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

M. Jeffri Arlinandes Chandra[1], Zico Junius Fernando[2]

[1]*Universitas Terbuka (INDONESIA)*
[2]*Universitas Bengkulu (INDONESIA)*

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

Guntur Bagus Pamungkas[1], Mirza Permana[2], Ulul Hidayah[3], Erika Pradana Putri[4], Shinta Permana Putri[5]

[1, 2, 3, 4, 5]*Universitas Terbuka (INDONESIA)*

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.
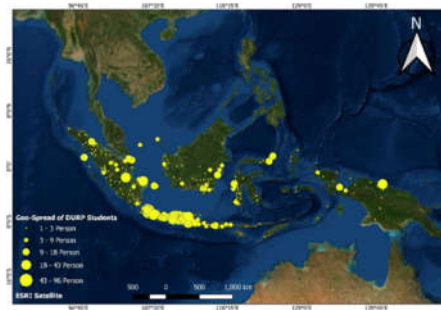

Figure 1. Geo-Spread of DURP OU Body Students.

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.
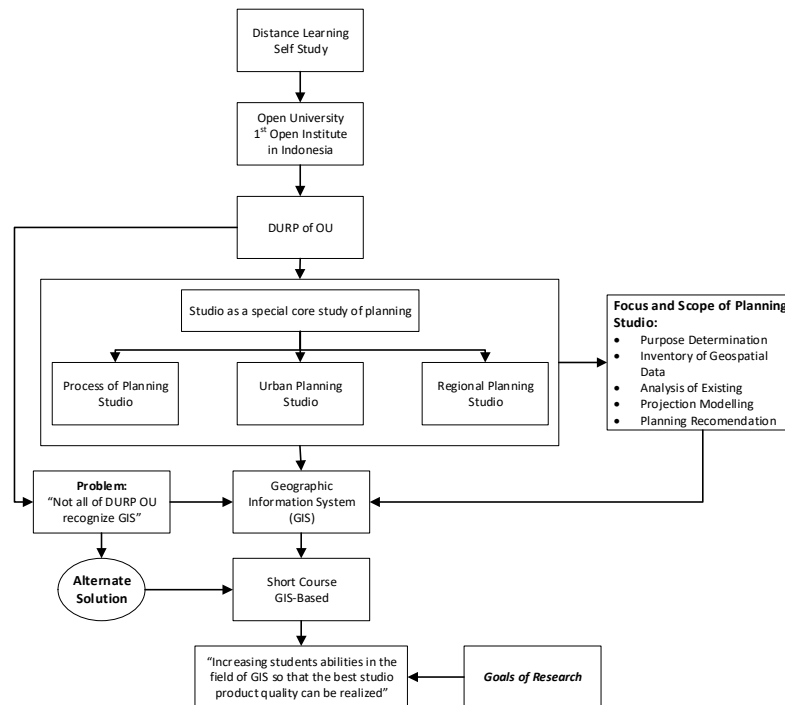

Figure 2. Goals of Research Process.

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.

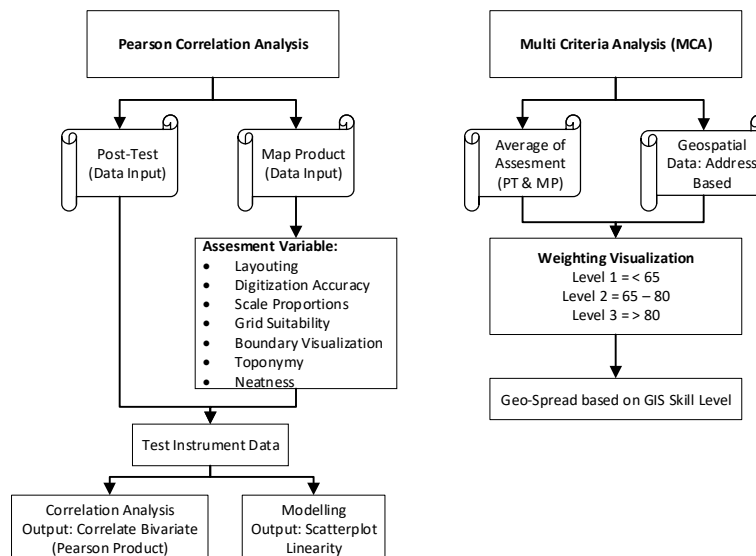## 2   METHODOLOGY

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.
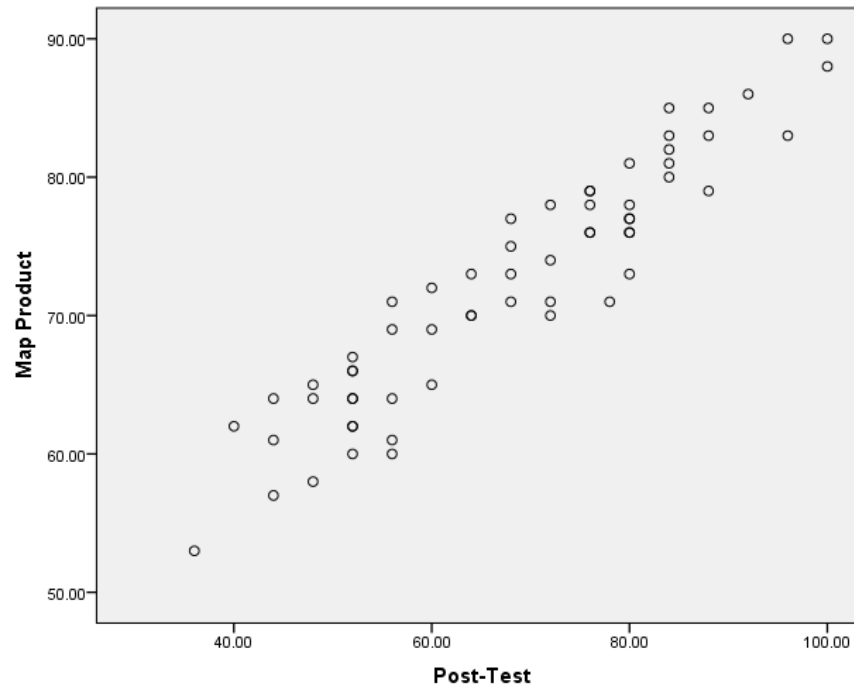
3.1 Linearity

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.
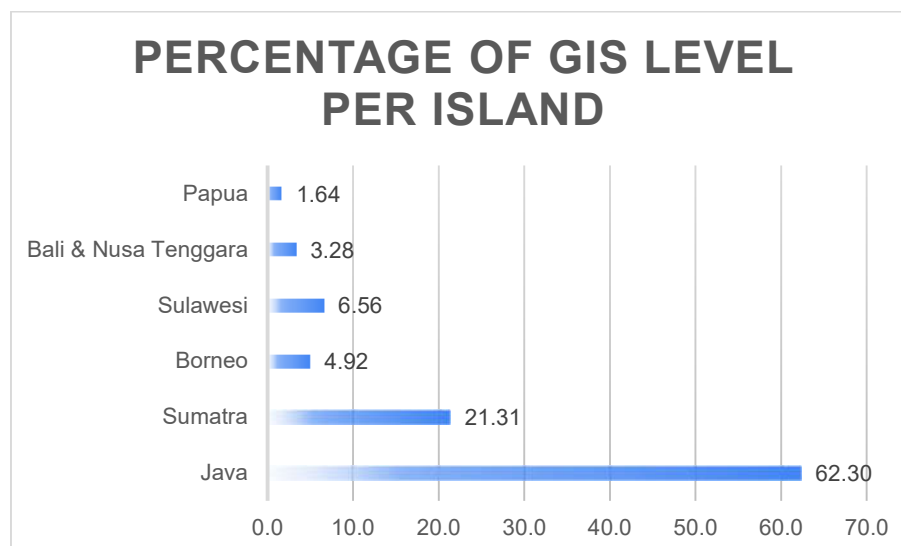

Figure 6. Percentage of Level per Island.

