

Development Of Android Application-Based Thematic Learning Media

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Abstract: This study aims to develop thematic learning media based on Android applications used the Borg and Gall development research design which consists of is simplified into 7 stages, namely: 1) potential and problems, 2) gathering information, 3) product design, 4) design validation, 5) design improvement, 6) product trial, 7) product revision. This research was conducted for class III students of MI NW 1 Kelayu. Data collected instruments include validation sheets, student response questionnaires, and teacher response questionnaires. Technical analysis of the data used in this study is a five-scale formula for validation tests, student response questionnaires, and teacher response. The results of this study indicate that the results of the media expert validation test are categorized as "very good" with a range of X scores $> 92.28-110$, and the total score was 102 and an average of 4.6. The results of the material expert validation test were in the "very good" category because they were in the X score range $> 37.8-45$ with a total score of 39 and an average of 4.3. While the results of student responses that have been carried out using student response questionnaires from 16 respondents were in the "very good" category with a total score of 44.8 and were in the X score range $> 41.88-50$, which means the thematic learning media based on android applications developed suitable for used in the learning process.

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Introduction

Education is an organized effort and is one of the important items in human life, planned and ongoing continuously throughout life to foster students to become perfect, mature and cultured human beings, as well as to motivate, foster, assist and guide students to develop all their potential so as to achieve better quality. Because with education humans can be distinguished from other creatures. Education is also a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and the skills needed by themselves, the community, the nation and the State.

Basic education in a community environment is the foundation in the form of developing attitudes, knowledge, and basic skills which are expected to form moral and ethical students. At this stage students are honed their abilities and skills in active learning. This is in accordance with the establishment of a new education system, namely the 2013 curriculum, which is a form of renewal in the field of education by implementing thematic

learning. The Ministry of National Education (Trianto, 2009) states that the term thematic learning is basically integrated learning using themes and linking several subjects so as to enable individual students to actively seek, explore and discover meaningful and authentic scientific concepts and principles. So that it can provide meaningful experiences to students.

Prastowo (2019) explains that thematic learning is an integrated learning model that starts from kindergarten (TK/RA) or elementary school which is based on certain themes that are contextual with the world. child. The theme is the main idea or main idea that becomes the subject of discussion. Trianto in (Prastowo, 2019) also explains that thematic learning is learning that is designed based on certain themes. In the discussion, the theme is reviewed from various subjects. The goal is to master the concept and its relation to other subjects. Thematic learning emphasizes student involvement in the learning process. Thematic learning provides opportunities for students to be able to participate more in the learning process. With the application of thematic learning, students can be expected to learn while playing with high creativity.

Implementation of the 2013 curriculum, students are required to be more active in the learning process, while the teacher acts as a facilitator. Teachers as spearheads in the implementation of education are very influential in the learning process. An educator has an important role in creating a learning atmosphere, and is expected to be able to lead students to achieve predetermined teaching goals, especially at the Elementary School level. An educational process that provides opportunities for students to be able to develop their potential starting from the attitudes, knowledge, skills needed to live in society, nation and state (Jufri, 2017). Permendiknas No. 16 of 2007 concerning academic qualification standards and teacher competence states that teachers are required to be able to utilize information and communication technology for self-development, to achieve learning objectives. Especially in times like today, everything is done at home using technology.

The country of Indonesia is being faced with the Covid-19/Corona Virus Disease-19 pandemic. Covid-19 has now become a very serious and dangerous pandemic all over the world because it has claimed thousands of lives. Prevention of the spread of the corona virus has now become a top priority in several countries, including Indonesia. All activities that invite crowds, crowds, and face-to-face interactions have been blocked since March 24, 2020. The Covid-19 pandemic has brought about instant changes in all sectors of life, one of which is the education sector. The world of education is also feeling the impact. The policy issued by the Indonesian government in anticipating the transmission of the corona virus was carried out by issuing various policies, such as social and physical distancing, isolation, Large-Scale Social Restrictions (PSBB), to eliminate face-to-face learning activities in schools and replace them with learning activities from home (BDR).

