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Android-Based Blended Learning Media for Computer Maintenance Lectures

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ABSTRAK

Kemajuan ilmu pengetahuan dan teknologi yang bergerak begitu cepat memberikan perubahan yang sangat signifikan bagi kehidupan manusia khususnya dalam bidang pendidikan dan pembelajaran. Artikel ini bertujuan untuk merancang dan mengembangkan kombinasi media pembelajaran berbasis android yang dapat digunakan pada perangkat komunikasi seperti smartphone dengan harapan dapat meningkatkan pemahaman siswa tentang perawatan komputer. Jenis penelitian yang digunakan adalah research and development (R&D) dengan menggunakan model 4-d yaitu define, design, development dan diseminasi yang menghasilkan produk media pembelajaran berbasis android. Instrumen yang digunakan dalam penelitian ini berupa angket yang dibagikan kepada dosen dan mahasiswa serta ahli untuk menguji kelayakannya. Berdasarkan hasil analisis diperoleh bahwa uji kelayakan media pembelajaran berbasis android ini sebesar 82,83%, dengan interpretasi valid terhadap tingkat validitas penggunaan. Hasil penilaian kepraktisan secara keseluruhan dari uji kepraktisan diperoleh sebesar 86,34%, sehingga tingkat kepraktisan dapat diartikan sangat praktis untuk digunakan. Hasil penilaian keseluruhan uji efektivitas untuk penilaian efektivitas adalah 100% sehingga dapat diartikan sangat efektif digunakan. Dengan demikian media pembelajaran ini valid untuk digunakan, sangat praktis digunakan dan sangat efektif digunakan dalam perkuliahan pemeliharaan komputer.

ABSTRACT

Advances in science and technology that move so fast provide very significant changes to human life, especially in the field of education and learning. This study aims to design and develop a combination of Android-based learning media that can be used on communication devices such as smartphones in the hope of increasing students' understanding of computer maintenance. The type of research used is research and development (R&D) using a 4D model, namely define, design, development and dissemination which produces android-based learning media products. The instrument used in this study was in the form of a questionnaire distributed to lecturers and students as well as experts to test the feasibility. based on the analysis, it was found that the feasibility test for this android-based learning media was 82.83%, with a valid interpretation of the level of validity of the use. The results of the overall practicality assessment from the practicality test were obtained at 86.34%, so that the practicality level could be interpreted as very practical to use. The results of the overall assessment of the effectiveness test for the effectiveness assessment are 100% so that it can be interpreted as being very effectively used. Thus, this learning media is valid to use, very practical to use and very effectively used in computer maintenance lectures.

1. INTRODUCTION

The use of digital applications in learning is influenced by technological advances, this is indicated by the number of emerging learning applications or educational platforms, and social media that display features that support online learning activities or distance learning (Sefriani & Veri, 2019; Wusqo et al., 2021). The use of learning media with the help of additional tools in the form of application software can improve learning outcomes (Mardiana & Kuswanto, 2017; Wijaya & Sefriani, 2020). Learning media is a tool or intermediary that is useful to help smooth the learning process, in order to facilitate communication between lecturers and students. This is very helpful for lecturers to teach and facilitate students to receive and understand learning materials. The media is an intermediary or messenger from the sender to the recipient of the message, in this case of course between educators and students (Arsyad, 2014; Falloon, 2020). The use of learning media in learning can create new enthusiasm and interest for students, motivation to learn, and even have a psychological impact on students. That one of the components of learning is media. learning tools, synchronization between learning

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components will create a well-executed learning process and the achievement of learning objectives (Astra et al., 2020; Hamid et al., 2020). The media is part of the communication process, and learning is a communication process between teachers and students (Susilana & Riyana, 2008). With the current conditions that are all online, teachers are required to be more creative in producing learning media that are in accordance with the needs and interests of students. The use of applications or software that provide benefits as guidelines for effective and efficient learning is a positive impact of learning media in the form of programs (software) (Sefriani, Radyuli, et al., 2021). The use of programs (software) in learning as a supporting medium in the learning process has many benefits that are felt by students. Learning with mobile learning provides convenience and flexibility for students and teachers in learning activities at any time, which has an impact on increasing the achievement of learning objectives (F. Martin & Ertzberger, 2013). In line with research that the existence of learning media in the form of an android-based application can generate student interest in learning materials on students' android mobile applications (Wijaya & Firmansyah, 2018). The results of previous research reveal that students have an attraction to the features and appearance of android learning media designs and allow students to improve their academic abilities in the independent learning process (Gunawan et al., 2021).

