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Learning media model development: Android-based chanting application for sunday school students

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ABSTRACT

This study aims to produce a chanting application development product based on an android application. This research approach with research and development methods is used to create specific outcomes and test the effectiveness of the products developed. The research aims to develop an android-based chanting application that will be used as a learning medium for Sunday School Students. The research was conducted in Buddhist Sunday Schools in the Pesawaran Districts. The population of the study was 144 students, and the sample of 21 students. The development steps taken based on the development steps of Bord and Gall have high relevance for developing chanting applications as learning media. Analysis technique using descriptive percentage. Quantitative data from product assessments developed during product trials were analyzed by descriptive analysis of percentages. This data analysis technique was used to determine the validity and reliability of the instrument. Product trials were conducted on media experts, material experts, and teacher and student users. The study's results determined the feasibility of the resulting product, namely, an Android-based chanting application for Sunday School Learning Media. Based on the product validation test carried out by media and material experts, the results showed that the media passed the validation test with an average rating. The indicator components that are analyzed and get the results of the operational test of the chanting application get a total score with good criteria and an assessment with good standards or "fit for use" for testing. Field trials were conducted on 21 students. The field test results are based on the criteria that have been made with the comparison value of the test results. It concluded that there was a difference between the average value before using the media and the average value after using the application.

KEYWORDS
learning tools; chanting; learning media; android application; Sunday school

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Introduction

The results of observations made at the Buddhist Sunday School in Pesawaran Regency on 4 Buddhist Sunday Schools it was found that the availability of learning media for the introduction of Mahayana Buja bhakti tools in Sunday schools was minimal. This is due to the Mahayana bhakti puja equipment, which is quite expensive. The availability of teaching aids, learning resources, and media is essential to achieve more effective learning objectives. Learning media is a tool used to stimulate students so that the learning process occurs (Hamiyah, 2014). Through learning media, it is hoped that it will facilitate the delivery of material so that the message conveyed can be understood well by students. Sunday school education includes study materials for paritta, mantra, dharmagita, Dhammapada, meditation, jataka, life history of Buddha Gotama, and essential points of Buddhism (Kemenag, 2007). One of the Buddhist Sunday School functions is to make students responsible for all actions through mind, speech, and body, which are carried out according to Buddha's teachings. To achieve learning objectives within the Buddhist Sunday School, adequate facilities and infrastructure are needed.

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The development of an increasingly modern era in the era of globalization requires the existence of high-quality human resources. One vehicle to improve the quality of human resources is education. Education is a deliberate or planned effort to help someone learn and be responsible, develop themselves or change behavior so that it is beneficial to the interests of individuals and society (Mukti, 2006). Education requires students to master general, scientific and religious aspects. Religious education helps one to stop all forms of evil (Mukti, 2006). Religious education is not only obtained from formal education but also in the scope of non-formal education and within the range of Buddhist Sunday Schools.

Along with the rapid development of technology, the learning process can take advantage of developing technology as a tool or media to help achieve learning goals. Learning media can take advantage of technological products by utilizing smartphones owned by educators and students (Susanto, 2020). However, students and teachers have not employed or directed the smartphone as a learning support tool but rather as a play and communication tool between friends. Apart from these observations, looking at the results of research conducted by Annas Ribab Sibalana in 2016, namely developing Android-Based Learning Media for Islamic Religious Education Subjects for Class XI SMA N 2 Malang, has proven exciting and effective in improving student learning outcomes. Based on the results of the questionnaire and validator responses, namely the validation of material experts by 73.5%, media experts by 86.6%, and lesson 1 experts by 88.1%. The analysis results show that most students experience an increase in learning outcomes after the learning process is assisted by media (Ribab sibiliana, 2016). Niarti, Novi. 2017. Thesis. Development of Interactive Multimedia-Based Teaching Materials on Listening Materials for Class VI Elementary School Students, University of Lampung. Bandar Lampung (published). The results showed that this study produced interactive multimedia-based teaching material in software with the Adobe Flash CS 3 application. Data analysis showed that interactive multimedia-based teaching materials on listening material were compelling and exciting in improving student learning outcomes (Niarti, 2017).