Since the implementation of learning from home activities, the use of gadgets, especially online games and social media, has increased in the environment where students live, this is because all activities or activities are carried out at home. Most students prefer to play online games or watch YouTube, which do not have the slightest educational element. So that the time that should be used for studying at school is used to play gadgets all day long at home. Various efforts were made by educators to still be able to convey learning material to students. Starting from coming to students' homes, forming study groups at the nearest teacher's house, to utilizing technology in the form of the WhatsApp application to be able to

deliver learning material. So that in this case the teacher/educator is required to be able to position himself in accordance with the times.

Based on the results of observations made by researchers, namely on March 13 2021, the implementation of the learning process was carried out in turns/shift system (children entered in turns). Besides taking turns, the learning process is still carried out at home and only uses thematic books from schools to support learning from home activities. However, due to the limited number of thematic books, teachers use smartphones to process learning activities from home, and even then only to send assignments to students. The teacher acts as a presenter, facilitator, and student guide in the process of learning activities from home. However, the current conditions that are happening teachers have not been able to provide creative ideas in the learning process. The development of instructional media is still rarely carried out by teachers so that students become bored and less enthusiastic about learning, so that learning becomes less interesting.

The use of media is very necessary in helping students' understanding of learning. Learning media is used as a means of conveying material which is then conveyed by the teacher to students. Criticos, 1996 in (Daryanto, 2013) says that the media is a component of communication, namely as a messenger from the communicator to the communication. (Rusman, 2017) explains that learning media is a tool or a form of stimulus to convey learning messages. The form of stimulus that is used as a medium is a moving image or not, writing, recorded sound, human interaction, and reliance. The use of learning media can not only help teachers in delivering material, but with learning media will be able to create or provide a fun learning atmosphere for students. In addition, learning media can create a stimulus for students to be more interested in the learning process. The use of media in the learning process can stimulate and motivate students in learning, and can have a psychological influence on students. Levie and Lentz in (Arsyad, 2010) explain the functions of learning media, especially visual media, namely: attentional functions, affective functions, cognitive functions, and compensatory functions.

Learning media that can be developed by a teacher are very diverse, ranging from two-dimensional media, three-dimensional media, audio media, visual media, audio-visual media, to media developed in the form of android applications, in accordance with developments in science and technology. This learning media has a role in facilitating teachers in the process of delivering subject matter. As for students, learning media can provide a new learning atmosphere, fun, and not only centered on the teacher. In addition, the media can also make it easier for students to understand the subject matter, especially in thematic learning. Learning media as a means of providing learning experiences to students (Kustandi, and Darmawan 2020)

The use of learning media is very necessary in helping the delivery and understanding of students in the learning process, especially in conditions like today teaching and learning activities are carried out at home. But in fact, based on the results of observations made by researchers, the use of media or even to develop learning media is still rarely done. This is the background for researchers to develop thematic learning media based on Android applications as a support for learning from home activities.

An application is a software program that contains a collection of files with program code that connects to computer hardware. Applications can be used for various purposes, such as communicating, processing documents, graphic design and so on. Applications are

not only found on cellphones or computers, but applications are also found on laptops. Herlinah and Musliadi (2019) argue that Android is an operating system that is widely used on mobile devices (touch screens) and is used on smart phones. Android is also an operating system on mobile phones/smartphones and even on computers that are modified as mobile devices (mobile devices) based on Linux consisting of an operating system, middleware, and applications (P.Juhara, 2016).

Research on the development of Android-based learning media has been carried out by many studies. Dwiranata, Doni (2019), regarding the development of android-based interactive mathematics learning media in three-dimensional material for class X SMA, with the results of the research that it can be seen that the results of trials in large groups obtained learning mastery reaching 80% in the "effective" category and obtaining an average -average 54,485 in the "practical" category. Research by Yamin, Askhabul, and Harmanto (2020), regarding the development of learning media based on android applications on national integration material within the framework of unity in diversity for class X students of SMAN 1 Puri Mojokerto. The results of this study indicate that the feasibility of learning media based on the level of validity obtains a percentage of 91.5% with very feasible criteria, the practicality of the media is obtained from student response questionnaires obtaining an acquisition score of 78.9% with the feasible category. The level of effectiveness of the media was assessed based on the results of student tests which obtained a complete score of 79.1% with good criteria, and an average increase in knowledge of 0.43 with moderate criteria. Assessment of student activity gets a percentage of 96.9% in the very good category.