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.
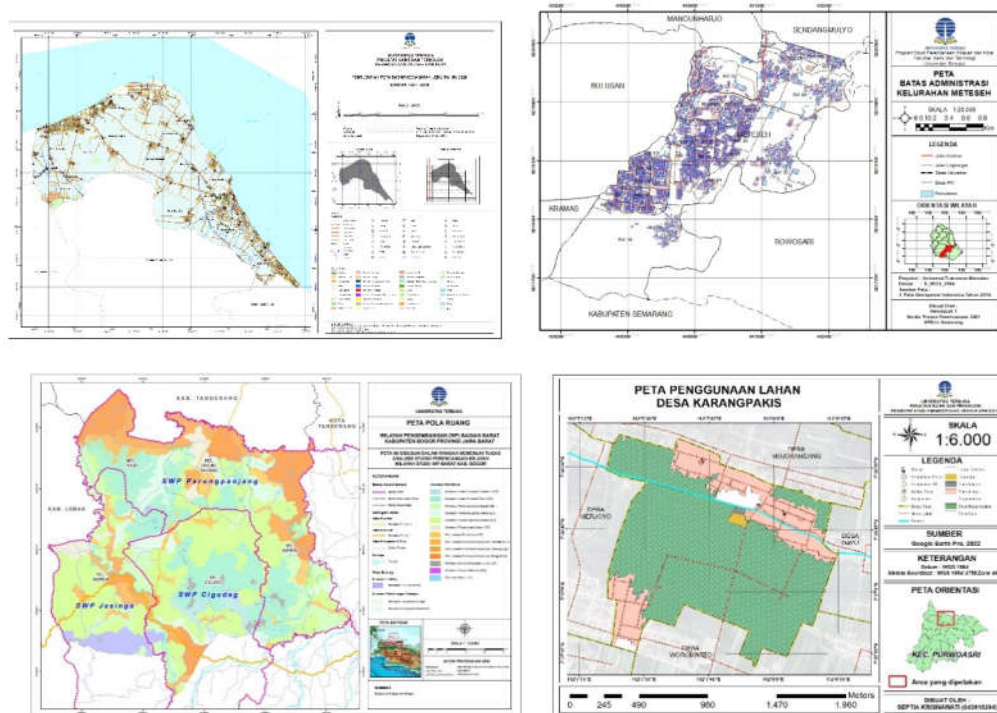
Figure 7. Best Student Map Products.

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.

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

Astri Dwi Jayanti Suhandoko[1]

[1]*Universitas Terbuka (INDONESIA)*

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 R2 (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)

Tania Nur Rahma Dini[1], Abiyyu Zharif Nugroho[2], Widyo Nugroho[3], Sri Wiji Lestari[4]

[1, 2, 3]*Universitas Gunadarma (INDONESIA)*
[4]*Universitas Jayabaya (INDONESIA)*

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.
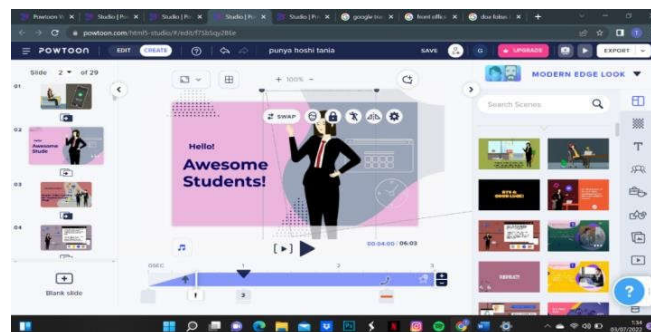
Figure.1. Animated Video Making Using PowToon Premium Account

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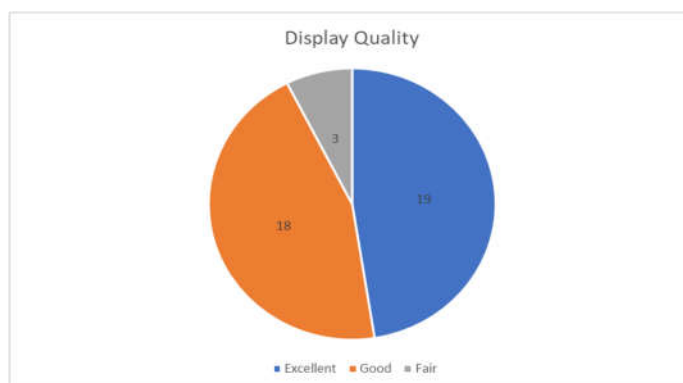
The researcher has done the evaluation by distributing survey to 4 experts to check the eligibility of the product. It can be accumulated into percentage by using formulation below:

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

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
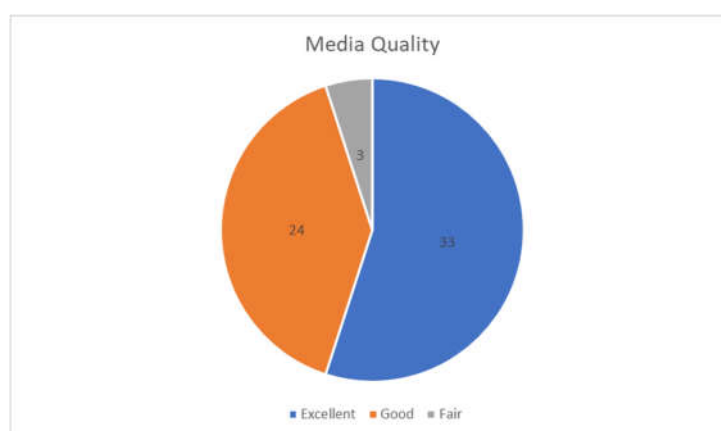
Graphic Chart 2. Media Quality

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
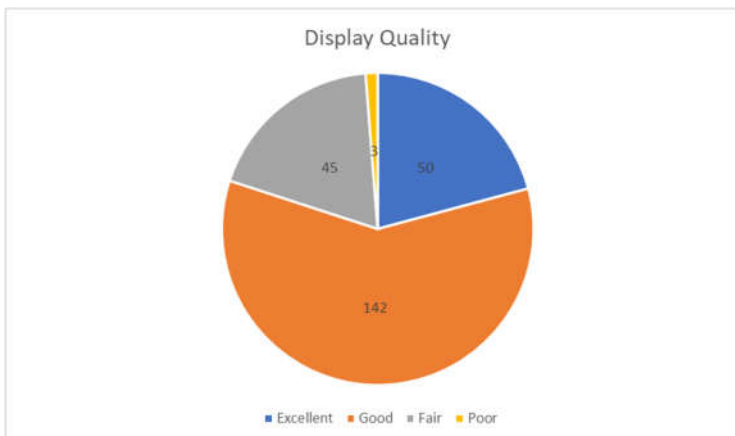
Graphic Chart 4. Student Display Quality

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
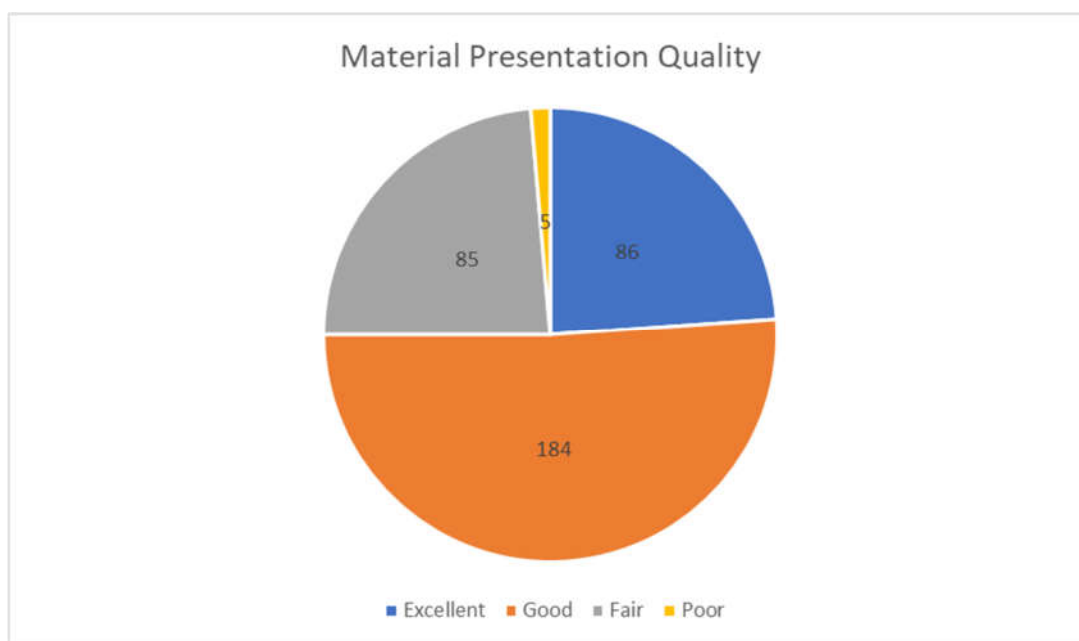
This survey contains of 12 questions regarding to material presentation quality of the product with the highest score is 5 for excellent (E) and the lowest score is 1 for very poor (VP). If the ideal score is when the participants answer 5 for each question, then the total of ideal score (*Xi*) is 12 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

