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Increasing Student Understanding and Concentration Through Virtual Reality Learning Media in Electronic Records Management Courses

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Abstract

Technology development today gives students many references to learn new things. The development of technology-based learning media is an alternative for teaching staff to make a breakthrough in the world of education. Virtual Reality is a technology that can make its users feel like they are in another room without having to move. This technology is supported with audiovisual features, which can make users feel isolated and focus on VR media. The purpose of developing this VR learning media is to measure students' understanding of the material presented in VR learning media and to measure student concentration when using VR learning media. This research was conducted on students from the State University of Malang who taught the Electronic Records Management course. Learning media adapts from sub-CPMK to 1.1. The development of this VR learning media uses the multimedia development method from Luther. The results of the material expert validator and media expert show that learning media is very suitable for learning media by getting a score of 94%. The results obtained from this study show that learning media influences students' understanding of the material, which is indicated by an increase in the class average at the learning stage. Post-test by 11%. This study also found that this learning media made students concentrate more because they felt more focused when using Virtual Reality.

Keywords: VR; learning media; electronic archives

INTRODUCTION

Technology is the application of telecommunication scientific principles by utilizing existing technological equipment to improve the quality of a job such as delivering messages, sending media, providing impact, and so on (Setiawan, 2018). With the use of technology that is currently growing and changing the order in all fields, education is one of the activities that is also affected by this technological development. Education is one of the things that play an important role in improving the quality of society because education is a place for individuals to acquire knowledge and with this knowledge, individuals can improve their quality and quality both in their personal life and in society so that they become intelligent and intelligent individuals. the character following the times (Nur, 2020). Technological developments have affected the world of education through new findings which are considered to be able to assist in the process of adding knowledge and facilitating learning activities and adding information anytime and anywhere following the objectives of the development of educational technology in Indonesia (Akbar & Noviani, 2019). With the development of technology, it is felt that the world of education has greatly benefited because it has received various extraordinary benefits, such as easy access to the latest information from free sources on the internet, e-learning learning activities, and even the emergence of government websites for educational facilities such as the Ministry of National Education (Mahlopi, 2022). However, this technological advancement is inversely proportional to the reality of education, especially learning at the tertiary level, where teachers still use lecture methods and assign assignments which make students easily bored so they don't have the concentration to take courses in class. Whereas learning activities must take advantage of several factors such as appropriate teaching methods and the use of supporting infrastructure for learning activities. The teacher has full control in

creating a classroom atmosphere through the methods and use of media. If learning activities are not executed properly, then as a result there will be several indications of unsuccessful learning activities such as the appearance of boredom and unmotivated students in learning activities (Devy, 2020). In the case of tertiary institutions, if lecturers cannot provide effective teaching, students will not understand the material being taught, and student grade performance will become unstable, even decreasing. So, we need an interactive learning media where the learning media can make students understand and focus on participating in learning activities in class, namely by utilizing virtual reality technology.

Virtual reality (VR) is a learning medium which is indicated to be able to increase student learning interest and student learning outcomes. According to Supriadi & Hignasari (2019), virtual reality is a powerful technology for solving current real-world problems. For educational purposes in general, virtual reality has been widely proposed as a significant technological breakthrough that has great potential to facilitate learning. Virtual reality learning media is considered interactive, in line with the view according to Lumenta (2021), virtual reality is a technology where virtual reality users can already interact with an environmental condition designed by a computer (computer-simulated environment), where the actual environment is imitated or made like original but imaginary. The technology is designed to convey a perception that uses emotions just as we do in the real world. In addition, according to Khuzeir Tarmizi et al., (2021) Specifically, VR is defined as an environment that is generated by a computer, is three-dimensional, and interactive. These environments can be real-world models or imaginary worlds that can help students understand and become more focused on learning.

Based on the results of observations made by researchers at Malang State University in the Electronic Archives Management course, students showed indications of being out of focus and unable to concentrate. This can be seen from the learning situation in the classroom where many students carry out activities that are not useful, such as being busy alone, disturbing classmates, and daydreaming, and there are even some students who feel sleepy while learning activities are in progress. Researchers also conducted direct interviews with several students related to learning activities that still use media such as Powerpoint and media images. Students say that it is difficult to understand learning because the material used in the learning media is considered abstract. When carrying out discussion activities, many students are still passive. This is because students still have difficulty understanding the material. This is in line with research from Cecep et al., (2022) which states that there are several reasons for low concentration in learning, including 1) Learning activities are only carried out using the lecture method; 2) The teaching technique used is inappropriate; 3) There are not enough facilities and infrastructure; 4) The method used by the teacher is only limited to the question and answer method; 5) Teachers do not use visual aids to support learning activities.

