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VIRTUAL REALITY DEVELOPMENT IN AN EFFORT TO IMPROVE THE READINESS OF OFFICE ADMINISTRATION EDUCATION STUDENTS TO FACE TEACHING SKILLS PRACTICE

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ABSTRACT

This research was conducted with the aim of determining the level of feasibility and practicality of Virtual Reality learning media in teaching and learning strategy courses on microteaching material. This research uses the Research and Development (RnD) method with the ADDIE (Analysis, Design, Implementation, Evaluation) development model. The research subjects consisted of 1 material expert and 1 media expert as well as 10 6th semester students of the Office Administration Education Study Program, Faculty of Economics, Universitas Negeri Jakarta. The data collection technique uses a questionnaire with a 1-5 Likert scale. Data analysis techniques were carried out using expert validation tests and practicality tests. Based on validation tests carried out by 1 material expert and 1 media expert, the average percentage result was 94.5%, which means the category was very feasible. Based on the results of practicality tests for small and large groups, an average percentage score of 95% was obtained in the very practical category. Therefore, the results of the research and development that have been carried out are declared very feasible and very practical and can be used in learning activities.

Keyword: Learning media, Virtual reality, Microteaching

ABSTRAK

Penelitian ini dilakukan dengan tujuan untuk mengetahui tingkat kelayakan dan kepraktisan media pembelajaran *Virtual Reality* pada mata kuliah strategi belajar mengajar pada materi *microteaching*. Penelitian ini menggunakan metode *Research and Developoment (RnD)* dengan model pengembangan ADDIE *(Analysis, Design, Implementation, Evaluation)*. Adapun subjek penelitian terdiri dari 1 ahli materi dan 1 ahli media serta 10 mahasiswa semester 6 Program Studi Pendidikan Administrasi Perkantoran Fakultas Ekonomi Universitas Negeri Jakarta. Teknik pengumpulan data menggunakan angket dengan skala likert 1-5. Teknik analisis data dilakukan dengan uji validasi ahli dan uji praktikalitas. Berdasarkan uji validasi yang dilakukan oleh 1 ahli materi dan 1 ahli media mendapatkan rata-rata hasil persentase sebesar 94,5% yang berarti memperoleh kategori sangat layak. Berdasarkan hasil uji praktikalitas kelompok kecil dan besar diperoleh rata-rata skor persentase sebesar 95% dengan kategori sangat praktis. Oleh karena itu, hasil penelitian dan pengembangan yang telah dilakukan dinyatakan sangat layak dan sangat praktis serta dapat digunakan dalam kegiatan pembelajaran.

Kata kunci: Media pembelajaran, *Virtual reality*, *Microteaching*

INTRODUCTION

Education is a structured effort aimed at creating a learning environment where students can actively develop their potential, including spiritual strength, self-control, personality, intelligence and practical knowledge. Students who focus on education have a greater chance or opportunity to become an educator or teacher. Students in the field of education are given knowledge related to teaching practices. Teaching practice is one of the essential concepts for every prospective teacher in the teaching process is teaching practice. In teaching practice, a prospective teacher is asked to be able to present lesson materials in an interesting way and understand the individual characteristics of the students being taught in order to achieve learning objectives (Retnawati et al., 2018). Examples of teaching practices or Teaching Skills Practices (PKM) can take various forms, including teaching in class, guiding or assisting students, planning and compiling learning materials, and evaluating student learning outcomes. In reality, teaching practices or Teaching Skills Practices (PKM) are a challenge for students, especially for those who have no previous teaching experience. With the role of technology in the learning process, it will facilitate the teaching and learning process.

Using technology-based learning resources is one way that innovation has been produced in the process of teaching and learning. One type of learning medium based on information and communication technology is virtual reality-based learning. Technology known as virtual reality allows users to engage with a computer-simulated environment. In technical terms, virtual reality refers to a three-dimensional environment that a computer creates and that a person can interact with.

