture office in Senayan, the Minister of Education and Culture, Prof. Dr Nugroho Notosusanto, inaugurated the Rector of UT, Prof. Dr Setijadi [1].

Distance learning is developing regarding the quantity and quality of students and the organizing institution. Distance learning in formal education is increasingly being used to reach students who cannot follow the face-to-face education system. In non-formal education, more and more types of

programs and institutions provide distance learning, for example, professional development programs. In line, social changes lead to a knowledge-based society, fulfil lifelong learning needs, and demand universal access to education at various levels, pathways and types. Distance learning has a strategic role in responding to these interrelated challenges. The government and interested parties cannot underestimate the potential of Distance Learning in helping to meet the educational needs of citizens and create a knowledge-based society.

Distance learning is an educational, training and human resource development effort that develops dynamically in the country. The number of institutions, students and the variety of distance learning programs offered is growing and increasing continuously in line with the needs of its citizens. Distance learning is no longer seen as a side effort that is done casually to improve the financial income of the institution in order to cover the expenditure budget of the implementing institution. Distance learning has a firm legal position, as stated clearly and unequivocally in the tenth part of Article 31 of the Law of the Republic of Indonesia Number 20 of 2003 concerning the National Education System. PJJ is an education system with proven theoretical, empirical and best practice experience worldwide. The profession of distance learning in Indonesia is a prestigious profession which requires specific skills and unique competencies, reasonable rewards, and bright future development prospects for practitioners and theorists.

Warsita [2] explains three essential aspects of distance learning: separation, teachers/educators with students, independence, and learning services. If you look at these three aspects, freedom in education is an element that the teacher's skills will influence in managing learning and the services teachers and educational institutions provide during distance learning.

Five concepts in educational technology have been integrated into the education system and are contained in the National Education System Law and its derivatives. The five concepts are (1) learnerfocused learning; (2) various learning resources; (3) bottom-up approaches in managing learning activities and their implications in education units; (4) an open and multi-meaning education system; and (5) distance education [3].

Students can learn independently through print and non-print media, specifically designed to be selfstudy as the primary media used in the distance learning process at the Open University. The Open University (UT) provides teaching materials to be studied independently. In addition to using teaching materials provided by (UT), students can also take the initiative to use other reading materials in the library following tutorials, either face-to-face or via the internet, radio, and television; and utilize other learning resources such as computer-assisted teaching materials and audio/video programs. Students can ask the Program Unit for information about study assistance

if they have learning difficulties. Teaching students in remote villages can continue their education without leaving their main tasks and family. Get learning assistance services through face-to-face tutorials so that they can discuss with their friends and between groups guided by a lecturer or tutor as a facilitator so that students in learning do not feel lonely and isolated.

The Open University with a distance education system whose learning process is mediated by printed and non-printed teaching materials can reach and be accessible to the community where he lives. Likewise, people who work in remote areas enjoy higher education like in other places. Student study groups on duty in remote villages must receive the same educational services, not only self-study or organize their learning. But also, can learn through face-to-face tutorials guided by a lecturer or tutor and act as facilitators in helping students with learning difficulties so that they are accustomed to selfstudy. With this learning process, students continue to study in their place without leaving their main tasks and their families.

With the distance learning system, prospective students or the public who previously could not continue their education in higher education, especially those living in remote villages, because the place to study at face-to-face universities is far away and takes up a lot of time and money. Likewise, those bound and busy with their respective main tasks are more likely to choose the Open University. Because the learning system does not interfere with their work, meaning they can continue their higher education while working and not leave their main tasks and family. In general, this study aims to describe the implementation of PJJ Management in UPBJJ-UT Palangka Raya, seen from the aspects: (1) PJJ planning, (2) PJJ implementation, and (3) PJJ supervision.

2 METHODOLOGY

The method used in this study is a qualitative approach with a case study design because the researcher wants information about the Implementation of Distance Learning Management at UPBJJUT Majene in general and Mamasa City in particular.

Moleong [3] states that qualitative research is carried out by research subjects such as behaviour, perception, motivation, action, etc., holistically and by way of description in the form of words and language in a unique natural context. Data were collected by using observation, interview, and documentation techniques. After the data is collected, the steps of data analysis used in this study are the Analysis Interactive Model from Miles & Huberman [4],[5], which divides the steps in data analysis activities into several parts, namely data collection, data reduction. Data reduction, data display, and drawing conclusions or verification (conclusions). Drawing conclusions is the final stage of a series of data analyses which will then produce findings. Drawing conclusions aim to review the neutrality of the interpretation of each data, view and check consistently and see if the

data obtained are sufficient. Based on the pre- and post-surveys carried out during the training. It shows tangible improvement in several aspects of distance learning skills, namely increasing understanding of effective learning methods, concepts and methods of distance learning, effective reading methods, and ways to overcome learning difficulties. How to arrange study schedules, find and access information at UT, the facilities at UT and the UAS system at UT. It is hoped that this increase will positively impact increasing student academic achievement at the Open University [6].

3 RESULT

3.1 Planning

Belawati [7] said that Based on interaction/communication design, online learning could be divided into synchronous and asynchronous online learning. Synchronous online learning is online learning that is designed with a real-time interaction pattern, which is different from asynchronous learning, whose interaction design is not real-time (delayed). The implementation of effective online learning always starts with good planning and learning scenarios that guide students.

Initial intervention is provided through activities through PKBJJ (Distance Learning Skills Training) and OSMB (New Student Study Orientation). It is expected that students can access online learning facilities. Through clinical exam activities and task workshops, students are given guidance in supporting the implementation of learning tasks in the Mamasa District. Furthermore, this activity trains students in problem-solving or solving problems, and students see examples of questions and do assignments, such as making papers/assignments.

Independent learning, in many ways, is determined by the ability to learn effectively. The ability to learn depends on the speed of reading. And the ability to understand the content of the lesson. To be able to study independently effectively, UT students are required to have self-discipline, initiative, and robust learning motivation. Students must also manage their time efficiently so they can study regularly based on a self-determined study schedule. Therefore, prospective students must be prepared to learn independently to succeed at the Open University (UT).