This study aims to innovate to design a learning media for Buddhist Education that can complement the lack of limited availability of puja bhakti tools. So specifically, this study seeks to answer: 1. How is the process of developing an Android-Based Chanting Application as a Buddhist Sunday School Learning Media, 2. Is the media created suitable for use based on the assessment of experts? 3. Can the developed media support the learning process? Media are forms of communication, both printed and audiovisual, and their equipment. Media should be manipulated, visible, heard, and readable (Sadiman, 2012). The media is called learning media if the press carries messages or information for instructional or teaching purposes (Azhar Arsyad, 2013). Learning media can be said as a tool that can stimulate students so that the learning process occurs (Hamiyah, 2014). To determine the quality of multimedia learning, the following criteria must be considered: 1. The quality of the content and objectives, 2—the quality of learning, and 3. The technical quality (Azhar Arsyad, 2013). There are six criteria for assessing interactive multimedia, which is the basis for determining the quality of the media created. Buddha, in conveying teachings, is also done in the form of stories, poetry, and media (Fatimah, 2018). This is done because the main and most important thing is the meaning conveyed by the Buddha (Mukti, 2006). The purpose that has been understood continues to be repeated and practiced to get good results. Frequently repeating lessons produces deep knowledge (Anggarwati, 2001). This is a form of Buddha's efforts to emphasize the meaning and give space to the media as an essential innovation so His students can understand what has been taught. The Buddha asked Bhikkhu Culapantaka to face the east (morning sun) and rub the white cloth, observing him while saying, "clean from defilement." Seeing the process of the fabric being soiled by his sweat, he immediately understood the induction of quality and impermanence (DhA. 25). With his Attention, Bhikkhu Culapanthaka became enlightened. Seeing this, it is hoped that the use of media can positively impact students so that students' understanding of the material can be better.

Mobile learning tends to be interpreted as a condition where students can learn without being limited by space and time. In the current context, mobile learning is learning that utilizes mobile devices and networks (Wang et al., 2020). One of the uses of mobile learning is through the android application. Android applications are written in the Java programming language. Java compiles the code, data resources, and files ready for the application to be bundled into Android packages and archive files marked with .apk (Hernawan, 2011). In software development, it must meet the usability goal. Software development must meet six usability criteria: effectiveness, efficiency, safety, utility, learnability, and memorability (Pressman, R.S ; (McGraw-Hill, 2010). Practical to use (effectiveness) how a system can work as intended. The system must allow the user to do what he expects from the system. Efficient use (efficiency) means that the system can run to support users' work. Safe to use (safety) protects users from dangerous and unwanted conditions. The good utility has the proper uses and functions according to the user's needs and desires. Easy to learn (learnability) how the system is easy to understand. People don't like to spend their time learning to use a system. Easy to remember how to use (memorability)

From the discussion and preparation of the aspects and criteria for assessing learning media, there are three essential aspects in making learning media: aspects of software engineering, aspects of learning design, and aspects of visual communication (Fatimah, 2016). Chanting is an educational application created using the Adobe Animate CC program. Adobe Animate (formerly Adobe Flash) is multimedia helpful in creating animations from Adobe Systems. Adobe Animate is used to design vector graphics and animations for television programs, online videos, websites, web applications, rich internet applications, and video games.

Literature review

Apart from the results of these observations, looking at the results of research conducted by Annas Ribab Sibalana in 2016, namely developing Android-based Learning Media for Islamic Religious Education Subjects for Class

XI SMA N 2 Malang has proven to be interesting and effective for improving student learning outcomes. Based on the results of the questionnaire and the validator's responses, namely the validation of material experts by 73.5%, media experts by 86.6%, subject 1 experts by 88.1%. The results of this analysis indicate that most students experience an increase in learning outcomes after the learning process is assisted by the media (Ribab sibiliana, 2016). Niarti, Novi. 2017. Thesis. Development of Interactive Multimedia-Based Teaching Materials on Listening Material for Class VI Elementary School Students, University of Lampung. Bandar Lampung (published). The results of the research show that this research produced an interactive multimedia-based teaching material in the form of software with the Adobe Flash CS 3 application, data analysis shows that interactive multimedia-based teaching materials on listening material are effective and interesting in improving student learning outcomes (Niarti, 2017).

Methods

The methods explain clearly how the author carried out the research. The method must describe the research design clearly, the replicable research procedures, describe how to summarize, and analyze the data.