Furthermore, as stated by Pramesti et al. (2022), Regarding the scope of the research, VR technology can be a new means to replace conventional learning with a more interesting one. Virtual reality (VR) technology such as HMD and mobile VR can help students, especially college students, learn more and better understand what they are doing. In addition, VR can be used as a learning aid, improving students' memory and enhancing their learning experience. Biology learning requires more complex visualization models, so that students can learn concepts in a more real way than just relying on books or teacher explanations. As a result, virtual reality technology is most often used in this topic. In addition, according to the results of the study Shabir (2022) is the low learning experience experienced by students during the online learning process can be overcome by utilizing virtual reality (VR) technology. VR technology is suitable for use as a learning medium considering that many studies have shown the positive impact of this technology in improving students' learning experiences.

A different way to define virtual reality is technology that can produce a realistic-feeling 3D environment, giving users the impression that they are actually in the real world even when they are only engaging with a virtual simulation. Furthermore, virtual reality eliminates time and location restrictions by enabling access from any location. Flexible learning options enable students to adjust their education to meet their unique needs and support distance learning (Ogbuanya & Onele, 2018). Students can access virtual or real-world learning environments, like classrooms or industrial settings. This enhances the learning process by enabling students to apply concepts in a more practical setting. Innovation in the design of learning is made possible by the application of virtual reality. New, more interesting and successful teaching strategies can be developed as a result of research and inquiry into this technology. Students can get immediate feedback on the choices or actions they make in virtual simulations. This facilitates an adaptive learning process and gives students the opportunity to immediately increase their comprehension (Darojat et al., 2022).

Developing a Virtual Microteaching Prototype Model is one of the steps that must be taken in order to build VR technology-based media. The software development process can be aided by the prototype in creating a model of the software that has to be developed. This method is implemented in phases, beginning with direct prototype and continuing with intermittent

development until the software is finished and usable. Therefore, it can be said that a prototype is a preliminary iteration of a software system that is used to test concepts, carry out research, identify new issues, and identify possible fixes. Users can use a prototype model to assess how effectively a system functions.

Therefore, researchers choose to develop and research virtual reality because Virtual Reality-based learning media is considered effective and feasible to use in learning activities (Shi et al., 2019). In this study, VR-based learning media was chosen because this technology has not been widely used in education and can help students practice teaching skills through simulations of real and abstract classroom environments in 3D. In addition, Virtual Reality can be accessed from anywhere, thus reducing geographical and time limitations. Students can learn flexibly, so that it can be adjusted to the needs of each individual and facilitate distance learning.

This research makes a practical contribution, namely virtual reality technology, students can practice alone without needing many people to experience it directly. This set of audiences is referred to as virtual students. Students in this virtual class are as if they were in a real classroom. According to Fudholi et al. (2020), the use of virtual reality as a learning tool offers a number of advantages that can improve the quality and effectiveness of the educational process. Therefore, the aim of this research is to develop a prototype of a virtual microteaching model in an effort to increase readiness for Teaching Skills Practice.

LITERATURE REVIEW

Learning Media

Learning media is made to make learning contents easier to absorb, retain, and apply in an engaging and efficient manner. Learning media come in a wide range of formats and can be multimodal, audio, visual, or a combination of the two Ramadhani et al. (2023). Learning media is a part of learning resources or physical facilities that contain instructional materials in the student's environment that can inspire pupils to learn (Sinaga et al., 2023). Increasing student involvement, facilitating concept understanding, and fostering a more participatory learning environment are the goals of utilizing learning media. Books, whiteboards, diagrams, models, films, animations, learning software, educational games, and a variety of other resources can all be considered forms of learning media. The use of learning media is adjusted to the characteristics of students, learning objectives, and the subject matter being delivered (Ogbuanya & Onele, 2018). Therefore, researchers will create innovative learning media such as virtual reality so that the learning process can be more interesting, efficient, and provide a better learning experience for students.