To support the implementation of online learning in the city of Mamasa, it is necessary to cooperate with the Pokjar administrators. The appointment of the Pokjar management is carried out according to the following principles.

1. Benefit principle, namely to facilitate group learning activities and communication between Pokjar and UPBJJ-UT.
2. Accessibility of Services, bringing UT services closer to study groups.

The implementation of distance learning at the Open University (UPBJJ-UT), precisely in Mamasa, will design and provide a flexible administration and registration system, distribute standard teaching materials - substitute lecturers, provide study assistance services - via various modes. The learning activities at UT are:

1) Preparing teaching materials,

2) Distributing teaching materials,

3) Providing study assistance services,

4) Preparing test materials,

5) Organizing exams,

6) Processing exam results,

7) Delivering the test results.

3.2 Implementation

Several innovations in the use of technology in PJJ at the level of higher education in the country are carried out using networks. Past, Present, and Tomorrow assist the learning process, create a computer-assisted learning environment, and use television programs via live satellite broadcasts for university lecturers in Indonesia [8].

To facilitate its students spread throughout the country, UT has established many representatives in various regions, such as Pokjar. UPBJJ-UT formed UPBJJ-UT Pokjar to help provide services to a group of students and was coordinated by one Pokjar Management. UPBJJ-UT Pokjar administrators are individuals who play a role in supporting student study group activities based on the provisions set by UT. Pokjar management is appointed and determined by the Head of UPBJJ-UT on a contract basis.

The primary duties of the Pokjar Management are:

a) Maintaining a positive image of UT;

b) Studying the UT education system and other provisions related to student learning services;

c) Provide information about potential UT students in their respective work areas;

d) Assist in the socialization and promotion of UT's educational programs;

e) Assisting prospective students/students in the registration process;

f) Assisting UPBJJ-UT in providing student learning assistance services;

g) Assisting UPBJJ-UT in disseminating relevant information to students;

h) Build positive communication, interaction, and cooperation with UPBJJ-UT, students, tutors, supervisors, and other Pokjar administrators in providing learning assistance services;

i) Assist in coordinating student participation in the implementation of student activities, EKBM (OSMB

j) & PKBJJ), UPI, and other UT activities;

k) Help prepare students to take the exam; and

l) Make a Pokjar Management report per semester to UPBJJ-UT

There are several steps that students need to take, namely:

1) Doing registration,

2) Obtaining teaching materials,

3) Carry out independent learning activities,

4) Following tutorials,

5) Take the exam,

6) Receive test results.

A tutorial is a form of tutoring service given to students so that those who have difficulty learning are motivated to learn. The tutorial can be defined as "a program of assistance and tutoring that aims to stimulate and trigger independent learning," [9].

Various problems, both administrative and academic, are still experienced by students due to their lack of independence, and UT also has limited reach in providing services. It helps provide services to students. The Study Group (Pokjar) management will provide information about registration, tutorials, exams, graduation, and graduation.

Academic and administrative services such as registration, payment of tuition fees, printing examinee cards, and the end-of-semester examination (UAS) are provided online. Study Group Management (Pokjar) can help provide administrative services and information about UT to students who need group services. To overcome the problems faced by students, the Management of Study Groups (Pokjar) can assist prospective students in the registration process. It ensures the completeness of documents for registration administration. It helps facilitate online registration under certain conditions. Submit registration files for prospective students/students to UPBJJ-UT and receive and check prospective students' Personal Data Sheet (DP) and Payment Information Sheets (LIP) of prospective/students and assist students in making changes to their DP.

Several things study group administrators can do in implementing distance learning, namely:

a. Assisting UPBJJ-UT in providing student learning assistance services in the form of:

1) distribution of teaching materials for SIPAS services;

2) providing input for TTM/practice/practicum implementation sites under UT Simitas standards

3) coordinating the preparation and implementation of the TTM/practice/practicum at the tutorial location;

4) submission of reports on the implementation of TTM/practice/practicum according to the report format;

5) coordinating the settlement of student study cases/problems under applicable academic provisions.

b. Help prepare students for exams which include:

1) convey information related to the printing of the Exam Participant Identity Card (KTPU) to each student in the management of their study group through the available website;

2) directing students to take the exam according to the schedule;

3) solve student problems related to exams according to academic provisions

c. Assist prospective students/students in the registration process:

1) ensure the completeness of documents for registration administration;

2) help facilitate online registration;

3) under certain conditions, submit registration files for prospective students/students to UPBJJ-UT and receive and check Personal Data Sheets (DP) of prospective students and Payment Information Sheets (LIP) of prospective/students;

4) help students make changes to their DP.

d. Assisting UPBJJ-UT in providing student learning assistance services in the form of:

1) distribution of teaching materials for SIPAS services;

2) providing input for TTM/practice/practicum implementation sites under UT Simitas standards

3) coordinating the preparation and implementation of the TTM/practice/practicum at the tutorial location;

4) submission of reports on the implementation of TTM/practice/practicum according to the report format;

5) coordinating the settlement of student study cases/problems under applicable academic provisions.

e. Help prepare students for exams which include:

1) convey information related to the printing of the Exam Participant Identity Card (KTPU) to each student in the management of their study group through the available website;

2) directing students to take the exam according to the schedule;

3) solve student problems related to exams according to academic provisions

3.3 Evaluation

Evaluation of Distance Learning is a series of activities that aim to measure the level of success of an educational program [10]. Suprihanto [11] states that the objectives of evaluation include: (a) as a tool to improve and plan future programs, (b) to improve the allocation of current and future sources of funds, resources and management, and (c) to improve the implementation and factors that affect the implementation of the program re-planning a program through activities to re-check the relevance of the program in terms of small continuous changes and measure the progress of the planned targets. Based on the results obtained during the research, it can be explained that the evaluations carried out by UPBJJ-UT Majene, especially in Mamasa City, are:

a) Implementation of the program with a predetermined plan

b) quality goals

c) the level of customer satisfaction per semester.