This study uses research and development methods. This method is used to produce “Chanting” applications and test the effectiveness of “Chanting” This is related to the research objective, namely to develop an android-based application model. “Research and development serve to validate and develop products”(Sugiyono, 2018). “Chanting” is designed to be used as a medium of learning in Sunday schools to increase knowledge of puja facilities in the Mahayana tradition. The development steps following the steps of research and development level 3 no 1 to 3 are research activities and activities no 4 to 11 are development”(Sugiyono, 2015).

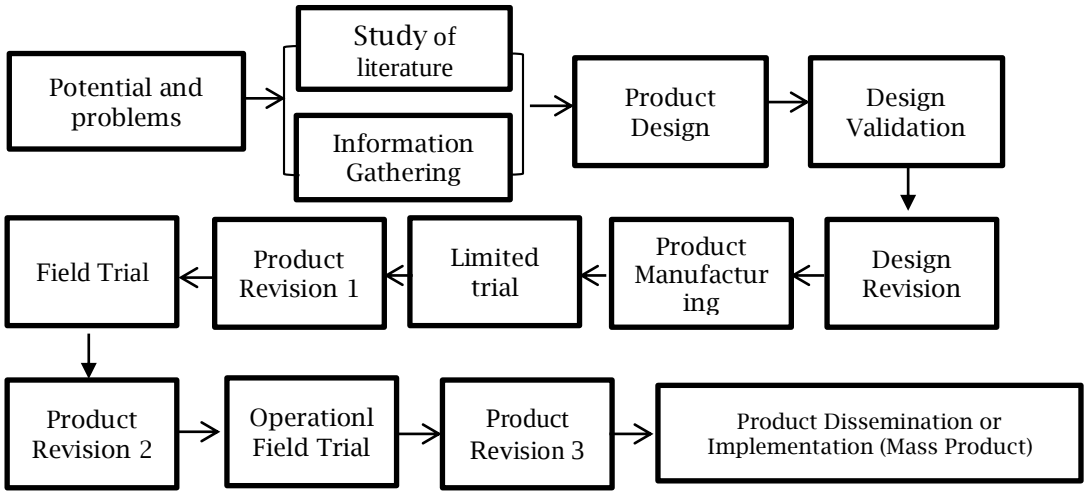

Figure 1. R&D Research Steps with an Existing Product Developing

Research Phase This research comprises three stages: the preliminary study stage, the model design development stage, and the model validation stage, where the researcher refers to the Borg and Gall development model (Sugiyono, 2015). The development procedural is descriptive and qualitative. This model outlines the general steps that must be followed to produce a product. Efforts in this procedure include analysis of development needs analysis. The product design development stage consists of manufacturing media by applying the methods used. Material experts and media experts then validate the product design development results to declare whether the product made suitable for use or not. Validation testing aims to measure the extent to which the developed application is feasible before limited testing is carried out. Expert validation data analysis was carried out by using the descriptive percentage analysis technique.

Product testing in this study was limited to Sunday school teachers as subjects of field feasibility testing and operational testing with Sunday school students as subjects. Data analysis of the test design using one group pretest-posttest which can be described as follows:

$$O_1 \; x \; O_2$$

This design is used to determine the extent to which the product developed can achieve the goals and objectives that have been set. The research was carried out in 12 Buddhist Sunday schools in Pesawaran Regency with two sources of media feasibility validation data, 25 teachers as sources of limited testing data, and 144 Sunday school students subject to operational testing. The proportional random sampling technique was used to aim that the Negerikaton sub-district was the most significant Buddhist base in the Pesawaran district by taking 15% of the population. The sample used was 21.

Participants

Research data source 1 was a Buddhist Sunday school teacher who was subjected to research observation to obtain needs analysis information.

Research data source 2 is a validator consisting of 2 material expert validators and experts in the field of instructional media.

Media experts referred to in research are people who are experts and experienced in the field of instructional media/IT fields and are tertiary lecturers who have at least completed a master's degree in educational technology or information systems.

The material experts referred to in this study are lecturers of Buddhist Religion Education in Higher Education who have completed their Masters in Buddhist education.

Data source 3 is a Buddhist Sunday school teacher in Pesawaran District with a total of 25 teachers.

Data source 4, The population of Buddhist Sunday school students in Pesawaran district with a total of 144 students. This was adjusted to the use of proportional random sampling with the aim that the Negerikaton sub-district had the largest Buddhist base in Pesawaran district.