Mobile learning is one form of learning development that is growing rapidly in today's digital era (F. Martin & Ertzberger, 2013). So that the impact on the world of education is marked by the emergence of many learning applications that are equipped with learning materials in the form of applications. Previous research created an application in the form of developing client server-based mobile learning on digital simulation subjects. This application is here to help students learn digital simulations in the hope of improving learning outcomes. Mobile learning is a process of transferring information and communication capacity from the center and given to students (J. Martin et al., 2011). This is in line with the expectations of researchers. to present flexible, valid, practical, effective learning media so that the learning process runs flexibly, learning objectives are achieved and students understand lectures on computer maintenance. In this computer equipment maintenance course, there are several theoretical materials that are in sync with the practical material. Lectures with practice using several computer devices are kept to a minimum without causing damage to computer devices, so that one of the solutions offered is the development of learning media in the form of Android-based applications, then applied in a mixed manner learning. The development of lecture learning media is also carried out by another study with the aim of having valid, practical and effective lecture media so that they can help students and lecturers in digital engineering lectures (Hapsari et al., 2017). Learning with the help of mobile learning and a blended learning approach in computer maintenance courses is expected to improve understanding and learning outcomes. The existence of learning media facilitates the learning process (Aranta et al., 2021). Meaning, it is important to develop android-based learning media in computer maintenance lectures. This study aims to design and develop a combination of Android-based learning media that can be used on communication devices such as smartphones in the hope of increasing students' understanding of computer maintenance.

2. METHOD

The type of research used is Research and Development (R&D), which is the type of research used to produce certain products (Sugiyono, 2014). To develop this research using a 4-D development model, which consists of define, design, develop and desiminate. This research was conducted at the Department of Informatics Engineering, Universitas Putra Indonesia, Yptk Padang, which is located at Jl. Raya Lubuk Begalung, Padang City, West Sumatra. Research subjects are second-year students who are enrolled in the third semester of the Department of Informatics Engineering, Universitas Putra Indonesia, Yptk Padang. Data was collected through questionnaires, literature study, observation and training (learning evaluation). To do the validity test, media experts were involved, namely 3 lecturers, for practicality lecturers and students were asked, and the effectiveness test involved students. Following is the implementation of the 4-D development steps for the developed product. The define stage is the stage for defining and defining the terms of learning. This stage includes several main steps, namely student analysis, concept analysis and formulation of learning objectives . This stage consists of 3 steps; (1) Curriculum analysis, before designing this media, reference is made to the curriculum. Aims to find out the competency standards, basic competencies and indicators that must be achieved by students. (2) Media Analysis, aims to produce products in the form of media Learning in the eyes of the Maintenance of Computer Devices. (3) Student Analysis, conducted to determine the ability of students which includes academic ability, age and psychomotor, especially the skills that students already have, especially in the field of computer assembly, must be considered.

Thiagarajan divides the design stage into four activities, namely: constructing, criterion referenced tests, media selection, format selection initial design activities carried out, among others. Develop a critical test, choose learning media that is suitable with the material and characteristics of students The choice of form of presentation of learning is adjusted to the learning media used. Simulate the presentation of material with the

media and learning steps that have been designed. At develop stage the validity and practicability tests were revised based on the input provided by the validator . This test aims to determine the product's suitability. Then the practicality test aims to determine the practicality of the product produced. Practicality is done by educators and students. Dissemination stage is the stage of using devices that have been created and developed on a broader scale. This research and development design was tested by material experts and media experts. Data analysis was performed using quantitative data