Researchers want to provide a solution to the problem of student understanding and concentration, namely by applying learning media based on Virtual Reality assisted by the MilleaLab application as one of the learning media that is capable of increasing student understanding and concentration at Malang State University. It is hoped that with the application of Virtual Reality-based learning media using the MilleaLab application, learning in class is expected to no longer be boring so that students' learning comprehension will increase. According to Saifullah & Basry, (2022), virtual reality learning media can be used to increase concentration because users can interact with the virtual world that exists in virtual reality and make all of their senses able to feel things in the virtual environment. Meanwhile, according to Shabir (2022), virtual reality can help improve and optimize students' understanding rather than just learning through books and videos. The reason the author chose MilleaLab as an application for creating virtual reality media is because the MilleaLab

application is an All-in-one VR Platform application for creating virtual reality media which was launched in 2019 using cloud-based technology that supports the creation of 3D and Virtual Reality-based learning content anywhere. and anytime without coding quickly, easily and affordably. The features offered also vary, including having hundreds of templates and assets for education, a cloud-integrated system so that it can store and retrieve data very quickly, a subscription system at an affordable price, and does not require coding (scripting or visual coding). This feature can be used to create interesting learning media so that it can increase student understanding and concentration. However, what distinguishes this research from previous research is that this learning media is applied to the eyes of students taking the Electronic Records Management course at Malang State University. Another thing that distinguishes this research from other studies is that this study takes student understanding and concentration as the main topic of the research problem.

This research is important to do considering previous research from Darojat et al., (2022) which stated that based on research on the development of Virtual Reality as a learning medium with the theme of the solar system it was stated that virtual reality-based learning media was appropriate to use because it received a positive response during the feasibility test on media experts and material experts, as well as during trials on students also received a positive response. As well as research according to Alfarizi & Yugopuspito, (2020) concluded that virtual reality-based museum research shows that students find the VR museum concept interesting and allows for interactive learning between users and content in the virtual reality world. Students can easily use the media because there are clear directions for exploring activities. In conclusion, VR museums as learning media can be used effectively and can be used as civic learning media. Based on this, the researcher took the title "Increasing Student Understanding and Concentration Through Virtual Reality Learning Media in Electronic Records Management Courses". It is hoped that by implementing this learning media, students will be able to solve problems in real situations and help them become independent learners

RESEARCH METHODS

This study uses the development method from Luther (1994). According to Luther, this development model is widely used to develop multimedia-based products such as making videos, making learning media, and other digital works. According to Prayogha & Pratama, (2020), the Luther research model has advantages such as collecting material that can provide creative convenience for content creators, and research can be carried out in parallel to speed up the development stages. This research model can help solve the problems studied sequentially and simply so that it is easy to apply in media development.

The development of this media goes through the product trial stage to determine the feasibility of a product. Learning media product trials include several activities such as conducting product validation, revising products, and testing in small groups. After the last revision, research will be carried out by applying the control class and experimental class. The type of data to be obtained in this study is in the form of quantitative data on the results of understanding using the pre-test-post-test method, and qualitative data on concentration results. The data collection instruments used in this study included observation, closed questionnaires, and documentation. Subjects on product validation and revision include media expert validators and material expert validators. The subjects of the small group trial consisted of 6 students from the DD Offering Students of Malang State University Study Program of Office Administration Education S1 who took the Electronic Archives Management course. Whereas.

The subjects of the large group trial consisted of 25 students from the DD offering of Malang State University Students of the Office Administration Education Study Program who took the Electronic Records Management course as an experimental class and 25 students from the FF offering of Malang State University Students of the Office Administration Education Study Program who taking the Electronic Records Management course as the control class. The results of understanding will be processed using the questionnaire data processing formula, while the concentration results will be processed by utilizing data obtained from closed questionnaires from the experimental class

RESULT AND DISCUSSION

The product produced in the development of this media is a learning media using VR and an application for making VR media called MilleaLab. The product development process is carried out through several stages, among others:

Observation Stage

Observation is a stage carried out by an observer to observe activity and make conclusions after the observation activity is carried out (Rahmah et al., 2019). Observations were made to students who totalled 25 students in each class. This is needed to observe the condition of the class when learning activities occur. In observation activities, it was found that teachers used PowerPoint media and carried out case study activities to convey material. Unfortunately, the PowerPoint media used is only a static image, making it less attractive. This makes students get bored quickly and don't focus on learning activities, especially students who sit in the back of the chair and have a tendency to play with gadgets and talk to friends while doing learning activities.