This Android application-based learning media is designed to be more attractive, and can be operated independently by students via an Android phone. Students can also study independently at home. There are pictures, national obligatory songs, sounds, videos, and games so that children don't get bored quickly and make it easier for students to study independently at home. With various advantages, this Android application-based learning media is expected to be an alternative in improving the quality of learning during a pandemic as it is today, as a support for learning from home activities to help students understand learning material. Therefore, the purpose of this research is to develop thematic learning media based on Android applications as a support for Learning From Home (BDR) activities for class III students MI NW 1 Kelayu.

Research Method

Sugiyono (2019) suggests that the research and development method is a method used to research or validate and develop existing products and then test how effective or valid a product is. This study uses research and development (R&D), namely research and development proposed by Borg and Gall (1998).

This research develops an android application-based thematic learning media using a simplified Borg and Gall development research design. Hasyim (2016) states that research and development according to Borg and Gall can be simplified and adapted to the needs of researchers, because research used research and development (R&D) on a large scale requires a lot of money, quite a long time, and originality. So in this study the researchers limited it to the seventh step. The seven steps are potentials and problems, collecting information, product design, design validation, design improvement, product testing, and product revision.

The subjects in the research on the development of learning media based on android applications were students in class III MI NW 1 Kelayu with a total of 21 students. To get valid and effective thematic learning media based on Android applications, research instruments are needed. The data collection instruments needed to collect data in this study were validation sheets from material experts and media experts, student response questionnaires, and teacher response questionnaires. Research data obtained through trial activities can be classified into two, namely qualitative data and quantitative data. Qualitative data in the form of criticisms and suggestions put forward by a team of material experts and a team of media experts collected to improve the quality of products developed by researchers in the form of learning media based on Android applications. Then the quantitative data obtained from the student response questionnaire is to find the average student overall score and its standard deviation then converted in the form of qualitative data with a scale of 5 (likert scale) which refers to the PAP developed by (Widoyoko, 2011).

Result and Discussion

The product developed in this study is an android application-based thematic learning media as a support for learning from home (BDR) activities for class III MI NW 1 Kelayu students used the Borg and Gall development research design which is simplified into 7 (seven) stages, namely: 1) Potential and Problems, 2) Gathering Information, 3) Product Design, 4) Design Validation, 5) Design Improvement, 6) Product Trial, 7) Product Revision. The following are the results of research conducted by researchers at MI NW 1 Kelayu.

Potential and Problem Stage

The potential and problem stage is the first stage carried out by researchers to start their research. At this stage the researcher made observations that took place at MI NW 1 Kelayu by interviewing class teachers to be able to find out the potential or problems that exist in the field. Based on the results of observations and interviews with class III teachers , the researchers found several problems in the learning from home (BDR) process, namely: 1) the number of thematic books in schools was limited, so many students did not get thematic books to use at home. However, teachers sometimes use smartphones to send assignments to students; 2) the lack of use of media in the learning process, this is due to the lack of availability of learning media. 3) Lack of teacher skills in making media, causes teachers to only rely on thematic books in schools, so that the delivery of material is still carried out in a classic way and seems ordinary. 4) use of facilities such as laptops or smartphones is rarely used in the learning process, because not all teachers can use technology as a medium in the learning process.

Not only problems found by researchers, but class III students at MI NW 1 Kelayu have the potential to utilize or operate thematic learning media based on Android applications. This is clearly seen when the learning process is in progress, students are very proficient in running/operating the learning media used (Hashim, 2013). This is because the use of technology such as smartphones among students is not new. So it doesn't take long to explain the instructions for use or how to use thematic learning media based on Android applications.