3. RESULT AND DISCUSSION

Result

This research and development resulted in an Android-based blended learning media learning product on the subject of computer device maintenance. The resulting product goes through several stages of testing, including validity, practicality and effectiveness. In the validity test stage, it involves experts related to the product produced, which consists of media experts and material experts. Learning media validation. from the validator is done to provide an assessment of the media design material. It can be seen in Table 1 that the evaluation of the validator for android-based blended leraning learning media is reviewed from the aspect of content eligibility, linguistic component, presentation component and graphic component. As a whole the assessment by the validator of the Android-based blended learning media was 83.33%, meaning that the resulting product was feasible or valid for use in computer maintenance lectures. This is supported by research which also resulted in a validity test in the form of a video media product with a valid category (Wisada et al., 2019). Another research also revealed that the product feasibility test in the form of interactive learning media that was developed was in the valid category for use in learning (Ernawati, 2017). The assessment conducted by the relevant validors regarding the appropriateness of the content, component of language, component of graphic, component of discussion. The results of validity test in this research is presented in Table 1.

Table 1. Validity Test

No	Aspect	value	criteria
1	Content Eligibility	81,33	Valid
2	Language Component	83,33	Valid
3	Component of Serving	83,33	Valid
4	Graphic Component	83,33	Valid
	Sum	331,32	
	Average	**82,83**	Valid

Practicality test is used to determine the level of practicality of Android-based blendede learninh learning media in computer maintenance classes. To find out whether the product is practical or not so that it can be used practically by its users, namely students and lecturers. Thus the resulting product is practical to use as shown in Table 2.

Table 2. Practicality test

No	Aspect	value	criteria
1	Aspects of Condition of Use	87,85	Very Practical
2	Aspects of the effectiveness of learning time	85,71	Very Practical
3	The benefit aspect	85,48	Very Practical
	Sum	259,04	
	Average	**86,34**	**Very Practical**

The effectiveness test on android-based blended learning media is done by providing practice questions for learning evaluation. In order to find out there are differences between lectures using Android-based blended learning with regular lectures. Based on the results of data processing the results are obtained as shown in Table 3.

Table 3. Comparison before and after the effectiveness of android- based blended learning media.

	Task Collection		
	Complete Tasks Independently	**Complete Tasks on Time**	**Didnot Complete the Task**
Before (%)	20	30	80
After (%)	100	100	0

Discussion

Mobile learning is one form of learning development that is growing rapidly in today's digital era (F. Martin & Ertzberger, 2013). So that the impact on the world of education is marked by the emergence of many learning applications that are equipped with learning materials in the form of applications. Previous research created an application in the form of developing client server-based mobile learning on digital simulation subjects. This application is here to help students learn digital simulations in the hope of improving learning outcomes. Mobile learning is a process of transferring information and communication capacity from the center and given to students (J. Martin et al., 2011). This is in line with the expectations of researchers. to present flexible, valid, practical, effective learning media so that the learning process runs flexibly, learning objectives are achieved and students understand lectures on computer maintenance. In this computer equipment maintenance course, there are several theoretical materials that are in sync with the practical material. Lectures with practice using several computer devices are kept to a minimum without causing damage to computer devices, so that one of the solutions offered is the development of learning media in the form of Android-based applications, then applied in a mixed manner learning. The development of lecture learning media is also carried out by another study with the aim of having valid, practical and effective lecture media so that they can help students and lecturers in digital engineering lectures (Hapsari et al., 2017). Learning with the help of mobile learning and a blended learning approach in computer maintenance courses is expected to improve understanding and learning outcomes. The existence of learning media facilitates the learning process (Aranta et al., 2021). Meaning, it is important to develop android-based learning media in computer maintenance lectures.