Roman Hadi Saputro[1], Korry El Yana[2], Kadek Masakazu[3]

[1, 3]*Universitas Terbuka (INDONESIA)*
[2]*Universitas Muhammadiyah Tangerang (INDONESIA)*

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*)

Siti Samsiyah[1], Dinar Ludwinia Azzahra[2]

[1]*Universitas Terbuka (INDONESIA)*
[2]*Trisakti University (INDONESIA)*

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.
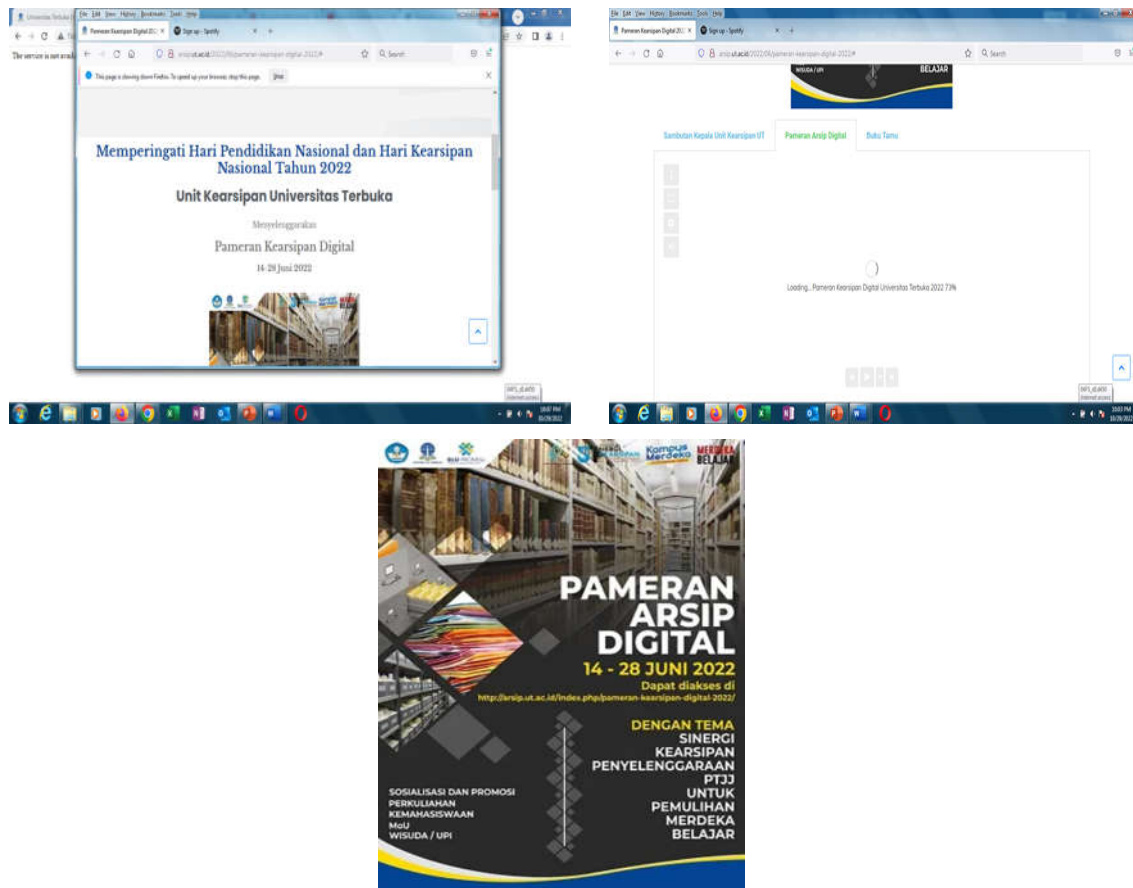
In the display of publications and archives exhibitions listed, planning has been carried out on the event side which will be informed in the form of archive listings. Likewise, the user interface design at the exhibition can be designed as desired. For walls / partitions between exhibition themes, it 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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LAMPIRAN PERATURAN KEPALA ARSIP NASIONAL REPUBLIK INDONESIA NOMOR 21 TAHUN 2011 TENTANG STANDAR ELEMEN DATA ARSIP DINAMIS DAN 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)

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

Widiasih[1*], Zakirman[2]

[1, 2]Universitas Terbuka (INDONESIA)
Corresponding Author: widiasih@ecampus.ut.ac.id

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.
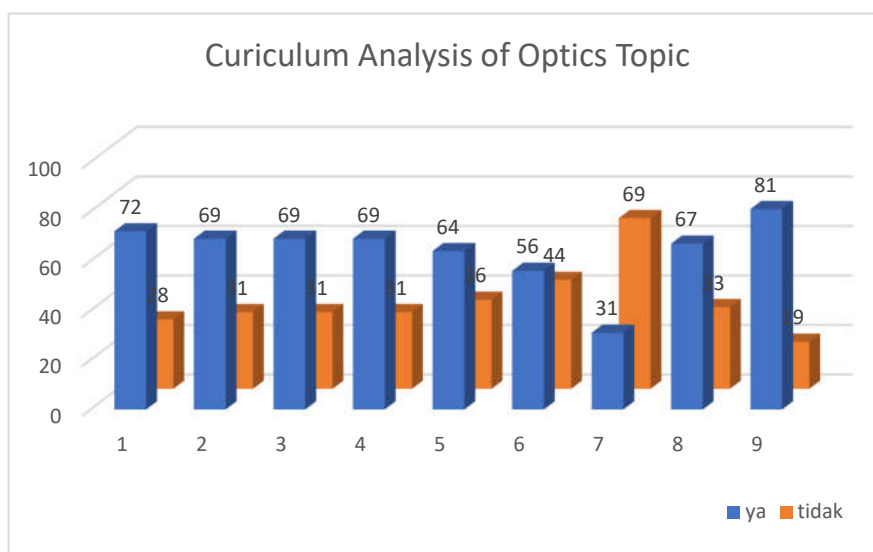
Figure 1. Results of Curriculum Analysis and AR Media Needs by Students on Eye Optics System Materials

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:
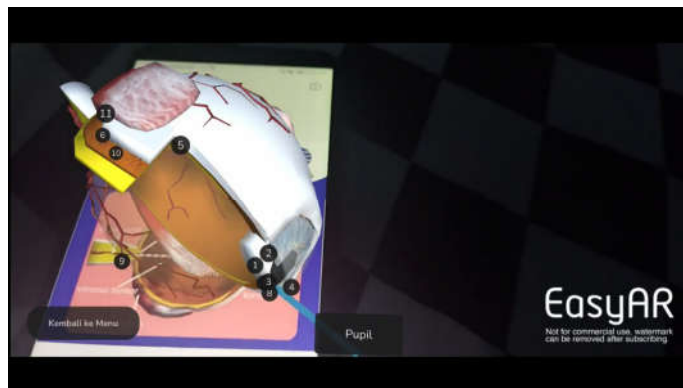
Figure 1. Eye System Parts presented in AR Media

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.
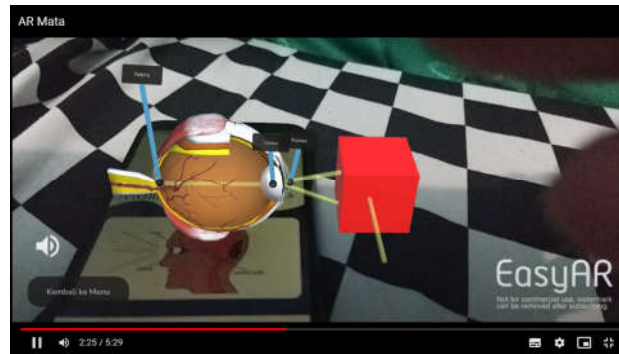
Figure 2. A Display That Shows The Eye Can See Objects