Design Stage

At the product design stage, the researcher determines the right media to be developed according to the problems that occur in the field. The media created is learning media based on Virtual Reality which aims to make students more focused and more aware of the learning objectives being carried out. Learning media utilizes learning activities from the 1.1 sub-CPMK Electronic Archives Management course entitled Introduction to Electronic Archives Management. Researchers develop concepts from VR media in the form of storyboards. According to Goldman et al., (2006), Storyboard is a document created in the form of text or graphics that can be used as a guide in creating a multimedia-based content concept. The storyboard of the learning media is shown in Figure 1

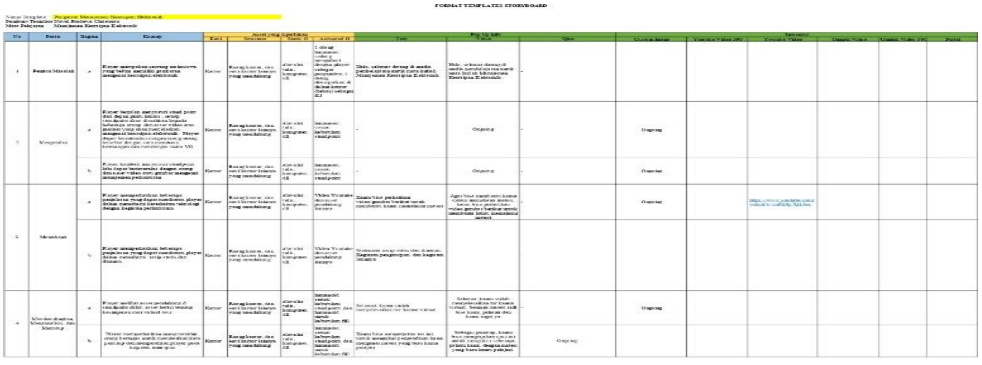

Figure 1. VR media storyboards

Product Development Stage

The product development stages in this study include several activities such as collecting material/assets to be used from the internet (.mp3 and . JPEG file extensions) and creating VR products on the MilleaLab application. The display of media creation can be seen in Figure 2 and the display of supporting assets can be seen in Figure 3

Figure 2. Making VR media

Figure 3. Supporting Assets

Learning media can be accessed on smartphone devices with an Android-based operating system. Users are required to enter the class code and download several assets before they can use learning media. In learning media, there are several features such as auxiliary text, supporting images, video player media, and also quiz media which can be used as evaluation media for tutors.

After the learning media has been developed by researchers, the media must go through the trial phase by media experts and material experts, consisting of 1) material expert validators, namely office administration education lecturers who are experts in electronic records management courses, 2) media expert validators, namely lecturers of office administration education who are experts in the field of technology and keep abreast of current technological developments, 3) user validators namely students of the State University of Malang from the S1 Office Administration Education study program who are taking electronic records management courses. The validator provides an assessment of the product that has been developed, and then provides input and suggestions that can be used in product revision. In addition, the validator provides conclusions regarding the continuation and feasibility of the product that has been made.

Table 1. Material Expert Validation Results

Assessment Aspects	Score		Percentage (%)
	X	X1	
Teaching Materials	22	25	88
Presentation of Teaching Materials	15	15	100
language	15	15	100
Average Validation Results	53	55	94

Source: Researcher Primary Data (2023)

Table 2. Media Expert Validation Results

Assessment Aspects	Score		Percentage (%)
	X	X1	
Ease of Teaching Media	19	20	95
Presentation of Teaching Media	25	30	83
language	15	15	100
Average Validation Results	53	55	90

Source: Researcher Primary Data (2023)

Table 3. Small Class Validation Results

Assessment Aspects	Score		Percentage (%)
	X	X1	
Ease of Teaching Media	19	20	95
Presentation of Teaching Media	25	30	83
language	15	15	100
Average Validation Results	53	55	90

Source: Researcher Primary Data (2023)

Table 4. Validator's Criticism and Suggestions

Validators	Criticism and suggestions
Dr. Madziatul Churiyah, S.Pd, M.M.	At the beginning of the learning media, the course name and CPMK must be conveyed. Then there must be an evaluation.
Suryo Hadi Wira Prabowo, S.T., M.AB.	The pinpoint placement must be adjusted to eye level. The evaluation is made up of 15 questions.