The research findings show that the evaluation carried out in the city of Mamasa in implementing distance learning management has been going well.

4 CONCLUSION

Based on the results and discussion of the research, it can be concluded that:

PJJ planning is carried out by identifying services that will be provided for student satisfaction and the appointment of officers at UPBJJ-UT Majene. The implementation of PJJ in the Mamasa Regency has been going well. This can be seen from the academic schedule run, and the evaluation is carried out by the Head of UPBJJ-UT Majene and all parties in UPBJJ-UT Majene and the person in charge of the Mamasa district.

ACKNOWLEDGEMENT

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THE CONCISE LATEST REPORT ON THE USE OF MOBILE LEARNING TO SUSTAIN OPEN AND DISTANCE EDUCATION: LITERATURE REVIEW AND BIBLIOMETRIC ANALYSIS

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Abstract

Currently, numerous universities use an open and distance education system. In various countries especially in the Asian continent, there are many universities using mobile learning as learning aid media in learning process, Universitas Terbuka is one of them. However, the Speedtest Global Index reports that the speed of Indonesia's mobile internet network is 21.35 mbps in July 2021, compares to other countries in Southeast Asia, Indonesia's mobile internet speed is the slowest. Therefore, a bibliometric analysis was carried out to evaluate whether the application of mobile learning in the higher and distance education system in Indonesia was appropriate. As a recommendation, the results of this analysis provide further guidance and provide new arguments for the application of mobile learning in Indonesia.

Keywords: bibliometric analysis, open and distance education, mobile learning

1 INTRODUCTION

The COVID-19 pandemic has led to increased online learning at all levels of education, from kindergarten to higher education. Indeed, in the last 2 decades several universities have offered online education, but distance learning methods have become an absolute must, especially when face-to-face learning is discontinued for the common good. Distance learning, also known by various names such as distance education, e-learning, mobile learning, or online learning, is a form of education in which there is a physical separation between teachers and students during the teaching and learning process (Simonson, 2002). Distance learning is also an instructional practice that effectively utilizes various tools and technologies to enrich the student learning experience (Klein et al., 2016) and to facilitate student-faculty (especially with lecturers) and student-student communication (Alawamleh et al., 2022). The minimum technology requirements for distance learning are a computer, mobile device (cell phone), or webcam, some form of listening device, a video conferencing application such as WebEx or Zoom, a Microsoft Windows or Apple operating system, and a stable internet connection with a speed of approximately 56K (56,000) or more (Jabnoun & Al-Tamimi, 2003).

Data on the number of universities/comparisons/increases in the number of distance learning methods. Advantages and disadvantages of distance learning methods. Compare with universities in Indonesia. Universitas Terbuka?

Keegan (1980); Perry and Rumble (1987) were the initial researches of the concept of distance education (distance education, distance learning) with the main characteristics: a) the separation

of lecturers and students during the teaching and learning process; b) use of educational media (print, audio, video and computer); c) the important role of educational organizations in planning, preparation of study materials and student services; d) the availability of two-way communication; and e) individualization of the learning process (self-study) (Agung, 2007). In Indonesia, the Universitas Terbuka (UT) is a state university that provides education through an open and long-distance system through various media, such as print media (modules) and non-printed (audio/video, computer/internet, radio broadcasts, and television).

It can be concluded that the learning system at UT does rely on technology. The materials, discussions, and assignments are carried out through Online Tutorials (Tuton).

2 METHODOLOGY

To develop the bibliometric analysis, we counted on three sources of information: (1) international research journals, (2) internet search engines with keywords related to mobile learning in higher and distance education, and (3) the knowledge of the authors about the analyzed areas.

This section consists of three parts. The first provides an overview of the adoption and implementation of mobile learning, then it followed by a critical and analysis of existing mobile learning models and frameworks, and lastly, a framework for higher and distance education system in Indonesia informed by critical findings is delivered.

The results of the synthesis of studies related to mobile learning in universities are presented in Table 1.

Table 1. Summary of Mobile Learning Research Developments from 2005 - 2022

No	Researchers	Subject/Population/ Sample	Research Variables	Method
1	Lee and Chan (2005)	First year undergraduate students of information technology.	The affective and cognitive benefits of mobile learning and podcasting.	Action research case study in two cycles.
2	Menkhoff and Bengtsson (2011)	Undergraduate students of entrepreneurship and business networks.	Pedagogical experiences with using mobile phones, wikis, and other mobile learning approaches.	Evaluative-exploratory case study
3	Fuegen (2012)	Research results/articles related to the use and impact of mobile devices and mobile technologies on distance education.	Impact of mobile technologies on distance education.	Study of literature
4	Ally and Prieto-Blazquez	Research results/articles related to the use and impact	Impact of mobile learning applications in higher education.	Study of literature

No	Researchers	Subject/Population/ Sample	Research Variables	Method
		of mobile learning in higher education.		
5	Ranieri and Pachler (2014)	Workshops of mobile learning in adult education conducted in Italy and Britain.	The potential of mobile learning in adult education with a particular focus on identity formation and self-representation.	A case study approach
6	Bray and Tangney	54 students in three secondary schools	The impact of a transformative, mobile technology-mediated approach, RME, and a particular model of 21st century learning facilitates the development of mathematics learning activities to increase student engagement and confidence	Explanatory case study with multiple embedded units and a pre-experimental design
7	Borba, et al (2016)	Five sub-areas of research, important trends of development, and illustrating them using case studies: mobile technologies, massive open online courses (MOOCs), digital libraries and designing learning objects, collaborative learning using digital technology, and teacher training using blended learning.	Identifying recent advances in research on digital technology in the field of mathematics education	Literature survey
8	Oyelere, Suhonen, Wajiga, and Sutinen (2017)	142 third-year undergraduate students in a Nigerian university	The application of the design science research approach in the course of developing a mobile learning application, MobileEdu, for computing education in the Nigerian higher education context	Experimental method
9	Sarrab, Al-Shihi, Al-Manthari, and	The results of applying the proposed set of educational requirements on three different M-learning	Standards for learning and mobile application software quality and guidelines.	Literature study