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.
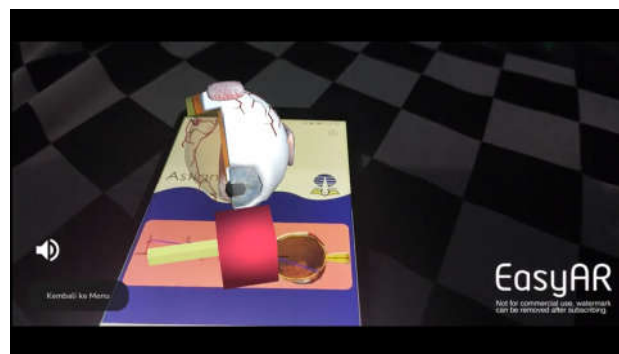
Figure 3. Rotation display when the Eye Process can see objects

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

M. Arifin Zaidin[1], Hasanuddin[2], Kusmaladewi[3]

[1, 2 ,3]Universitas Terbuka (INDONESIA)

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
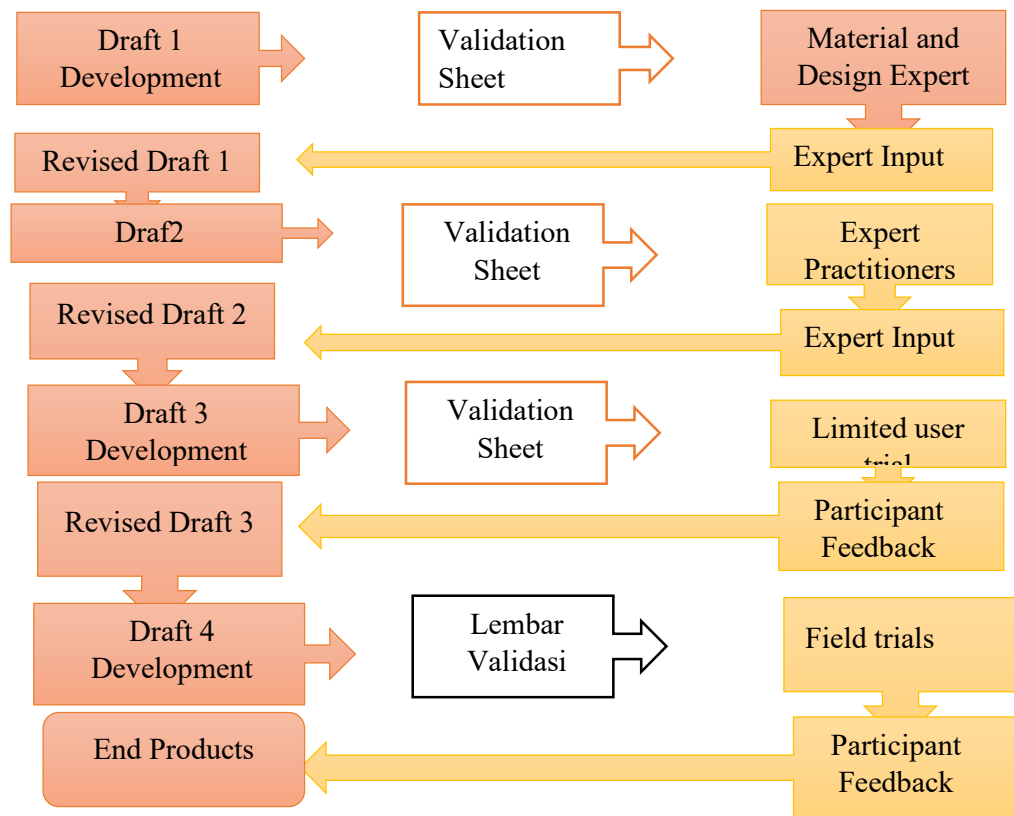
Fugure 1: Test Design

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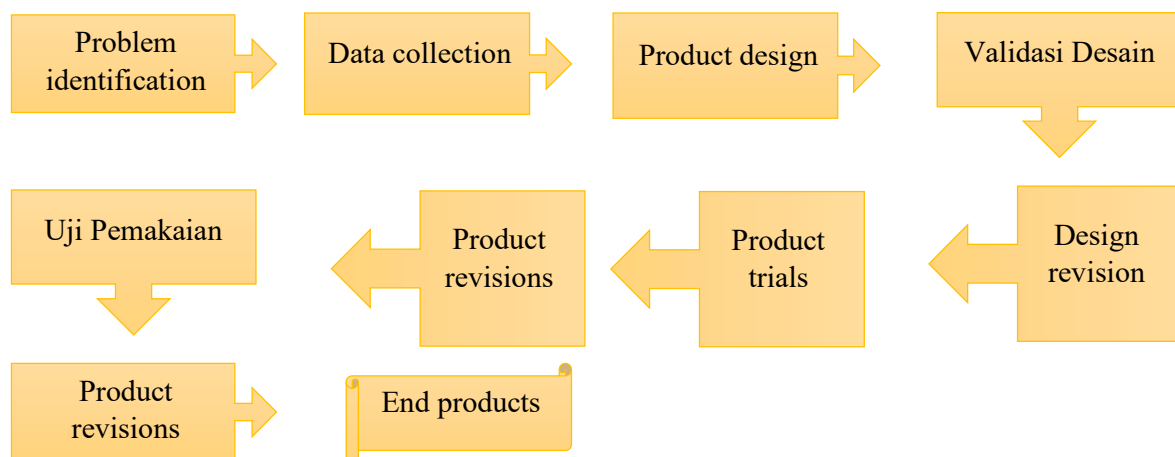
Figure 2 Steps – Steps of Development Form

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.
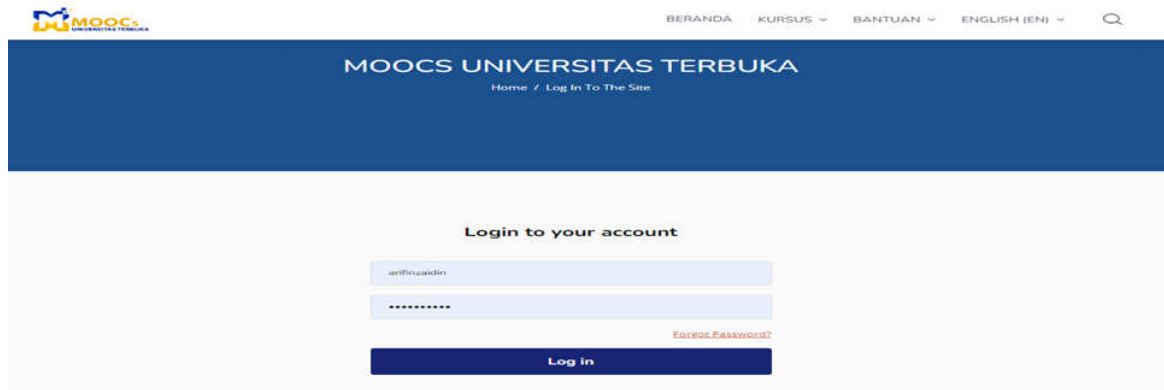
b. Finding a Course