Virtual Reality

A technology known as virtual reality (VR) produces a simulated environment or experience that can be either identical to or unlike the real world. Users can have the feeling of being in that environment even though they are actually in the real world by employing specialized hardware and software. Creating an immersive experience that can elicit a genuine and profound sensation is the primary objective of virtual reality technology. Virtual reality, according to Chaffy et al. (2019), is a technology that makes it possible to effectively communicate knowledge through media that combines sounds, pictures, and realistic user experiences, making it simpler for users to recall the information. According to Yung and Khoo-Lattimore (2017), virtual reality is a media that is made similar to the real world so that users can interact and provide feedback. Virtual Reality is also an unreal (virtual) world and users can interact. Therefore, researchers create innovative learning products in the form of virtual reality so that students can simulate micro teaching practices optimally.

Teaching Skills Practice

In the context of teaching, Teaching Skills Practice is a crucial idea that all aspiring educators should comprehend. It is the process by which a prospective teacher employs efficient teaching strategies in the classroom. Students are to be given a thorough knowledge. To accomplish learning objectives, a prospective teacher needs to be able to carry out teaching techniques that involve both understanding the qualities of the students they are teaching and how to deliver the learning materials in an engaging way (Ramirez, 2020). Since it applies the theories that are acquired in lectures and offers hands-on experience in the field, Teaching Skills Practice is regarded as an essential component of the teacher education curriculum. The main purpose of teaching practice is to provide opportunities for teacher education students to practice the theories that have been learned in college (Larsen et al., 2019). Therefore, researchers explore the material related to micro teaching in the hope of providing opportunities for students to develop teaching skills and train other aspects needed in their work as teachers.

METHOD

This research uses the Research and Development (R&D) method by adopting the ADDIE development model, which includes the stages of Analysis, Design, Development, Implementation and Evaluation (Dick et al., 2014). The ADDIE model is designed to direct the learning process with a systematic and humanist approach, both in the short and long term; (a) Analysis: Research was conducted at the Universitas Negeri Jakarta to identify learning issues. Students from the office administration education program Faculty of Economics were interviewed to gather insights on the teaching and learning strategies course and the program's facilities. The findings revealed that students had insufficient time to study and practice, leading to a lack of interest in the material. Consequently, researchers decided to develop VR teaching materials to enhance digitalization, variety, and innovation, hoping to boost student interest; (b) Design: The initial design for the VR media product involved creating VR illustrations, selecting colors, fonts, and preparing tools for virtual assessments. Various assessment elements were considered in this design process; (c) Implementation: Once the VR material was validated, a product trial was conducted with 10 students from the Office Administration Education Study Program. The trial aimed to assess the practicality of the VR material using a questionnaire and included three stages: (1) Test material and media experts, (2) One-to-one evaluation, Conducted with three students to identify obvious errors and gather initial reactions, and (3) Small group trial: Conducted with seven randomly selected students to analyze potential obstacles, detect errors, and gather improvement suggestions; and (d) Evaluation: The final stage involved formative evaluation to refine and assess the quality of the developed learning materials. Data was collected through observations and questionnaires filled out by material and media experts, as well as student response sheets. A descriptive analysis approach was used to explain the results of the expert validation tests and the practicality tests.

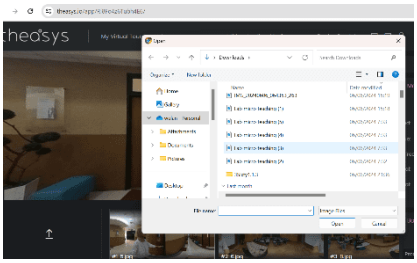
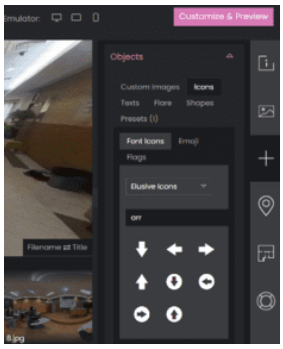
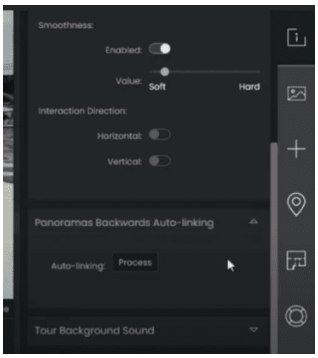
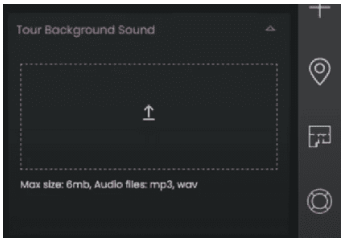
RESULTS AND DISCUSSION