No	Researchers	Subject/Population/ Sample	Research Variables	Method
	Bourdoucen (2018)	systems. Instructional designers and educational software developers may find the requirements useful in the development of M-learning systems.		
10	Grant (2019)	Research results/related articles.	The principles of mobile learning; definition, design, and implications for future research and instructional design.	Literature study
11	Alasmari and Zhang (2019)	The Saudi higher education students enrolled in all the twenty-eight public universities in Saudi Arabia	Learning Expectancy (LE), Effort Expectancy (EE), Social Influence (SI), and characteristics of mobile learning	Mixed-method research
12	Pinto, et al (2019)	Research results/related articles.	(a) identify the most relevant journals that publish literature in this feld, (b) calculate the authors' average productivity and identify the most productive authors, and (c) discover the most significant trends in this academic feld, through statistical and co-occurrence word analyzes of the titles and the keywords used to index papers	Bibliometric analysis
13	Bai (2019)	Scholarly peer-reviewed journal articles that were published between 2010 and 2017	(1) original research was reported; (2) data-based research in which data collection and analysis were described; (3) positive learning outcomes were reported; (4) mobile technology was used by students for learning; (5) mobile devices were limited to iPads, iPods,	Literature study

No	Researchers	Subject/Population/ Sample	Research Variables	Method
			PDAs, tablets and mobile phones; (6) studies were conducted in K-12 and higher education settings	
14	Hall and Connolly (2019)	Papers that highlight key features of infrastructure in relation to mobile learning within teacher education and related areas (2014-2019).	Infrastructure in relation to mobile learning within teacher education and related areas	Literature study
15	Li, Zhao, Herencsar, and Srivastava (2021)	Teachers and students of sebior high schools in Shanghai	The main body and scope of collaboration, constructs a man-machine collaborative resource sharing model with large scale man-machine cooperation as the main model	Experimental research
16	Gounder and Kumar (2021)	103 papers retrieved from six different databases	The use of mobile learning applications in higher education institutes to; i) identify publication trends, ii) types of mobile learning applications used, and iii) categorize the research papers published	A systematic mapping study
17	Okai-Ugbaje, Ardzejewka, and Imran (2022)	Studies conducted over four years (2018-2022), including the outcome of two empirical studies conducted in a Nigerian university	Mobile learning framework that considers the sociocultural and socio-economic contexts of low-income economies	Literature study

3   FINDINGS AND DISCUSSION

This mobile learning system makes use of the portability of handheld devices, including cell phones and PDAs, to offer a learning function that can be used whenever and anywhere (Ardiansyah & Nana, 2020). Mobile learning can be used to supplement the learning process in classrooms and colleges, not to replace regular sessions (Aripin, 2018).

Figure 1. M-learning tools

3.1 Functions and Benefits of Mobile Learning

There are three ways that mobile learning can be used in classroom learning activities (classroom instruction), namely as an optional supplement, complement, or substitution (Junita, 2019).

1. Supplements

Students have the option of using or not using the material from Mobile Learning, which serves as a supplement. Students are not required to access the Mobile Learning materials in this situation. Although it is optional, students who use it will undoubtedly get new information or insights.

2. Complement

In order to supplement the learning materials that students get in class, mobile learning serves as a complement (complement). Here, it means that the mobile learning content is set up to serve as a student's reinforcement or remedial material as they engage in traditional learning activities.

3. Substitution

Many colleges in affluent nations offer their students/students a variety of alternate forms of educational activity. The intention is for students to be able to handle their lecture activities flexibly in accordance with their daily schedules and other obligations. The following three alternate models of learning activities are available to students:

A. entirely face-to-face (traditional)

B. partially face-to-face and partially online

C. entirely online Position of M-learning in Learning

Since mobile learning is a component of electronic learning (e-Learning), it is also a component of distance learning (d-Learning) on its own (Aripin, 2018).
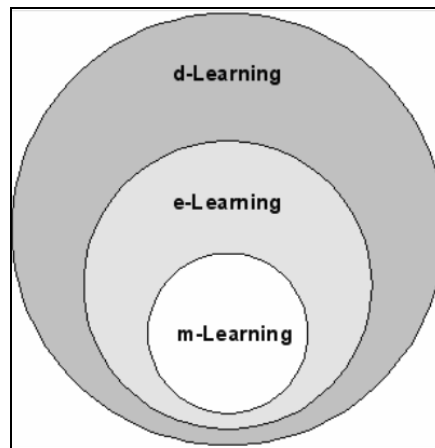

Figure 2. M-learning scheme

Looking at the above diagram, we can see that remote learning includes both m-learning and electronic-based learning (e-learning), depending on how it is implemented (d-learning). According to the following diagram, mobile learning is truly a crucial component of e-learning (Rahmat et al., 2019).

Mobile learning systems are based on tools that leverage devices like laptops, tablets, PDAs, smartphones, and cell phones, which are all essentially portable and usable at any time or place. based on the network's GPRS, GSM, Bluetooth, and infrared capabilities. When seen from the perspective of teacher-teacher communication, it can be done both online and offline using synchronous and asynchronous group communication (Wulandari et al., 2019). M-learning can be done both on and off campus, in terms of geography.

4   CONCLUSION

A learning system called mobile learning places an emphasis on practicality, portability, and accessibility. Different approaches, including tutorials, drill and practice, games, and simulations, can be used to develop learning utilizing mobile learning to sustain open and distance education.