Instruments

The instruments used in this study are 1) Interview instruments. Interviews are conducted to communicate with users and stakeholders. The interview is intended to obtain an overview of the requirements used to define the application to be made. 2) Product validation instruments. The questionnaire instrument is in the form of questions that expect the respondent to choose one of the available alternative answers. This questionnaire contains the suitability of learning media applications for installing electronic control systems as learning media from the media and material aspects.

Data analysis

data analysis using descriptive analysis of the percentage by using the percentage interval scale.

Design field testing is carried out by using the product in real conditions. The test design uses one group pretest posttest The test design uses one group pretest posttest which can be described as follows:

$O_1 X\ O_2$
Information:
O_1 = value before using interactive multimedia
O_2 = value after using multi-media
X = use of interactive multimedia
Multimedia effect is calculated by ($O_1 X\ O_2$) (Sugiyono, 2015)

Results

This research and development result is an android-based chanting application as a Sunday school learning medium in the Pesawaran district. The preliminary study obtained an overview of the implementation of Buddhist Sunday School education learning, the form of effective learning implementation, the obligations of productive teachers, and the availability of adequate facilities and tools. The needs analysis conducted for Buddhist Sunday School teachers shows the need for the availability of Android-based media that can be used in Buddhist Sunday School learning, so development needs to be done. The basis for further development is the results of interviews with Sunday school teachers showing that the availability of Mahayana bhakti puja equipment is relatively minimal, and some SMBs do not have Mahayana bhakti puja tools. Using bhakti puja tools is a form of Kausalya's effort to introduce Buddhism. With the inadequate number of activities, learning to recognize the Puja Bhakti tool is experiencing problems.

The implementation stage and the results of the media design development were carried out by analyzing the needs for chanting growth, designing chanting designs, and making chanting designs, followed by implementing methods by validating media applications by experts. The results of the validation of the chanting application prototype received a good assessment. They were suitable for use, although the validator gave many suggestions and inputs before testing the product.

Figure 2. Chanting Application

The results of product validation tests by learning media experts and Buddhist education subject matter experts that have been carried out based on the leading indicators obtained the following results.

Table 1: Recapitulation of Product Validation Test Results Developed

NO	Aspect	Media Expert			Media Expert			Total		
		Score	Mean	Category	Score	Mean	Category	ST	MT	KT
1	Rule	17	4.47	Very Well	17	4.3	Very Well	34	4.4	Very Well
2	governance	4	4.75	Very Well	4	4.25	Very Well	8	4.5	Very Well
3	chanting app	9	4.22	Very Well	9	4.44	Very Well	18	4.3	Very Well
4	relevance	9	4.33	Very Well	9	4.11	Very Well	18	4.2	Very Well
		39	4.44	Very Well	39	4.27	Very Well	78	4.359	Very Well

The media expert validation test was carried out to determine the feasibility of chanting applications in terms of rules, management, relevance, and application components. The results show that the mean value of the media expert's total validation score is 39, and the mean is 4.44 in perfect criteria, so 4.44/5x100% = 88.8 is classified as very feasible.

The product validation test that was carried out got the results for the validation test by media experts, get an average score of 4.4 with a total score of 172 and a percentage of 88%. While the material expert test gave an average value of 4.27 with a total score of 167 and a percentage of 85%, the two validation tests were then totaled to get a comprehensive picture of the two internal tests that had been carried out. The results of the two tests got a total score of 339 with an average answer giving a score of 4.3 with a percentage of 86% so, the media as a whole has passed the validation test with an average rating that the chanting application is classified as "very good" or very feasible to use with indications that the application meets the feasibility assessment of these four aspects.

The operational test of the application is based on four indicators, with 25 respondents being Buddhist Sunday school teachers in Pesawaran District. The results of the recapitulation of the application operational test results are based on four indicators. The indicator components are analyzed and get the results are described in the table and chart below.

Table 2. Recapitulation of Due Diligence by Sunday School Teachers

No	Aspect	Teacher		
		Score	Mean	Category
1	Rule	425	3.78	Well
2	governance	100	3.89	Well
3	chanting app	225	3.76	Well
4	relevance	225	3.78	Well
		975	3.80	Well

The indicator components that were analyzed and obtained the operational test results of the chanting application got a total score of 975 with a real mean of 3.80 with good criteria so that the results are obtained based on the operational test of chanting applications in Buddhist Sunday Schools with Buddhist Sunday. School teacher's respondents are assessed with good criteria or "fit for use." The main field testing is carried out using the revised product I result in actual conditions. The test design used one group pretest-posttest. The results are as set out in the following table.