Gathering Information

Gathering information is the second stage carried out by researchers after the potential and problem stages. At this stage the activities carried out by the researcher were to collect

information from the problems and potential found, by interviewing class teachers and class III students to be able to analyze the problems that occurred in MI NW 1 Kelayu related to the implementation of thematic learning and the availability and interest in learning media as a support for learning from home activities. From these activities the researcher obtained information that during the process of implementing learning carried out at home / in turns (system shift), students only use thematic books from schools to support learning from home (BDR) activities. In fact, not all teachers can maximize and take advantage of the use of technology. So that in the learning process at school, teachers tend to use conventional learning models. So that students pay less attention to the lesson, even students often play around when the teacher is explaining. Besides that, the activity that many children spend after school is playing smartphones. This condition makes students prefer to play online games and watch YouTube at home. So that the spectacle or games played by students are less able to provide learning (M. Ikhsan Kahar, 2020).

The use of technology in the learning process can provide new experiences and benefits for students, both in stimulating students' minds and interest in the learning process (Rahmat, 2018). Based on research data obtained from the validation of a team of media experts and material experts, student response questionnaires, and teacher response questionnaires, it shows that thematic learning media based on Android applications are appropriate to use because they meet the criteria.

Product Design

The next stage carried out by researchers is product design. At this stage there are two activities carried out, namely media design and research instrument design. The things that were done at the product design stage in developing Android application-based thematic learning media to support learning from home (BDR) activities were as follows: 1) Android application-based learning media was designed using Android version 5.0+ " Lollipop"; 2) Android application-based learning media is designed with 3 main slides /views, namely the first display slide contains an invitation to pray together before starting learning. The second slide contains the Pancasila precepts for students to always remember the Pancasila precepts, and read them together before starting learning; 3) then on the third slide there are menus to make it easier for students to go to the next menu/ slide , which consists of an instruction menu and contains fragments/ components such as instructions for use, IC, KD mapping, learning objectives. Next there is the Indonesian national anthem menu, the material menu which contains several lessons, the evaluation menu, attendance menu, and finally the researcher profile menu; 4) learning media containing material for theme 7 sub-themes 4 accompanied by pictures, Indonesian national anthem, animated videos, and evaluation questions; 5) Instructional media are designed using simple language and are easily understood by third grade students with various font sizes and colors.

The design of the research instrument validation sheet for media experts and material experts. The preparation of the media expert validation instrument is adjusted to the appearance and function of the buttons on the learning media to obtain an assessment and suggestions for the learning media being developed. The design of the media expert validation instrument includes 22 indicators/statements, and the material expert validation instrument includes 9 indicators. The scoring consists of five choices, namely very good (SB), good, fair, not good, very bad. The preparation of student response questionnaire sheets is adjusted to the appearance and benefits of the Android application media to be able to find

out student responses to the learning media developed. The design of the student response questionnaire includes 10 statement items, and consists of five scores, namely: very good, good, enough, less, very less. The preparation of the teacher's response questionnaire sheet is adjusted to the appearance, and the convenience or benefits of the developed Android application media. The teacher's response questionnaire consists of 15 statements with five scoring options, namely SS (strongly agree), S (agree), CS (quite agree), TS (disagree), STS (strongly disagree).

Design Validation

Design validation is a product assessment process related to the effectiveness or not of the product that has been made or developed by researchers (Ramdan & Atiaturrahmaniah, 2019). Before this android application-based learning media is used and tested, it is first validated by media experts. In this study validation was carried out by asking for validation from media expert validators, namely people who are competent and understand the learning media developed by researchers. The validator chosen in this study was Muhammad Tantowi Jauhari, S.Ag as the principal of MI NW 1 Kelayu. The validation was carried out by media experts by filling in the instrument sheet that had been prepared by the researcher. The results of the validation carried out by media experts on thematic learning media based on android applications are in the "very good" category (feasible to use).