Based on table 1, it can be seen that each aspect of the validity test is in the valid category. This is indicated by the overall results of data processing in table 1, that overall andorid-based blended learning media obtained an assessment of 82.83% with valid categories used. The same results are also shown by research conducted by (Sefriani, Radyuli, et al., 2021; Wijaya, I., & Sefriani, 2017) with valid category. Meanwhile, it is no different from the previous research (Rahmat et al., 2019). Previous studies found the level of validity of the learning media developed with a very valid category (Husna Arsyah et al., 2019; Nurhikmah et al., 2021). Thus it can be concluded that the media is valid for use in lectures by students and supports learning activities. Test is used to determine the level of practicality of Android-based blendede learninh learning media in computer maintenance classes .Seen in table 2 the practicality test data processing for the assessment of practicality for android-based blended leraning learning media in terms of aspects of the state of use, the effectiveness of learning time, and benefits. As a whole the calculation results of practicality assessment of android-based blended learning media amounted to 86.,34%, with the meaning that the resulting product is practically used in lecturing the maintenance of computer devices . Supported by research conducted by (Rahmat et al., 2019; Wijaya & Sefriani, 2020). The practicality of the resulting media products was very practical to use (Nurhikmah et al., 2021). The android-based learning media products it produces are very practical to use (Menrisal & Putri, 2018). This statement is also supported by several studies which produces learning media products with very practical categories (Veri et al., 2020; Wijaya & Firmansyah, 2018). Based on Table 2, it can be seen that each aspect of practicality test is in the category of very practical with two aspects, namely aspects of the user's situation and the effectiveness of learning time. overall from the data processing in table two, data obtained by 86,34% which shows that andorid-based blended learning media are in the category of very practical in use. Thus it can be concluded that the validity and practicality test of learning media is in the good category.

Based on Table 3, it can be seen the information presented that there was an increase in the completion of assignments undertaken by students in the computer maintenance course with a percentage of 100%, which means that it is in the very effective category of using android-based learning media blended learning in computer maintenance. in accordance with research conducted by oktavianti et al, that the presence of blended learnin media in learning has a significant influence on student learning outcomes(Oktavianti et al., 2018). Supported by research conducted by (Sefriani, Radyuli, et al., 2021; Sefriani & Veri, 2019). The application of blended learning in learning makes the learning atmosphere more fun, and learning feels more creative and independent (Rahmat et al., 2019; Tryanto et al., 2021). The application of blended learning has a positive impact in the form of increasing student learning outcomes (Sefriani, Sepriana, et al., 2021). In contrast to what was stated that blended learning during the COVID-19 pandemic was less significant in improving student learning outcomes (Finlay et al., 2022). Research results which state that blended learning is effective in supporting learning during the covid-19 pandemic (Suwannaphisit et al., 2021; Wibawa, 2017). Not much different from the research presented who also said that blended learning combined with innovative learning effectively creates an independent learning atmosphere, as well as a learning environment that encourages students to want to learn (Herwinarso et al., 2020; Marie, 2021). This shows that the application of blended learning in a pandemic or ineffective condition helps achieve learning objectives, creates an independent learning environment for students and can be applied by educators and students. Other study mentions that blended learning is felt very happy to be sustainable by students (Marnita et al., 2020). In line with this, the application of blended learning improves students' understanding (Pujiastuti & Haryadi, 2020). Learning carried

out with the help of android-based media shows that the use of android applications as student aids is considered sufficient, students become more enthusiastic in doing assignments (Safitri et al., 2019). Android-assisted blended learning students are more independent in developing their creativity, independence and innovation in managing blended learning, so that learning outcomes are achieved (Tobing & Pranowo, 2020). Previous research shows that the use of blended learning strategies has a better effect (Rais et al., 2019). Blended learning has a positive impact on learning in accordance with the results of research that has been carried out by (Isa, 2015).

4. CONCLUSION

Blended learning with additional learning media in the form of android-based applications in computer maintenance lectures has had a very positive impact on improving student learning outcomes, increasing interest in the lecture process and taking advantage of technological advances with the presence of learning media in unusual forms. than before. The presence of learning media in accordance with technological advances brings a new atmosphere in computer maintenance lectures. So that it motivates students to do the tasks given by educators through learning media applications. Learning media using android in this study proved valid, practical and effective for use in computer maintenance lectures. So in the future, it is hoped that there will be the development of better learning media, in terms of design, content and attractiveness.

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