Source: Researcher Primary Data (2023)

Product Implementation Stage

Product application was carried out to two classes at once, namely the control class and the experimental class with pre-test and post-test methods to measure students' understanding of the material presented. As for assessing student concentration, the researcher applied the closed questionnaire method only to 1 class, namely the experimental class.

Downloading the Millea Lab App from the Google Play Store

Millea Lab application, users can download the application on the Google Play Store by searching for the Millea Lab keyword. This application is only available on smartphones with an Android operating base.

Figure 4. The Millea Lab application on the *Google Play Store*

Millea Lab Applications Display

After the Millea Lab application has been successfully downloaded on a smartphone, the user is required to log in using a Google account, and then enter the class code that was shared by the researcher. After entering the class code, the next step is to select the media that has been entered, then the user can set up the VR equipment and enter the virtual world.

Figure 5. Display in the Millealab application

Evaluation Stage

The evaluation stage in this study was held to find out whether the provision of VR-based learning media was able to make students understand the material or not. Then an evaluation is also held to find out whether students concentrate when using learning media or if learning media does not have an impact on student concentration.

Data on students' comprehension results were analyzed based on the results of the pre-test and post-test from the control class and the experimental class. The results of the pretest activities are used to test students' initial abilities before being given a treatment (treatment), conversely, posttest activities are carried out to test students' abilities after being given a treatment (Wisada et al., 2019). The results of the pre-test and post-test evaluations of the control class and the experimental class can be seen in Table 5

Table 5. Recapitulation of *Pre-Test* and *Post-Test* Class Control & Experiment Averages

Class	Average (value)	
	Pre	***Post***
Control	72	83
Experiment	68	79

Source: Researcher Primary Data (2023)

Based on the results of the following research, it can be concluded that VR learning media influences giving students' understanding of the material. This is indicated by the increased class average results in the experimental class, which indicates that students can grasp the material presented in VR media and demonstrate the understanding gained in the post-test activities. Through processing the data obtained in the field, it was found that the learning outcomes in the control class and the experimental class had the same characteristics, that is, the class average experienced an increase after the action was carried out in the form of giving material by the teacher. The results show that learning activities using virtual reality learning media in the experimental class have the same effect as learning with the lecture method, with the achievement of the same goal of providing an understanding of the material being taught.

While the data on student concentration results were analyzed based on the results of a closed questionnaire given to control class students. The results of a closed questionnaire regarding concentration can be seen in Table 6

Table 6. Closed Questionnaire Results Regarding Concentration in Experimental Classes

Assessment Aspects	Score		Percentage (%)
	X	X1	
Media allows students to focus on the material	94	125	75
The media makes students isolated from the outside world	93	125	74
Students feel enthusiastic about learning media	102	125	81
Students feel motivated to take part in VR-assisted learning	99	125	79
Media makes students pay attention to the material	97	125	77

Source: Researcher Primary Data (2023)

Based on the results of the following research, it can be concluded that VR learning media influences student concentration on learning activities. The results of the questionnaire stated that students felt closed or isolated from their surroundings when using existing learning media. Isolation is a situation where a person feels closed or feels that there are other people present, but cannot expect the presence of other people (Revianti & Anggoro, 2022). With the isolation of students from the outside world, students can become focused and closed with learning activities, so that students can absorb existing material in learning activities following the CPMK that has been designed. The student enthusiasm for new learning activities is also a stimulus for students to be more focused on learning activities (Meiza et al., 2020). This is because students experience learning activities that are new and exciting without any outside distractions such as classmate distractions or other noisy sounds that can disrupt student learning concentration.

CONCLUSION

Virtual Reality-based learning media is a learning media product that utilizes the latest technology, namely Virtual Reality. The development of learning media is aimed at students taking the Electronic Records Management course. The purpose of creating this VR-based learning media is to measure the level of understanding and concentration of students when using VR learning media.

Field tests show that learning media has effects on students' understanding and concentration on the material provided. The response from students was also very good. The researcher has suggestions for further research through the results of this study so that in future research, makers of virtual reality-based learning media can choose the right CPMK for implementing virtual reality-based learning media so that learning media has higher effectiveness. The researcher also hopes that future researchers will pay attention to the psychomotor factors of students so that learning media can be used optimally

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