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.
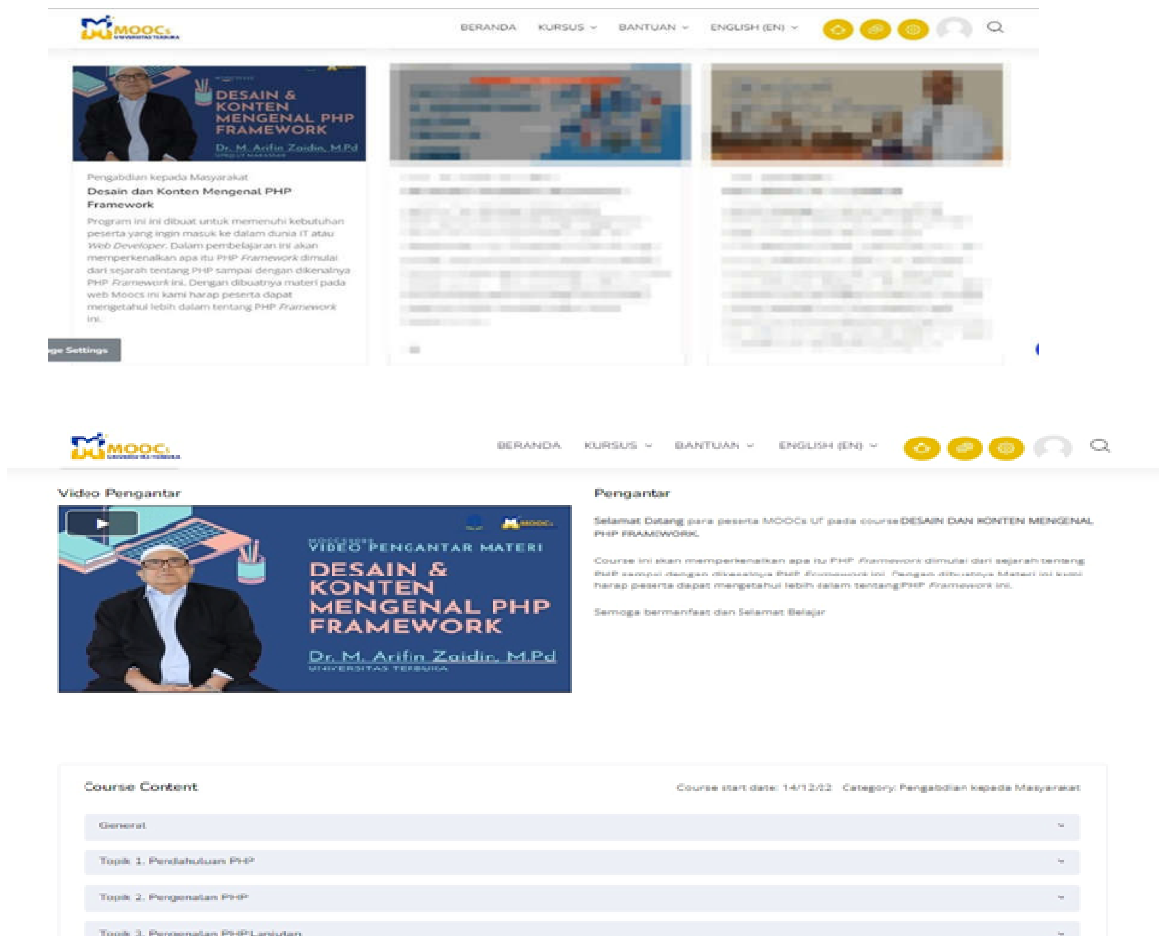
Furthermore, participants will access material on each topic that is already available in the course, where there is PPT material, a video presentation of the material on the subject, a Quiz containing ten numbers of questions, a discussion form related to the material, and a formative test containing five multiple choice numbers. Each available topic has the same process up to the last issue.
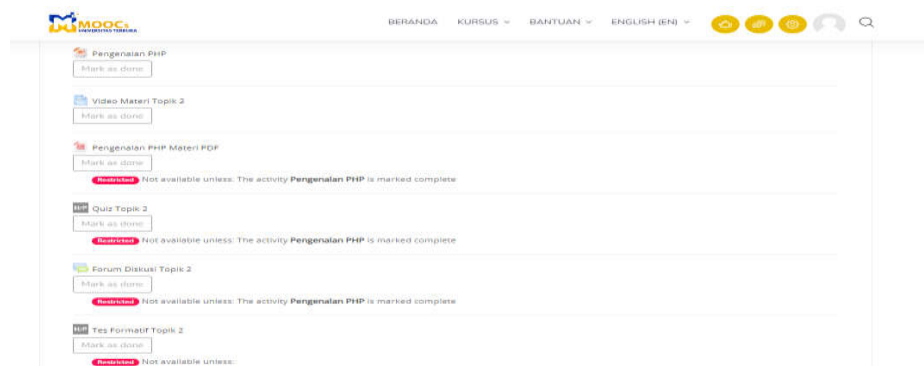
4 CONCLUSION

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.

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UTILIZATION OF LEARNING VIDEOS TO SHAPE STUDENTS' INDEPENDENCE IN LEARNING

Abd Gafur[1]

[1]*Universitas Terbuka (INDONESIA)*

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.

Student Response To Sound Clarity

| 44,2% | 44,2% | 11,6% | 0% | 0% |
| Very clear | Clear | Quite clear | Unclear | Very Unclear |
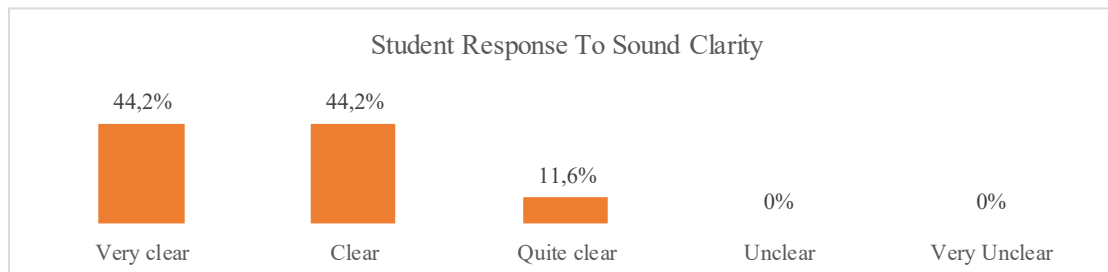
Figure 1. Voice clarity

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

Student Responses to Image Clarity

| 48,8% | 37,2% | 14,0% | 0% | 0% |
| Very clear | Clear | Quite clear | Unclear | Very Unclear |
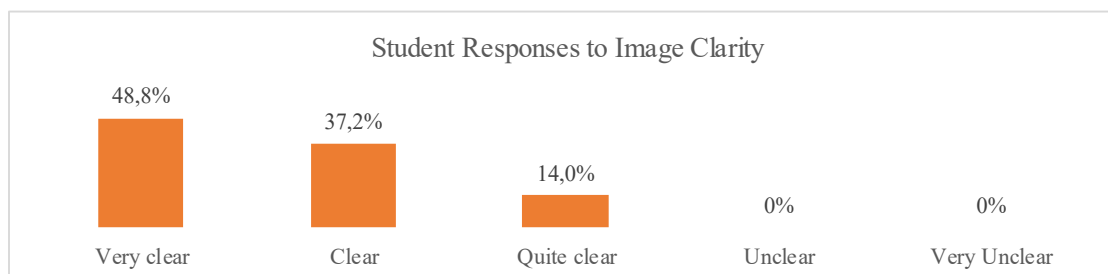
Figure 2. Image clarity

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.
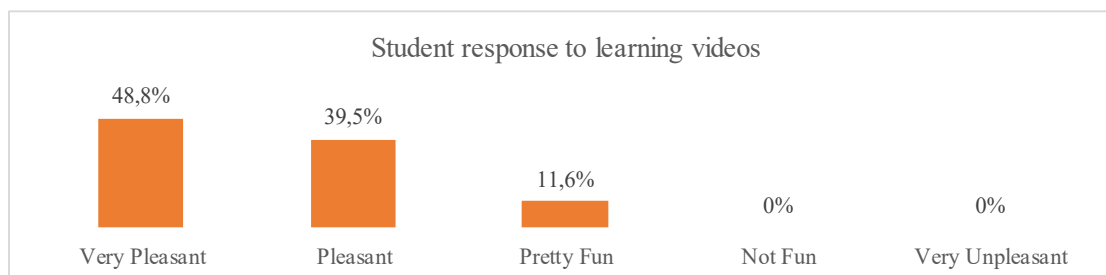
Figure 3. Text clarity

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.
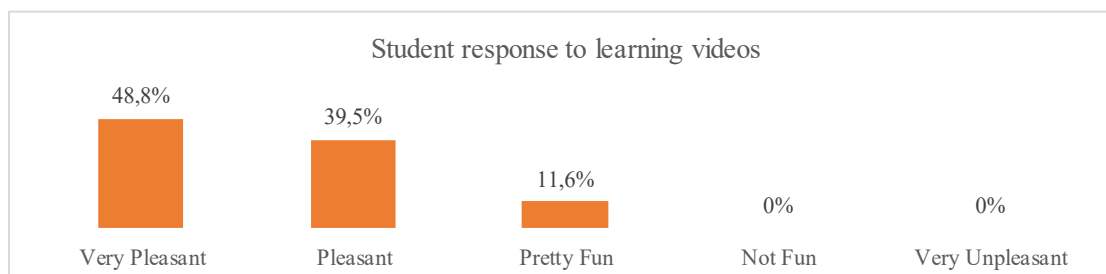
Figure 4. Student responses

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.