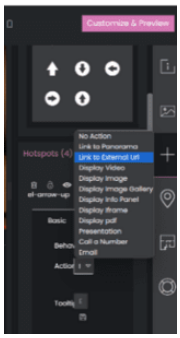
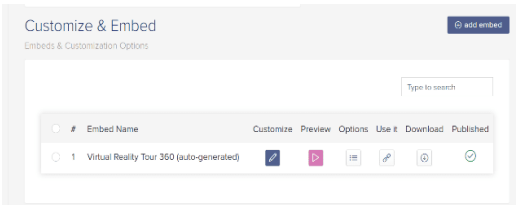
Steps for Creating Virtual Reality

At this creating virtual reality stage, the researcher will start by preparing micro teaching learning materials for the teaching and learning strategy course. In preparing this micro teaching material, it is adjusted to the learning syllabus. After that, the researcher also compiles the sections in the description of the material that will be displayed in the interactive infographic. After compiling the material, the researcher will continue to take 360 photos using the Insta 360 X3 camera at the research location, namely the Micro Teaching Lab. After the 360 photo material is complete, the next stage is the design of the product, namely virtual reality starting from panorama properties, hotspot properties, project properties and other

things that support creating virtual reality on the theasys website. The steps in creating virtual reality include the following (Table 1):

Table 1. Virtual Reality Design Steps

Number	Information	Appearance
1.	Taking footage in the micro teaching Lab with the Insta 360 X3 camera	
2.	Inserting photos into the theasys application	
3.	Add button click hotspots to each footage to connect to the next footage.	
4.	Add button click hotspots to each footage to connect to the previous footage by activating auto linking in the project properties section.	
5.	Add background sound to each footage	

Number	Information	Appearance
6.	Adding a click button for micro teaching material in PowerPoint format	
7.	The final stage is to customize and preview, then it will be automatically published on the theasys website.	

After carrying out the previous design stage, the researcher carried out each design that had been prepared at this development stage because the development stage is to carry out what had been designed at the design stage. At the design stage, the researcher had designed everything to create and develop learning media in the form of virtual reality. At the stage of developing virtual reality products, the researcher created media in the form of virtual reality. The development of this virtual reality learning media starts from taking 360° photos and continues by processing them into media using the *Theasys application* which is accompanied by several available features such as zooming, rotation, button click hotspots between footage, audio and button click power point materials. The following is a display of virtual reality development (Table 2):

Table 2. Virtual Reality View

Number	Information	Appearance
1.	Footage 1 Slide 1 contains 360 footage in front of the micro teaching lab, UNJ Mars audio as background sound and button click as hotspot to the next footage.	
2.	Footage 2 Slide 2 contains 360 footage in the micro teaching lab, audio of the class opening and learning objectives and 2 click buttons as hotspots to go to the next and previous footage.	

Number	Information	Appearance
3.	Footage 3 Contains 360 footage in the micro teaching lab, teaching audio, micro teaching material click button in the form of powerpoint and 2 click buttons as hotspots to go to the next and previous footage.	
4.	Footage 4 Contains 360 footage inside the micro teaching lab, audio Q&A with students and 2 click buttons as hotspots to go to the next and previous footage.	
5.	Footage 5 Contains 360 footage inside the micro teaching lab, audio of the conclusion of the lesson and closing of the class and 2 click buttons as hotspots to go to the next and previous footage.	