Table 1. Validation Results by Media Expert Validators

Validators	Score	Indicator	Total score	Average	Score Range	Category
	5	14				
Media	4	8	102	4,6	X > 92,28 – 110	Very Good

Based on table 6 above, the aspects assessed totaled 22 items with a score of 5 of 14, and a score of 4 of 8. From the validation results of the media expert, an actual score of 102 was obtained with an average of 4.6. This score is then analyzed using a scale of five formula. The results of the analysis are 92.28 – 110 (very good), 74.76 – 92.28 (good/valid), 57.24 - 74.76 (good enough), 39.72 - 57.24 (poor) , 39.72 (very less). From the actual score, a score of 102 is obtained in the range of scores 92,28 X 110 and is in the "very good" category. From the results of media expert validation, it shows that thematic learning media based on Android applications are appropriate to use to retrieve data with revisions according to suggestions. Based on input and suggestions as well as the results of discussions with the validator, they said that adjusting the dimensions so that they can be used on various smartphone devices, provide a skip so that the sound/backsound does not overlap.

Material expert validation was carried out by class III teachers at MI NW 1 Kelayu on June 3 2021. The material expert who became the product validator being developed was Saidah Asri S.Pd.I as class III teacher. Validation is carried out by material experts by filling in the instrument sheet provided by the researcher. Material expert validation of learning media products based on android applications in terms of material after being calculated using a scale of five formula, in thematic learning a total score of 39 is obtained with an average of 4.3. The results of the analysis of thematic learning media based on android applications are, 37.8 – 45 (very good), 30.6 – 37.8 (good), 23.4 – 30.6 (fairly good), 16.2 – 23 .4 (poor), X \leq 16.2 (very poor). Based on the results of the validation that has been carried out, it can be seen that the product assessment in terms of material experts is in the score

range **37,8 X 45** with a total actual score of 39, and is in the "very good" category. From the results of the material expert validation, it shows that the thematic learning media based on Android applications are appropriate to use to retrieve data with revisions according to suggestions, and the results of discussions with the validator that for evaluation questions are added pictures and increase the hot level on evaluation questions.

Based on the validation results that have been carried out by material experts, learning media is in the score range **37,8 X 45** with a total actual score of 39, and is in the "very good" category. From the data validation results by material experts, it shows that the thematic learning media based on Android applications developed by researchers are feasible to use. Meanwhile, validation by media experts showed that the actual score obtained was 102 and was in the range of scores **92,28 X 110**. This means that the thematic learning media based on android applications meet the "very good" category. From the results of media expert validation, it shows that thematic learning media based on Android applications are feasible to use. From the two validation results by material expert validators and media experts, it shows that the thematic learning media based on Android applications already meet the requirements to be tested in class III MI NW 1 Kelayu.

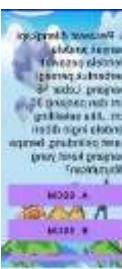
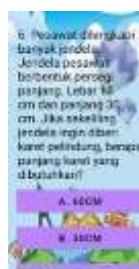
Design Improvements

The next stage is design improvement, at this stage the researcher will make improvements based on the results of validation by media experts and the results of validation by material experts in the form of scores, suggestions and input both in writing and discussions with validators (Suryaningsih & Fatmawati, 2017). Based on the validation results, input, and suggestions from the validator, the developed learning media can already be used in classroom trials. However, there are a number of things that need to be fixed before being used in the trial, namely adjusting the dimensions so that they can be used on various smartphone devices, adding stops so that the backsounds don't overlap or interfere, adjusting the background to elementary school students, adding a scroll view to the evaluation menu so that the choice button can be seen. on certain devices. As for the material in this Android application-based thematic learning media, namely for evaluation questions, add pictures and increase the hot level on evaluation questions. For more details, design improvements based on the results of validation by media experts and the results of validation by material experts can be seen in the image below:

Table 2. Image Views Before and After Revision

No	Revision	View before revision	View after revision
1	Added stops so that the backsounds don't overlap or interfere with each other		

Before adding the stop button After adding the stop button

2 Customize the background with elementary school students,		Before adding the background		After adding the background
3 Add a scrollview to the evaluation menu so that the choice button can be seen on certain devices.		Before added scrollview		After added scrollview

Product Trials

Learning media products are tested in schools to be used in the learning process. The aim is to see the extent to which the feasibility of the product, as well as the deficiencies of the product developed by the researcher. The indicator of the achievement of these goals is by looking at student responses and teacher responses to the use of learning media that were developed after being used in the learning process.