Student response to learning videos

| Very Helpful | Help | Helpful Enough | Not Helpful | Very Unhelpful |
| 37,2% | 37,2% | 25,6% | 0% | 0% |
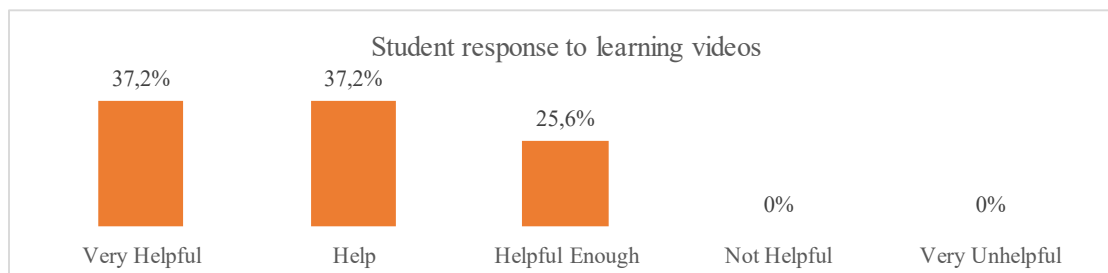
Figure 5. The use of video media

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 videos such as studying in the classroom	7% of students stated that they quite agreed that good students were students who continued to study even without teacher supervision
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

Afriliani[1], Agus Riyanto[2], Yudi efendi[3], Widyasari[4], Ni Putu Meri Dewi Pendit[5]

[1, 2, 3, 4, 5]*Universitas Terbuka (INDONESIA)*

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.
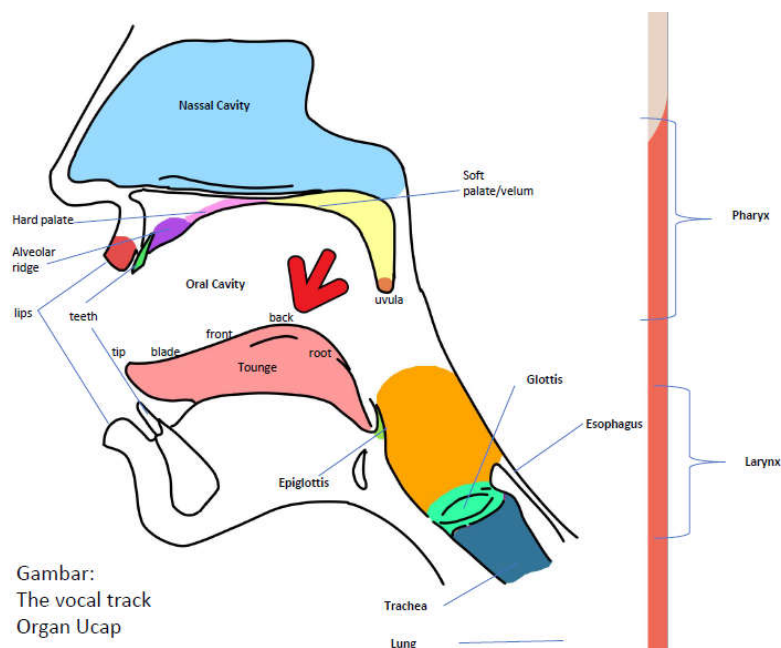
Figure 1. vocal track

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
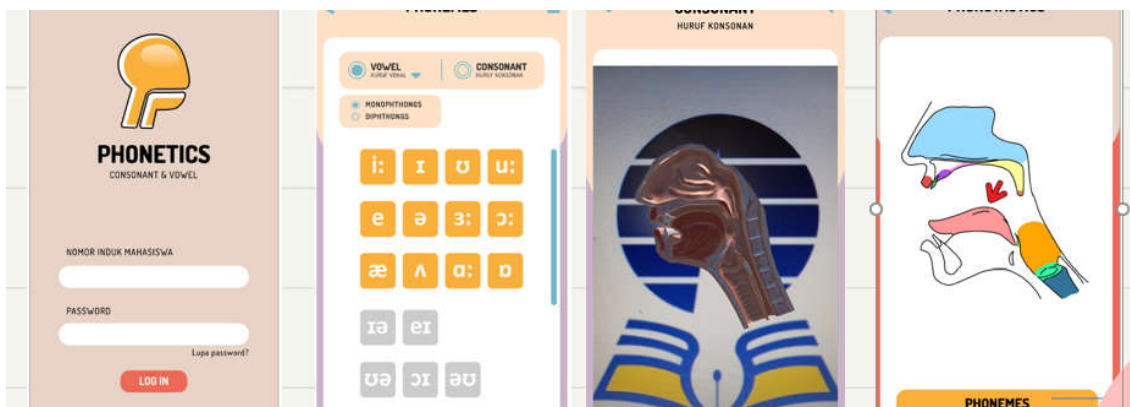
Figure 2. Menu display on AR Phonetic

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.

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

Amalia Sapriati[1], Mestika Sekarwinahyu[2,] Kartono[3], Isti Rokhiyah[4], Fitra Jaya[5], Dwi Riyanti[6]

[1, 2, 3, 4, 5, 6]*Universitas Terbuka (INDONESIA)*

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			

Item	Component		Item	Component
SE14	0.421	0.682	SE29	0.697
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	Cumula-tive %	Total	% of Variance	Cumula-tive %	Total	% of Variance	Cumula-tive %
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.

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METAVERSE FOR LEARNING ARACEAE PLANT IN DISTANCE LEARNING

Subekti Nurmawati[1], Sri Kurniati Handayani[2], Susi Sulistiana[3], Muhamad Rifli[4], Tresna Wijaya[5]

[1, 2, 3, 4, 5]Universitas Terbuka (INDONESIA)

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 metaverse, 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.
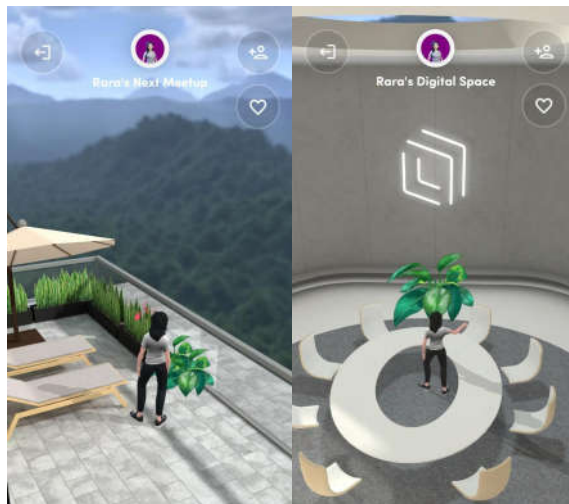
4   CONCLUSION

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

Madiha Dzakiyyah Chairunnisa[1], Purwaningdyah Murti Wahyuni[2], Megafury Apriandhini[3], Nadia Nurani Isfarin[4], Avelyn Pingkan Komuna[5], A. Rachmat Wiarawan[6]

[1, 2, 3, 4, 5, 6]*Universitas Terbuka (INDONESIA)*

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:

The First To Enter The Room Were The Clerk of Court, The Public Prosecutor, Legal Advisers And Visitors To The Trial

The Clerk of Court Announces That The Judgment Will Enter The Court Room

All Those Present In the Courtroom, Including The Public Prosecutor and Legal Advisors Stood Up

The Panel Of Judges Entered The Courtroom Through A Special Door, Then The Judges Sat In Their Respective Seats