The specifications of the virtual reality that has been developed are as follows:
Application: https://www.theasys.io/dashboard/virtual-tours/
Interactive Infographic Link: https://bit.ly/VRMicroTeaching
Material: Micro Teaching
Number of Footage: 5

Feasibility of Virtual Reality Learning Media

Two validators, the material validator and the media validator, performed the validation for this development. One lecturer from Jakarta State University's Faculty of Economics handled the material validation. 95% of the respondents fell into the category of extremely possible, according to the value of the questionnaire calculated and evaluated by the material expert validator. Subsequently, one lecturer from Jakarta State University's Faculty of Economics conducted the media validation. The results of the questionnaire's computation, which had been evaluated by a media expert validator, revealed a 94% percentage in the category of extremely feasible. Therefore, 94.5% is the percentage of the media validation test and the material validation test. From the average results, it can be concluded that the Virtual Reality learning media is very feasible to use in the learning process and can be tested on students. This is in line with research by Grasia et al. (2023) which states that media that has met material and media validation tests can be used in the learning process.

Practicality of Virtual Reality Learning Media

Students enrolled in the State University of Jakarta's Office Administration Education study program have participated in one-on-one and small-group trials. After the researcher distributes the learning materials to the students, they will be tested. In order to see and understand the practicality value to students in the learning process, the researcher uses this to

produce a practicality questionnaire in the form of a student response questionnaire. Three students received a very practical category score of 99% in the one-to-one trial conducted through random sampling. Additionally, seven students received a score of 91% in the very practical category during the small group trial stage. From the results of the small and large group practicality tests, an average percentage score of 95% was obtained with a very practical category. Therefore, it can be concluded that Virtual Reality learning media is very practical to use in the learning process. Based on one of the previous studies conducted by Habibi et al., (2023) regarding the practicality test of virtual reality learning media carried out by 8 practitioners consisting of school staff and employees, it gave a value of 0.86 with the category "very practical".

CONCLUSION AND RECOMMENDATION

Conclusion

The results of the analysis show that the use of Power Point (PPT) and E-modules by students in implementing learning is still limited, and the lack of student experience causes the learning process to be less than optimal. To support the teaching and learning strategy course on micro teaching materials, the researcher created a device in the form of a simulation. Furthermore, the researcher prepared research devices and created a product design. Then the researcher continued to the development stage, namely creating virtual reality and testing it on 10 6th semester students of Office Administration Education, Jakarta State University. This practicality test was carried out through 2 stages, namely the one-to-one evaluation trial stage, namely a trial on 3 students with high ability, medium ability and low ability categories. In the one-to-one evaluation trial stage, a percentage of 99% was obtained, which means it is categorized as very practical. Then in the second stage, there was a small group trial. This small group trial was carried out on 7 students selected by random sampling and the percentage result was 91% with a very practical category. Therefore, it can be concluded that the results of the practicality trial were 95% with a very practical category. Then there was 1 expert material examiner who obtained a result of 95% with a very feasible category and 1 expert media examiner who obtained a result of 94% with a very feasible category. Based on the validation test conducted by 1 material expert and 1 media expert, the average percentage result was 94.5% which means very feasible. This shows that virtual reality in the Teaching and Learning Strategy Course at Jakarta State University is very feasible to be used and tested on students.

Recommendation

Based on the results of the research that has been conducted, there are recommendations or suggestions for further research, including the following, (1) Further research can develop virtual reality learning media by increasing the features in it, such as adding non-monotonous footage and adding more creative features so that the learning process will be more optimal and effective; (2) Further research can maximize the number of samples for practicality tests by paying attention to appropriate research subjects so that the research is more comprehensive and gets maximum results; (3) Further research can expand research sources and can develop learning media with different development models; (4) Further research to create virtual reality with the theasys application can seek information about the use of the theasys application from researchers or other experts who are proficient in using it, (5) Further research can optimally study how to use virtual reality tools and remote controls to connect editing results from the theasys application, and (6) Further research is expected to be able to develop an augmented reality system so that digitalization in the field of education is increasingly advanced. Apart from that, based on the research results, practical recommendations have been formulated, namely that schools can improve educational facilities in the form of innovative learning media

so that they can increase achievement in the learning process and increase technological progress so that digitalization in the learning process continues to develop.

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