Analysis of student response questionnaires was carried out based on data obtained during field trials. The data collection was carried out by distributing questionnaires to 16 respondents regarding student responses to Android application-based thematic learning media products. The results of filling out student response questionnaires to the learning media developed by researchers showed that students gave quite good, good, and very good ratings, with a score of "44.8" (very good category) with several modifications to learning from home or from school by researchers. This is because the situation and conditions when conducting field trials began normally. Students begin to enter and study at school as usual or as normal before. Students no longer enter with a shift system (face-to-face learning in turns).

The learning modifications carried out by researchers are by: 1) collaborating with the school to ask class III MI NW 1 Kelayu students to bring smartphones on June 8, 2021, by sending a link/barcode to the school and then spreading it via WhatsApp group schools, so that students can download learning applications independently ; 2) then on June 9 2021 the researchers provided explanations and directions to students to be able to run and introduce thematic learning media based on Android applications ; 3) then the researcher conducted research starting from 10-12 June 2021 to give students a questionnaire which must be filled in according to its relation to the learning media that has been used in the learning process.

Student responses to the thematic learning media based on android applications developed by researchers received positive responses and can be seen from the results of

filling out student response questionnaires. From the results of filling out the questionnaire, it showed that the student's response to the media developed by the researcher was very good.

Table 3. Acquired Student Response Scores

Number of Respondents	Min	Max	Total score	Average	Score Range	Category
16	40	50	44.8	4.48	$X > 41.88 - 50$	Very good

Meanwhile, the teacher's response to the thematic learning media based on the android application can be seen from the results of the teacher's response questionnaire consisting of 15 statement items to be able to see the teacher's response to the thematic learning media products based on the android application developed by the researcher. The results of filling out the questionnaire to be able to see the teacher's response to the learning media developed by the researcher showed that the teacher gave a good, and very good assessment, with a score of "69" and an average of "4.6". Based on the results of filling out the teacher's response questionnaire that has been done, it can be seen that the teacher's response to the product developed by the researcher is in the score range $63 < X < 75$ with the "very good" category. From the results of the teacher's response questionnaire to the thematic learning media based on Android applications, it was stated that it was feasible to use.

Learning media is anything that can be used to channel or convey messages (learning material) so that it can stimulate students' attention, interest, thoughts and feelings and to achieve learning objectives. This is evidenced by student responses when the learning process takes place, this android application-based thematic learning media can stimulate students' attention because learning media is designed according to the characteristics of elementary school students equipped with animated videos that depict examples in everyday life, so that they can attract interest and students' minds in the learning process (Hashim, 2013).

Product Revision

The results of the field trials both from the results of the student response questionnaire and the results of the teacher response questionnaire conducted earlier by the researcher, the android application-based thematic learning media do not need to be revised again, because in terms of the results of the student response questionnaire and the results of the teacher's response questionnaire showed the results of the response were good. Very good.

Conclusion

Based on the results of the research and discussion presented, it can be concluded several things, namely: Student responses to the thematic learning media based on Android applications developed by researchers obtained scores from student response questionnaires with a total score of 717 with an overall score of 44.8 which consisted of 10 statement indicators with 16 respondents and was in the range of scores $41.88 - 50$ (very good category). The results of the validation of thematic learning media based on the android application, namely, the results of the material expert got a total score of 39 with an average of 4.3 and is in the $37.8 - 45$ score range with the "very good" category, and the results of the media expert got an actual score 102 with an average of 4.6 is in the range of scores of $92.28 - 110$ and is in the "very good" category.

Recommendations

Teachers should be able to take advantage of various learning resources so that teaching and learning activities are more effective and efficient, and certainly not monotonous. The limitations of teaching aids are not an obstacle to being able to provide understanding to students. So that the use of thematic learning media based on this android application can be an effective and fun alternative learning media. For future researchers, it is hoped that they will be able to follow up to test the effectiveness of using Android application-based learning media.

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