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STUDY ON OBSTACLES IN IMPLEMENTING DISTANCE LEARNING SUCCESS SUPPORT SERVICES

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Abstract

Distance Learning Success Support Service or often mentioned as Layanan Pendukung Kesuksesan Belajar Jarak Jauh (LPKBJJ) is one of the services provided by new students of Universitas Terbuka (UT). This activity is intended for UT's new students in order for them to gain some information about the open and distance learning (ODL) system at UT. This service is considered unique and different from the conventional way of learning they experienced before becoming UT students. This paper aims to examine various obstacles in the implementation of distance learning success support services. The study was conducted by reviewing the results of activities of distance learning success support services during the registration of 2022.1 by reviewing the report on the implementation from UT compiled by the Center for Student Support Services of UT. The results show that generally the obstacles happen in the following aspects. First, obstacles in socializing activities, such as inaccurate students' cellphone numbers and emails, the distance of their domicile. Second, some technical constraints, such as unstable internet connection, lack of technical equipment. Third, obstacles in student readiness, such as students' difficulties in focusing on the programs due to joining other programs at the same time, unable to leave their work, and difficulties of controlling student attendance in online classes. Fourth, obstacles in material delivery, such as over material that needs to be delivered in a limited time. Based on the existing constraints mentioned above, various alternative solutions were prepared to improve the implementation of distance learning success support services in the future.

Keywords: distance learning success support services, learning success, distance learning

1 INTRODUCTION

Being engaged in campus activities is always something new and even strange for new students since they need self-adjustment to being adults with lots of individual activities. They have to consequently manage all campus activities themselves, both academic and non-academic. Therefore, a good higher institution must pay attention to students' readiness in facing new situations on their campus, so they are able to adapt easily. Self-adjustment is a process of involving a person's response, both physically and mentally, to align the needs, expectations and demands that exist in the new environment. With this self-adjustment, it is expected that students are able to overcome difficulties in different conditions while attending high school, such as different types of curriculum, disciplinary demands, relationships between lecturers and students, social relations, lifestyles, and most importantly, various learning styles Sasmita and Rustika, 2015). One of these self-adjustment activities is carried out by providing directions for students to take part in orientation activities for new students and student organizations (Wilani and Pratiwi, 2019).

The Indonesian government has also concerned about new students' problems in the process of self-adjustment. Regarding this matter, the Director General of Higher Education and Research and Technology (DGHERT), who is developing a guidelines to a campus program for the Introduction to Campus Life for New Students that is called Pengenalan Kehidupan Kampus bagi

Mahasiswa Baru or known as PKKMB in 2021. In 2022 the guide will be refined with the hope that students will be able to: (1) get to know the new environment, especially the organization and structure of higher education, learning and student systems; (2) increase awareness of the nation, state and love for the country; (3) understand the importance of the education that will be pursued, character education and competency development for nation building and be able to apply it in everyday life; (4) foster a sense of friendship and kinship between students, lecturers, and educational staff; (5) have an attitude as an intellectual; (6) understand tips for successful learning and self-development in tertiary institutions; (7) become a superior generation that is independent and responsible; and (8) become agile and resilient learners (DGHERT, 2022). Based on these goals, every higher education institution in Indonesia is encouraged to conduct a program of campus introduction for its new students.

For Universitas Terbuka (UT) as an open and distance education (ODE) institution, conducting a program of the introduction of learning is a must. This is because UT has a unique distance learning system that distinguishes it from conventional universities. Therefore, UT students who are generally graduated from conventional schools, certainly need introduction and guidance from the beginning of their study in order to be able to understand the concepts, principles and systems of ODE that students have not fully understood. Furthermore, students also need to be equipped with learning skills that are applied at UT with the purpose for students to gain convenience and success in the learning process until they complete their studies at UT. Consequently, UT has conducted a program of introducing UT learning system to its new students to accommodate their needs of the relevant information in the form of Distance Learning Success Support Services or known as LPKBJJ. This service is divided into four sessions, i.e. Study Orientation for New Student (OSMB), Distance Learning Skills Training (PKBJJ), Assignment Workshops (WT), and Examination Clinics (KU). These four activities are conducted by UT regional offices (ROs) that must be followed by new students throughout Indonesia and abroad.

LPKBJJ activities have been carried out in several ROs since 2021. However, LPKBJJ activities completed with all components, including WT and KU was started in 2022 semester 1 (2022.1). Furthermore, UT team under the coordination of the Center for Research and Innovation and Center for Student Learning Support developed LPKBJJ guidelines for implementing LPKBJJ. However, in its implementation, there are still obstacles that occur in some Ros. These obstacles can certainly hinder the achievement of LPKBJJ's goals that resulted in the needs for evaluating as well as providing solutions for improving the process of LPKBJJ.

Based on the description above, it is necessary to study the constraints in implementing LPKBJJ in the field. Related to this, the purpose of this article is to present an overview of the implementation of LPKBJJ at UT in the 2022.1 semester and identify the obstacles that occur and find solutions to these obstacles.

2 METHODOLOGY

This study was carried out by conducting a descriptive analysis of the data from the LPKBJJ activity reports provided by ROs which was sent via Microsoft Teams to the Center for Student Learning Support. An explanatory research method was used to deliver a general description of the implementation of LPKBJJ and the constraints that occur during the process of LPKBJJ activities. The following is the data of the program and number of reports to be studied.

Table 1. Descriptions of the Reports

No	Components	Numbers of Reports (Ros)
1.	OSMB	32
2.	PKBJJ	32
3.	WT	19
4.	KU	14

From this report, some important information was traced regarding the number of participants, the mode of implementation, and the constraints that occurred in implementing the activities of the 4 LPKBJJ components.

3 FINDINGS AND DISCUSSION

3.1 LPKBJJ Concept: A Good Practice in Serving New Students

The distance learning system is based on conditions where students and lecturers are in separate locations. Thus, media is needed to connect the two, as well as the various resources needed in it. Murphy et al (2006) revealed that "distance education allows a learner to study while physically separated from the institution at which you are enrolled, through the provision of learning materials and supports that enable students to study anywhere and at any time". This separation of distances demands student learning independence, where students must be able to control or manage their own learning activities.

One responsibility of UT is to ensure all students can be directed in carrying out their independent learning. This briefing activity is intended so that students obtain high learning success. The

process of directing remotely still requires interaction between new students and instructors, where this interaction can be bridged by the presence of media. This is in line with the opinion of Wedemeyer (1981) which states that one of the strategic components contained in the concept of distance learning is the use of media as a tool for communication.