Table 6. Paired Samples Statistics

Pair Samples Statistics				
	Mean	N	Std. Deviation	Std. Eror mean

Pair 1	Before	67.29	21	2.217	.484
	after	76.05	21	4.853	1.059

Source: SPSS for Windows

The results of the standard deviation before and after using are 2.217 and 4.853 with a total sample of 21 with an average of 67 and 76. The correlation table is described below.

Table 7. Paired Samples Correlations

Pair Samples Correlation				
		N	Correlation	Sig.
Pair 1	Before & after	21	.454	.039

Source: SPSS for Windows

Processing the value data before and after using the media, it was found that the correlation value was 0.454 with a significance of 0.039, so it can be said between the two variables: Results 0.454 means a positive relationship with a significance level of 0.05 greater than 0.001 in the table.

Table 7. Paired Samples Test

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	sebelum - sesudah	-8.762	4.323	.943	-10.730	-6.794	-9.287	20	.000

Source: SPSS for Windows

The value of t_{count} is -9.287. The t distribution table is searched at a = 5% : 2 = 2.5% (two-sided test) with degrees of freedom (df) n-1 or 21-1 = 20. With a two-tailed test (significance = 0.025), the results are obtained for t_{table} of 2.08. the test results based on the criteria that have been made with the comparison value -t count < -t table (-9,287 < -2,080) and P value (0.00 < 0.05), it can be concluded that there is a difference between the average value before using media with the average value after using the application.

Discussion

The results of the recapitulation of the results of the operational test of the application are based on four indicators, with 25 Buddhist Sunday school teacher respondents in Pesawaran district. The indicator components analyzed and obtained the operational test results of the chanting application obtained a total score of 3692 with a total average of 3.80 with good features. So that the results are obtained based on the operational test of the application of singing in Buddhist Sunday schools with Buddhist Sunday school teacher respondents getting an assessment with good criteria or "fit to use".

At the product testing stage, there is a difference between the average value before using the media and the average value after using the application. Testing is carried out not only to find out the difference in values but also the constraints on the program in order to get a good program and reduce the constraints of program errors as small as possible. The product test carried out did not find any program or button errors, so the researchers did not revise the media that had been made. However, there are obstacles faced by researchers, namely the application master file data transfer system that is not optimal because the application made has not been officially uploaded to the relevant application provider. So that the transfer process is still via the researcher's Google Drive link.

The test uses a two-tailed test with a significance level of a = 5%. The level of significance in this case means that the researcher takes the risk of being wrong in making a decision to reject the correct hypothesis as much as 5% (5% or 0.05 is a standard measure of significance that is often used in research). So that the test results are based on the criteria that have been made with the comparison value -t count < -t table (-9,287 < -2.080) and P value (0.00 <0.05), it can be concluded that there is a difference between the average values before using the media with an average value after using the application.

Conclusion

The research and development results in this study indicate that 1) Buddhist Sunday school teachers and students need chanting applications to support their learning as a learning medium. 2) The steps for developing a

chanting application prototype are taken through the application development stage. Based on the research and development steps, the Borg and Gall development stage is taken to follow the steps of level 3 research and development by dividing research activities and development activities". 3) the prototype of the chanting application that has been developed meets the eligibility criteria, the media as a whole has passed the test. Validation by giving an average rating that the chanting application is classified as "very good." 4) The results of the operational test of the application are based on four indicators, with 25 respondents being Buddhist Sunday school teachers in Pesawaran District. The indicator components that were analyzed and obtained the operational test results of the chanting application got a total score of 3692 with a total mean of 3.80 with suitable criteria. 5) the prototype of the developed chanting application gave a good and significant change impact before and after using it. This research shows that computer programs can be used to create learning media in the world of formal and non-formal education. So that this will foster the motivation of actors in the field of education to create more varied and innovative learning media. From the results of the study, it shows that the application made is quite feasible to use for learning to read chanting. Based on the product test, it was found that there was a difference in the average value before using and after using the application. Buddhist Sunday schools in the Pesawaran district can use the application well and direct smartphones for learning activities. Further research related to android applications should be more carefully developed with a more measurable needs analysis. Hopefully, the teachers can take advantage of the chanting application better and cover the lack of availability of Mahayana bhakti puja tools.

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