The Clerk Invites The Audience To Sit Back

b) Calling the Defendant to Enter The Courtroom

The Presiding Judge Asked The Public Prosecutor Whether The Defendant Was Ready To Appear At Today's Hearing, If He Was Ready Then The Defendant Would Be Presented At Trial

If The Public Prosecutor Is Ready To Present The Defendant, The Presiding Judge Will Order The Defendant To Be Summoned

The Officer Took The Defendant Into The Courtroom And Asked The Defendant To Sit On The Chair For Examination

The Presiding Judge Asked A Question: Was The Defendant In Good Health And Ready To Attend The Trial, The Judge Read Out The Identity Of The Defendant

The Judge Asked Whether The Defendant Was Accompanied By A Legal Advisor

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
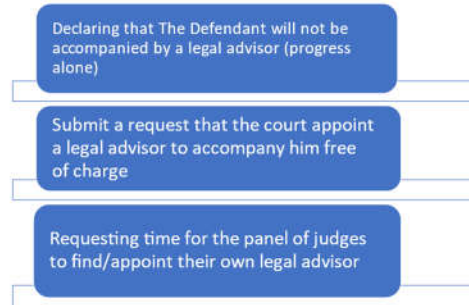
If the defendant is accompanied by a legal advisor, the next process is:

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.
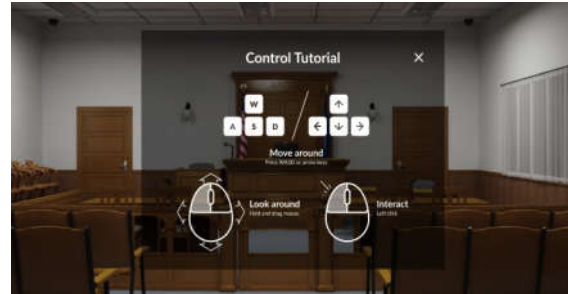
2. Explanation of The Role in Judicial Practice

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.
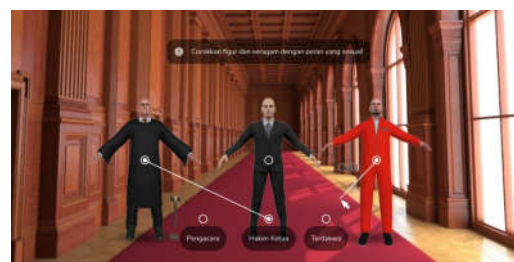
4.   Gamification 2 - Material Comprehension Quiz

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.
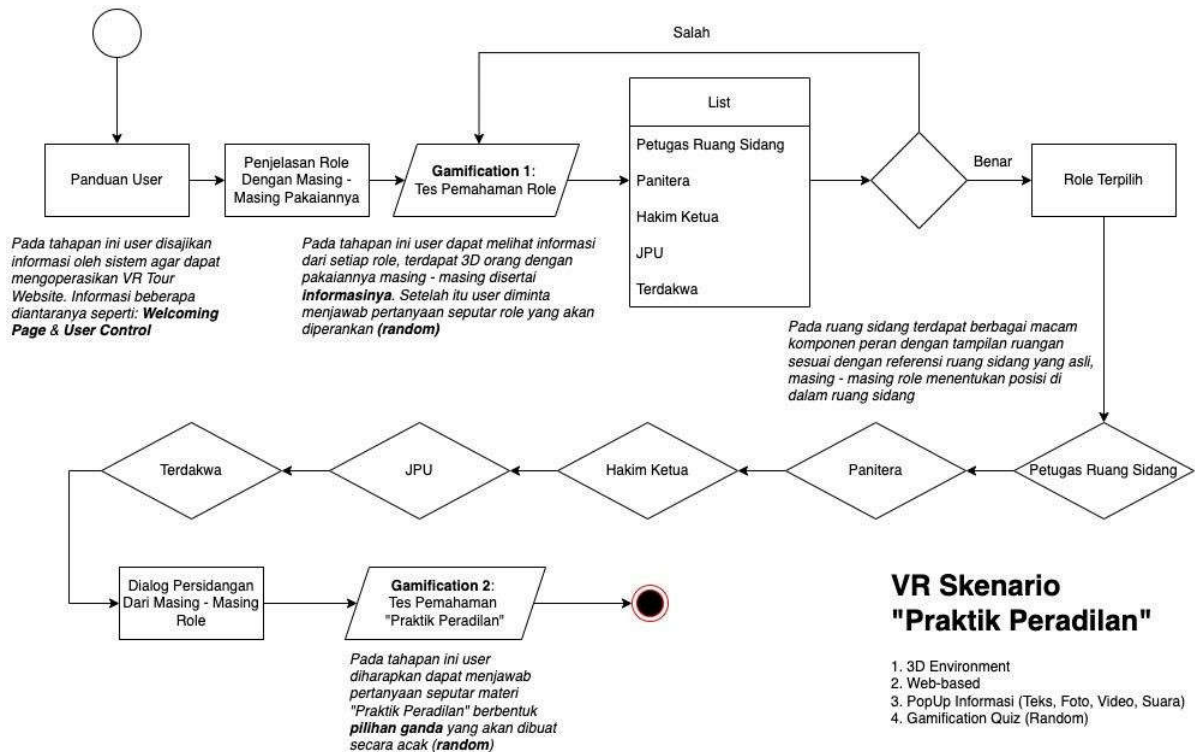

5.   Closing

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

Mukti Amini[1], Ernayanti Nur Widhi[2], Tedjo Djatmiko[3], St. Maria Ulfah[4], Hadiqotul Luluk[5], Mutiara Magta[6]

[1, 2, 3, 4, 5, 6] *Universitas Terbuka (INDONESIA)*

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.
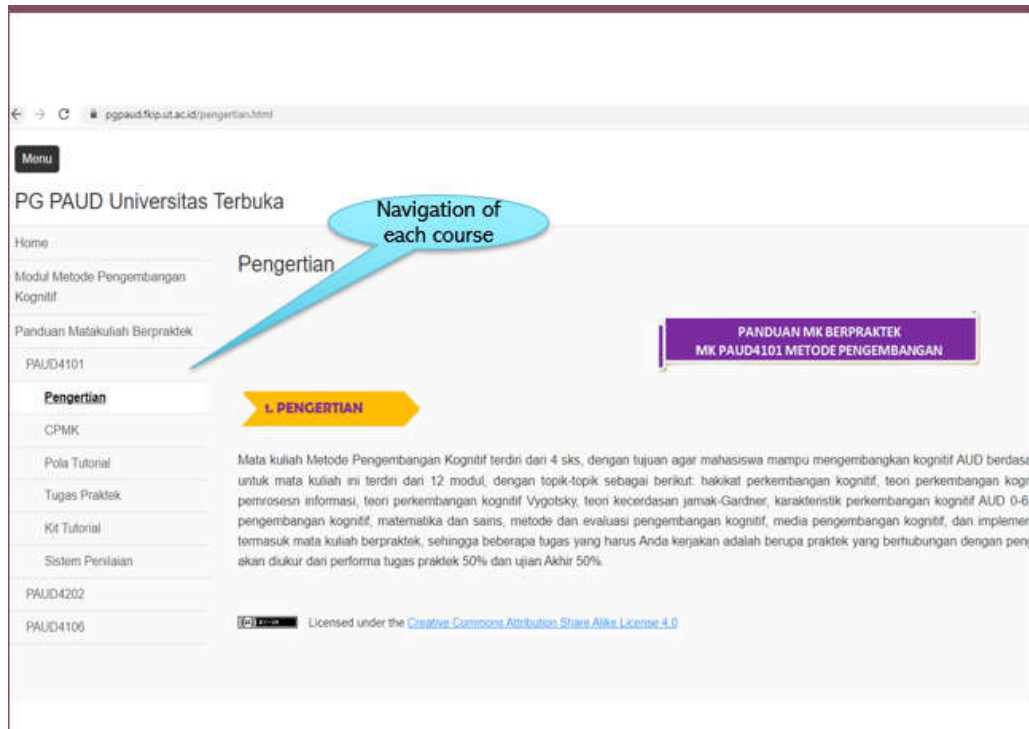
Figure 1. Subtopic Navigation for Each Course