LPKBJJ is the main program of UT held for new students and is considered mandatory. This means that all ROs are required to organize LPKBJJ and new students are required to take part in this program. The importance of LPKBJJ activities is based on the urgency of achieving student understanding of the distance learning system promoted by UT. For this reason, LPKBJJ activities are designed to be held in an interaction mode, both online and offline.

The purpose of providing LPKBJJ activities is for students to be able to (1) understand the concept of ODE and the learning system at UT, (2) have effective learning skills and strategies in studying at UT, (3) be able to take advantage of various learning services provided by UT and (4) be able to take education at UT properly including solve the various learning problems they experience (UT, 2021). The implementation of LPKBJJ shows that it is not enough for open universities to only provide various learning facilities, but also to provide interactive assistance. Furthermore, utilizing a two-way designed communication process can be provided more optimally. This is in accordance with Daniel's thoughts in Keagan (1996) that the interaction of learning participants with fellow friends and mentors is an important factor in supporting the success of distance learning. This interaction can take place synchronously or asynchronously by using the media.

The implementation of LPKBJJ in UT is carried out in a planned manner in every UT ROs throughout Indonesia under the coordination of the Center for Overseas Students Management. The materials for LPKBJJ were developed by the material authors according to their expertise, divided into OSMB, PKBJJ, WT and KU materials. The topics discussed in OSMB material include the formation of the character of Indonesian students, an explanation of the learning system in higher education institutions in general, as well as the learning system at UT in particular. PKBJJ materials contain effective learning methods along with training materials. WT material contains how to carry out tasks in the learning process at UT, while KU material contains about the exam system at UT and strategies to do the examination at UT. These materials are packaged in several forms of media, including text, video and powerpoint presentation materials.

The process of implementing PKBJJ is a systematic flow, which is contained in the procedures for implementing LPKBJJ. Figure 1 presents the flow of the LPKBJJ implementation process.
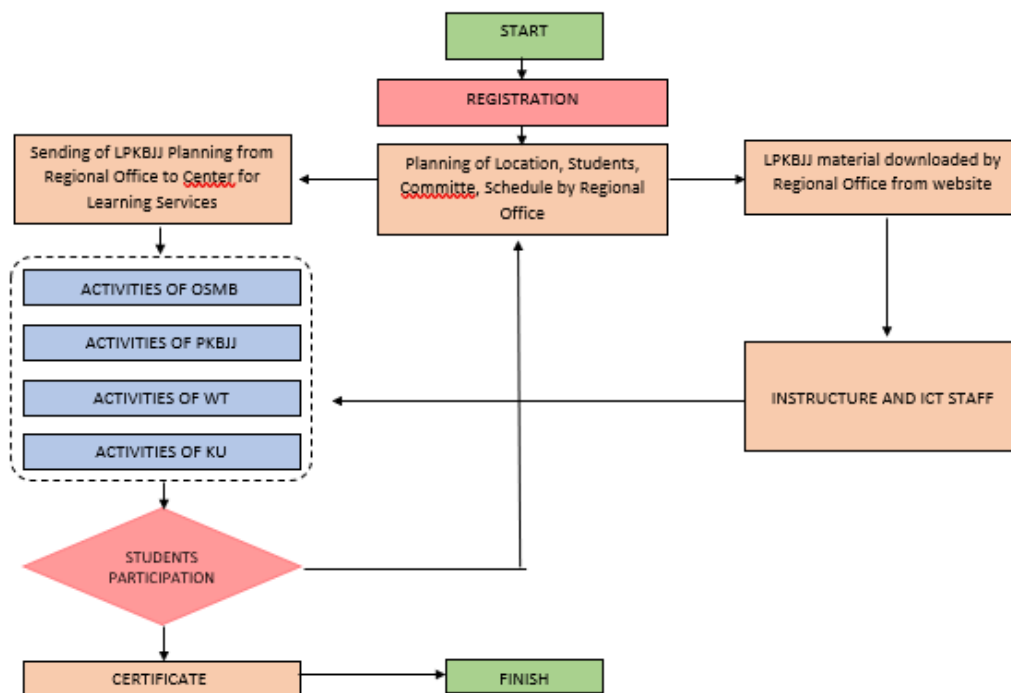
Figure 1. The Flowchart of LPKBJJ Implementation at UT (UT, 2021)

From Figure 1 it can be seen that LPKBJJ activities start from the new student registration process. The data of registered students forms the basis for planning LPKBJJ classes, which has an impact on collecting data on the HR needs of PKBJJ organizers in each RO, the need for instructors per class, determining locations and implementation schedules. In line with this, the ROs sent LPKBJJ plans to the Center for Student Learning Supports, as well as prepared materials that can be downloaded on the PBB website. Furthermore, the implementation of LPKBJJ is carried out in each region according to a predetermined schedule. The end result of this activity is that students get LPKBJJ participant certificates. This whole process shows the collaborative environment that supports learning activities initiated by Meyer et al. (2008). The environment consists of a tutor resource, namely instructors, LPKBJJ materials, the peer environment in the form of student fellow, the time span of study (the time environment), namely the time provided, and the environment. physical (the physical environment) such as a strong network system or a conducive facility. By fully participating in LPKBJJ activities, students are expected to be served the needs of supporting their learning success, familiar with the learning system at UT, so that they are able to complete the learning process well.

3.2 Implementation of LPKBJJ at UT in semester 2022.1

LPKBJJ implementation in semester 2022.2 will be held by all ROs and the Center for Overseas Student Management for new students in their respective regions. The series of LPKBJJ implementation began with the implementation of the OSMB coupled with PKBJJ, followed with the implementation of the WT and KU). OSMB and PKBJJ are carried out shortly before the learning process begins, while WT and KU are carried out along with the learning process or even for KU it is carried out just before the final semester exams. The timeline for implementing LPKBJJ refers to the academic calendar set by UT, which starts in December 2021 until April 2022.

From the available data, the implementation of OSMB, PKBJJ, WT and KU was carried out by ROs in two modes, namely online and offline. Online implementation is generally carried out centrally from the RO's office. Offline implementation utilizes strategic locations that can be reached by UT students, including at the ROs' office, schools, hotels, halls, or function rooms. The percentage between providers with online and offline modes is almost equal, as shown in Figure 2.
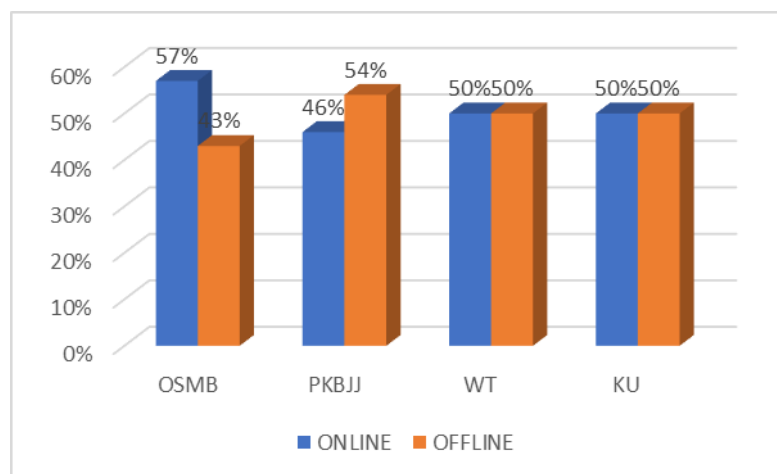

Figure 2. Comparison of the percentage of Conducting the LPKBJJ through Semester 2022

Figure 2 shows that most OSMB activities are held online by the ROs. OSMB material is more knowledge-based, so the delivery of material is only in the form of explanations. Providing explanatory material is considered quite effective delivered online, most ROs decide that OSMB will be carried out online. In contrast to LPKBJJ materials which also require students to work on worksheets, LPKBJJ is mostly held offline. Meanwhile, the implementation of WT and KU is carried out in the same percentage between online and offline. For new students, the materials presented in WT and KU activities is still about explaining important things that students need to pay attention to when doing assignments or exams, so they are still considered effective if given online.

Regarding participants who attended LPKBJJ, the number of participants ranged between 62 and 75 percent (Figure 3). This condition indicates that new students have not fully taken advantages of learning support service opportunities. UT students are in a very dispersed area and many of them are also employed. This fact allows the aspect of student attendance in LPKBJJ activities not to be 100 percent worth.
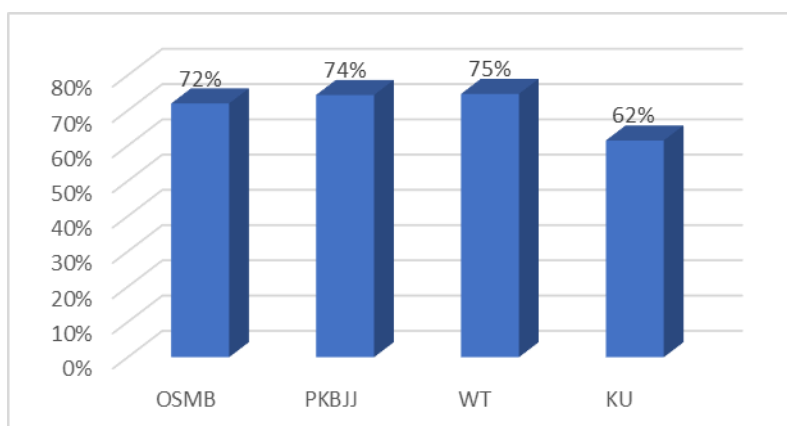

Figure 3. Percentage of student attendance in LPKBJJ Semester 2022.1 activities

In terms of instructor availability, most of the ROs involve all lecturers and teaching staff to become LPKBJJ instructors. If the number of instructors is insufficient, the RO divides the LPKBJJ implementation time into several terms. However, there were also ROs who asked lecturers from UT Head Office to become instructors for implementing LPKBJJ at the ROs.

3.3 Constraints in the Implementation of LPKBJJ

The results of a study of the collected LPKBJJ reports indicate indications of what constraints occurred in the implementation of LPKBJJ in general. The results of the study show that generally the constraints that occur in the implementation of LPKBJJ can be identified into 4 groups, namely constraints in: 1) socialization, 2) implementation technical, 3) student readiness, and 4) material delivery. The following is the details.

Constraints in Socialization of LPKBJJ

ROs in disseminating each of its programs utilizes various modes and media. Likewise in socializing LPKBJJ activities. In addition to the inaccuracy of student cell phone numbers and e-mails and the distance of student domiciles.

UPBJJ-UT in disseminating each of its programs utilizes various modes and media. Likewise in socializing LPKBJJ activities. According to the Coordinators for Learning Materials and Student Supports in a number of ROs, the socialization of LPKBJJ activities was given long before the

activities were carried out. Notifications are distributed through social media such as Instagram, Facebook and Twitter. More effective outreach is notification via SMS and WA blasts. However, these efforts are not always smooth, because many students do not receive notifications. This is generally due to the inaccuracy of the cellphone number registered by students during registration. Sending emailblasts to students also experienced problems, it was suspected that students rarely opened emails.

Another obstacle in terms of the socialization aspect is that LPKBJJ information is not optimal for students in areas that are difficult to reach. For example, students who live in mountainous areas are late in receiving information on the implementation of LPKBJJ. Addresses of student domiciles are often not written clearly, so that notifications by mail are ineffective. These constraints had an impact on not all students receiving notification regarding LPKBJJ activities, so they were not present in this activity. As a result, they do not get important information about the learning system at UT. This condition is in line with the results of Nurdianti's research (2014) which suggests that there are ecological constraints in the socialization process, where information is difficult to receive in locations that do not support socialization.