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.
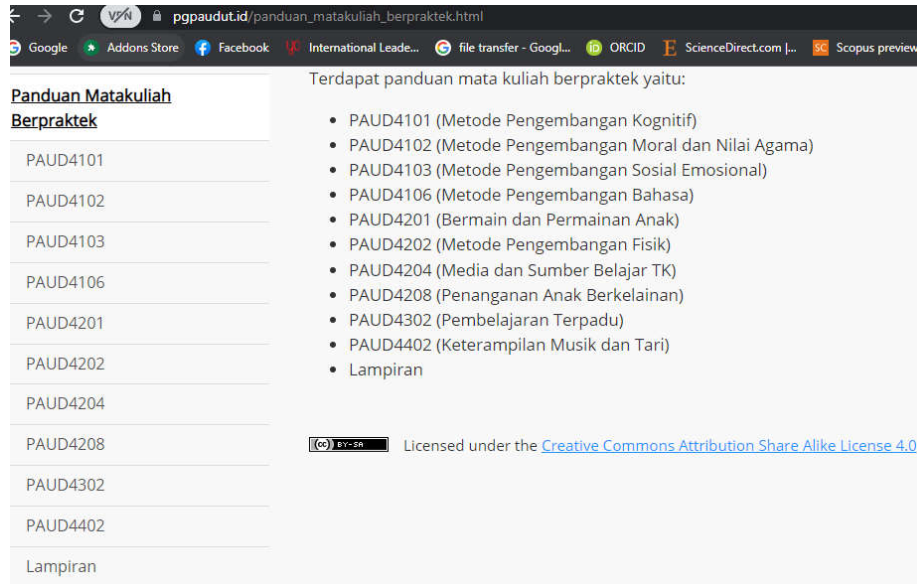
Figure 2. Guidelines for Each Course are Presented Separately

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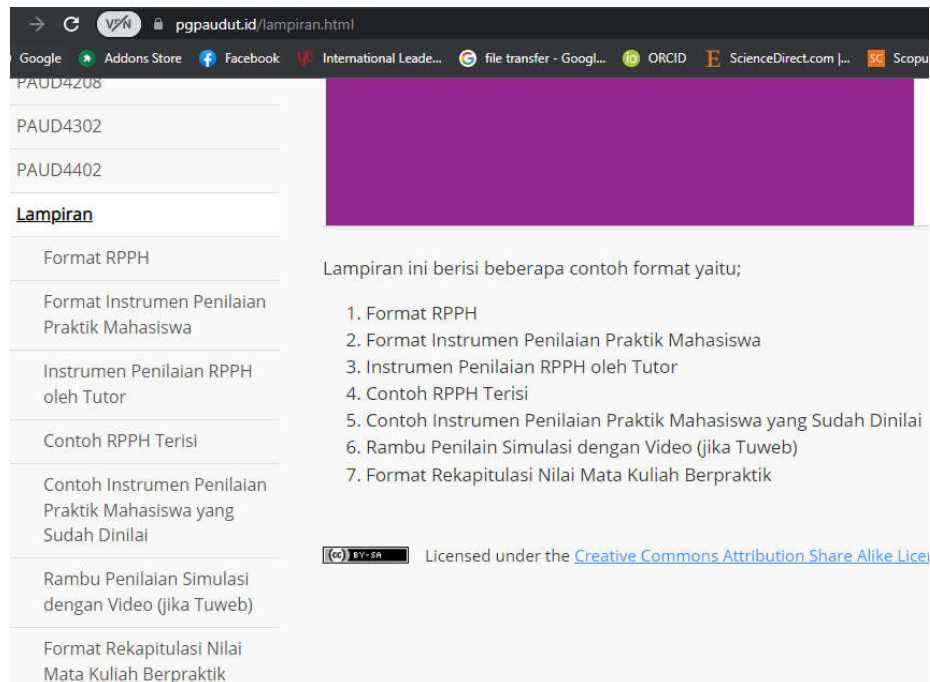
Figure 3. Format of Attachments in the Digital Book of Practical Course Guide

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

Suhartono[1*], Mutimanda Dwisatyadini[2]

[1, 2]*Universitas Terbuka (INDONESIA)*
**hart@ecampus.ut.ac.id*

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.
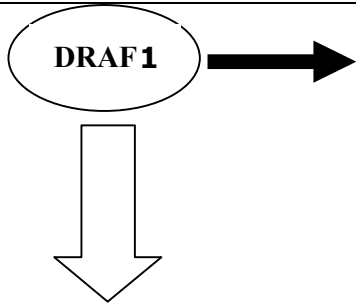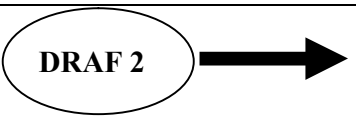
In general, the work procedure in research and development is in the following steps (Gall, Gall, and Borg, 2003:772), namely: (1) Research and information collecting planning. Review and gather information, including by reading literature, observing, interviewing and preparing reports on development 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	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.
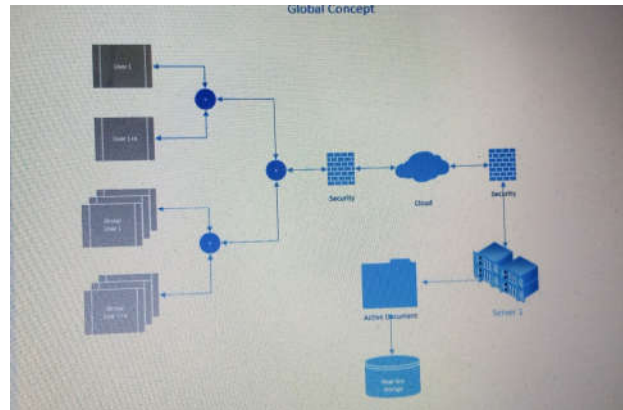
This is a somewhat more detailed description of the description above. Individual or group users. can make transactions to active documents with the encryption method which will later be standardized. each encryption will be different and stored in an access sand box stored on the main frame or server.

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
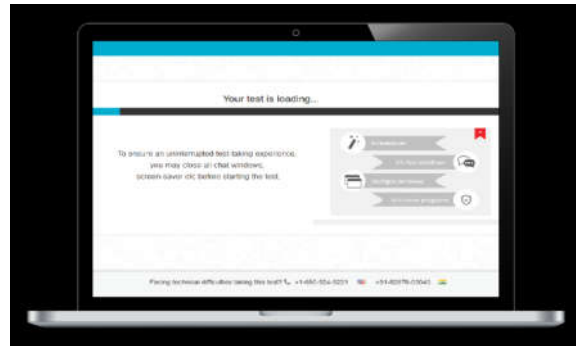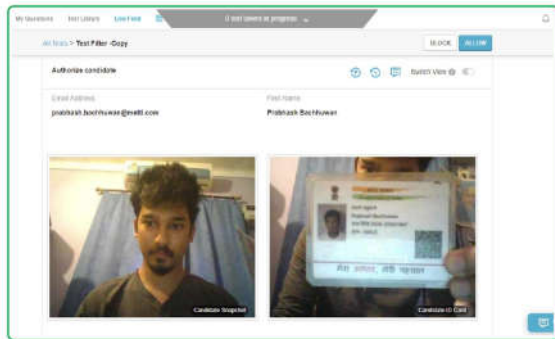
2. Verify Authenticity with 3 Point Authentication System
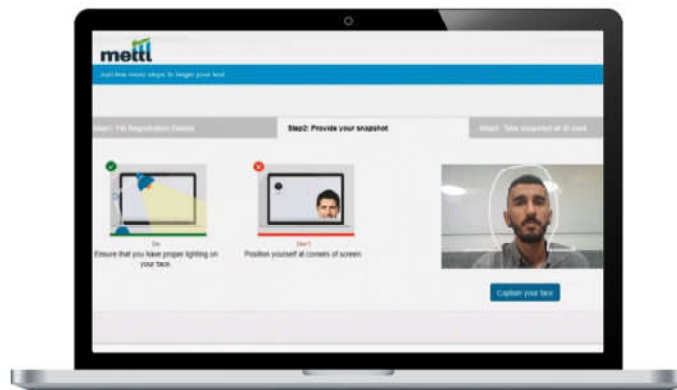
    a. Enter registration details (Columns can be customized)
    b. Clicking on the photo
    c. Verify his ID proof

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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