Constraints in the Technical Implementation of LPKBJJ

The implementation of LPKBJJ is carried out in an online mode, offline and there are even ROs which organize it in a blended manner. Organizing online activities requires technical equipment such as a PC computer or laptop and an adequate internet network. A PC or laptop supported by an internet network is used to turn on online classes. At that time the instructor presented the material and was listened to by students who were connected to the internet for the LPKBJJ online class.

Several ROs reported problems that occurred in the implementation of LPKBJJ online, namely the internet network was less stable. Sometimes the network at the center is disconnected, so you need to wait to be connected again. However, network problems are more common in student locations. Another obstacle related to the technical implementation of offline and blended is the technical equipment available in locations that lack support. Some schools don't provide a wifi network, or their LCD players cannot be used anymore. This can slow down the start of the process of providing LPKBJJ materials. Regarding technical constraints, the problem that often occurs is limited facilities and infrastructure, internet network, or low mastery of technology (Komalasari et al, 2020; Fitria and Suminah, 2020). In general, more technical problems with online implementation (in blended mode) occur at student locations than at the ROs' offices.

The technical obstacle in offline activities is the limited capacity of the hall, especially for OSMB activities which require space for a total of 200 participants. Sometimes UPBJJ does not find a suitable place, especially for UPBJJ-UT which has a large number of new students.

Constraints in Students' Readiness

Student readiness is an important factor in the learning process, including in participating in LPKBJJ activities. The readiness of students to become training participants will have an impact on satisfying results, namely the training material can be digested and understood properly.

Obstacles that occur related to student readiness are the lack of focus on students participating in LPKBJJ activities because they coincide with other activities. One of the characteristics of students studying at distance learning institutions is that they are working people. Not infrequently learning activities at UT clash with work schedules. This happened in the implementation of LPKBJJ. The RO does not fully guarantee student readiness to take part in LPKBJJ because it cannot control student attendance in online classes. It often happens in online classes, in the afternoon the number of participants is getting smaller, or in offline classes students don't come back after the break. This condition indicates that students are not ready to participate in LPKBJJ activities.

Constraints in Material Delivery

The next constraint in the implementation of LPKBJJ is the problem of material delivery. The amount of LPKBJJ material, especially OSMB, is too much and it is impossible to convey everything in this activity, both online and offline. Apart from time constraints, student boredom is also the cause.

All material presented in LPKBJJ activities is material that new students must accept. In addition to materials on UT's academic and non-academic processes, the Indonesian government through the ministry of education also stipulates several materials on national and state life, the higher education system in Indonesia, preventing violence and anti-corruption. UPBJJ-UT admitted that it would be difficult if all of the material was delivered in a limited time.

The implementation of LPKBJJ is carried out in an online mode, offline and there are even UPBJJ which organize it in a blended manner. Organizing online requires technical equipment such as a PC computer or laptop and an adequate internet network. A PC or laptop supported by an internet network is used to turn on online classes. At that time the instructor presented the material and was listened to by students who were connected to the internet for the LPKBJJ online class.

3.4 Solutions to Overcome the Constraints in Implementing LPKBJJ

This part is discussing a number of things that can be taken as solutions to the constraints in implementing LPKBJJ. To overcome the constraints to socializing activities, it is necessary to create a student registration system with accurate data collection of cellphone numbers and e-mail addresses, accompanied by socialization that all notifications will be sent via telephone and e-mail. In addition, the domicile address must be stated in full, in order to convey the message correctly. Students can be encouraged to follow and diligently access all social media at UPBJJ-UT so that they are not late in obtaining important information.

The constraints in technical implementation can be overcome by maximizing UT's bandwidth, if necessary also increasing its capacity. Gensets need to be prepared in locations that are prone to power outages, so that the network is still available safely. To improve the smooth implementation of offline PKBJJ, ROs also need to prepare back-up LCD players at LPKBJJ venues and place ICT that understands the device well. You also need to prepare an adequate quota if WiFi availability is limited. To overcome the constraints of limited space, LPKBJJ activities can be carried out in several terms.

Constraints on student readiness are actually obstacles that require more mainstream handling. One of the readiness of students needs to be pursued by providing high motivation about the importance of participating in LPKBJJ. So regardless of the conditions, if students are ready to receive material, then the objectives of LPKBJJ can be achieved properly. One of the RO circulates filling forms to provide time options for students to take part in LPKBJJ. This is a good effort, because students can attend activities according to their time readiness.

Constraints in the material delivery can be overcome by providing LPKBJJ materials to be studied independently. However, this method also requires control, so that students really learn the material provided. One of the efforts that has been developed by the Center for Student Learning Support is to provide an LMS page that contains LPKBJJ materials for students to study asynchronously. The control given is giving quizzes to ensure that students learn the material in the LMS. This method has been implemented by several ROs, but has not yet become part of the mandatory activities.

The existence of constraints does not mean that it becomes a barrier for UT to continue to provide the best service for students, including new students. The obstacles to implementing LPKBJJ should be a trigger for UT to find the best solution or the lowest risk, so that new UT students really understand the learning system at UT and are ready to study well.

4 CONCLUSION

LPKBJJ activities are services for students that must be followed by all new UT students. In semester 2022.1, all ROs have carried out LPKBJJ activities, which are held in both online and offline modes. Although LPKBJJ is mandatory for new students, not all UT students take part in this activity.

The constraints that occur in the implementation of LPKBJJ are quite diverse, including constraints in socializing LPKBJJ activities to students, technical constraints on implementation which include the stability of the internet network, adequate devices, and the availability of offline classrooms, constraints on student readiness, especially for working students, and obstacles full delivery of material for LPKBJJ participants. Solutions to existing constraints can be sought, among others by urging students to provide correct biodata and be actively involved in ROs social media; increase the capacity of the internet network, prepare adequate equipment or determine locations for offline LPKBJJ implementation in strategic places; provide intensive motivation to students regarding the importance of LPKBJJ in supporting the learning process; up to UT's efforts to organize the LPKBJJ system in an asynchronous mode to help students achieve all LPKBJJ materials.

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