

Development of Android-Based Sikair Interactive Learning Media to Improve Learning Outcomes of Class V Elementary School Students on the Material of the Water Cycle

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Abstract

This study aims to develop a product in the form of interactive learning media based on Android to improve student learning outcomes in elementary schools. This study uses the Research and Development method. This research was conducted at SDN 2 Courts. The results of the validation of the Android-based interactive interactive media were carried out by experts such as material experts, media experts and linguists. Each expert is as follows: the material expert gives a final score of 1 with the eligibility criteria of 100% or can be said to be "Very Eligible", the media expert gives a score of 0.9 with the eligibility criteria of 90% or can be said to be "Very Eligible", and the linguist gives score 1 with the eligibility criteria of 100% or you could say "Very Eligible". The results of the small group trial obtained an average score of 88, 5% with the eligibility criteria "Very Eligible", and the results of the large group trials obtained an average score of 90.5% with the eligibility criteria "Very Eligible". This shows that the Android-based interactive sikair learning media is very suitable to be used as a natural science learning media, especially in water cycle material, the field research stage of the Android-based interactive sikair media obtained an average N-gain score of 0.8 in the "High" category and "interpretation category" Effective". Based on the results obtained, the Android-based interactive interactive media was declared feasible and effective for use in elementary schools. This shows that the Android-based interactive sikair learning media is very suitable to be used as a natural science learning media, especially in water cycle material, the field research stage of the Android-based interactive sikair media obtained an average N-gain score of 0.8 in the "High" category and "interpretation category" Effective". Based on the results obtained, the Android-based interactive interactive media was declared feasible and effective for use in elementary schools. This shows that the Android-based interactive sikair learning media is very suitable to be used as a natural science learning media, especially in water cycle material, the field research stage of the Android-based interactive sikair media obtained an average N-gain score of 0.8 in the "High" category and "interpretation category" Effective". Based on the results obtained, the Android-based interactive interactive media was declared feasible and effective for use in elementary schools.

Keywords: Learning Media, Android-Based Interactive Brushing, Water Cycle



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INTRODUCTION

Education is not just about learning to teach. According to Ki Hajar Dewantara in Mudana (2019) Education is carried out in order to advance not only the character, but also the mind and soul of the child to fulfill the perfection of life and balance with the world. In this regard, students are required to be able to adapt themselves to the times by not ignoring the customs, norms that apply according to the times. Education is expected to be able to guide all the nature of students in order to achieve benefits both as individuals and as a society (Sholichah: 2018). In other words, students must be educated according to their era by not forgetting their natural nature. As it is today, the times are changing very rapidly, especially in the field of technology

and information. Education cannot be separated from the influence of these changes (Ainiyah: 2018). Technology in general can have a broad impact on various aspects of Jamun's life (2018). Its relation to the world of education, especially learning in schools, a teacher as an educator, protector, and facilitator for students. In the learning process, educators are expected not to be taboo in using technology because if technology is used proportionally and professionally, it will provide great benefits for student progress.

One of the technological advances that have been rife in society is the use of Android. Android is a form of Linux-based mobile operation (Arifianto: 2011). In addition, Hermawan (2011: 1) said Android is a form of mobile operation (OS) that has grown in popularity in recent years. Other OS such as Windows Mobile, i-Phone OS, Symbian, and so on. Meanwhile, according to Nazrudin (2012: 1) android includes system software, middleware, and applications. Android opens a stable platform for its users to create applications. Therefore, Nazrudin (2012: 3) states that Android is the dominating operating system, the circulation of Android smartphones in Indonesia is 79.75%. namely "the first complete, open, and free mobile platform. Based on the opinion above, the researcher concludes that android is one of the advancements in the field of technology that can be used as needed. In the field of education, cellphone devices that have the Android operating system can be used as learning media.

Learning media are all things that can be used to deliver insight to students that can arouse students' willingness to encourage the learning process (Mahnun: 2012). This is supported by the opinion of Arsyad (2015: 10), educational media, namely all types of media that can be applied to convey information during the learning mechanism to arouse student interest in learning (Arsyad: 2015). Not only that, other opinions also show that media is a type of supporting tool that can be used to help students achieve their educational goals (Djamarah: 2002). Related to technological advances in the world of education, it is necessary to use technology as a teaching medium in schools. These innovations are none other than to create students who are responsive to the times and are able to utilize technology as a source of knowledge. Therefore, the researchers determined elementary schools to be used as test sites for the effectiveness of using android as a form of technological progress by developing interactive android-based learning media using the Simple Random Sampling technique in three elementary schools, namely SDN 1 Court, SDN 2 Court, and SDN 2 Gunung Pereng. Previously the researcher had conducted observation and interviews with the school.

Based on the results of the researcher's interviews with teachers in the three elementary schools, there are several problems in learning science content, especially in the Water Cycle material, namely the low achievement of student learning outcomes in the form of an evaluation score that is below the KKM (Minimum Completeness Criteria), namely 75. This It can be seen from the data on the daily evaluation scores of class V students in science subjects, namely in the water cycle material where there are 64% of students whose grades have not reached the minimum completeness criteria and 36% of students have achieved the minimum completeness criteria. Homeroom teachers are also aware of the lack of use of technological media in learning which is still limited to power points which contain written text and pictures in the water cycle material which are only observed using theme books. As a result,

Learning media that can be utilized in this problem is by using interactive learning media based on Android. Android-based interactive learning media was chosen as an alternative media to support science learning in water cycle material because it is not yet available in elementary schools. From the results of the interviews, the teacher also explained that almost 99% of all fifth grade students were familiar with Android-based smartphones and could operate them, but were still not using them optimally. Students bring cellphones only for information on pick-up by parents, not only that students always use them during breaks just

to watch tiktok, Instagram and YouTube. Until now the teacher has not been able to take advantage of the facility and is eager to take advantage of the facility. Students' cellphones are only stored and are prohibited from being activated during the learning process, but there are still some students who like to open their cellphones during learning. The teacher explains with the help of theme books such as pictures that these efforts are still considered not optimal.

Based on these problems, to support the learning process that can facilitate student learning, it is necessary to develop an interesting learning media to foster student interest and enthusiasm in the process of learning activities. As a solution to this problem, the use of media is expected to help students understand the material being studied and by using interactive media. Selection of Android-based interactive learning media as a solution compared to other media. Because interactive media can present interesting learning so that it can stimulate students to learn more actively and also make time effective. Based on the description of the problem, then the researcher intends to conduct research and choose the title "Development of Android-Based SIKAIR Interactive Learning Media to Improve Student Learning Outcomes on Water Cycle Material in Class V SD". The purpose of this study was to determine the effectiveness of using Android-based SIKAIR interactive learning media to improve student learning outcomes in grade V SD.

RESEARCH METHODS

The type of research used is research and development. Stages of research using Borg and Gall. The following is Figure 1 which describes the implementation of the research.

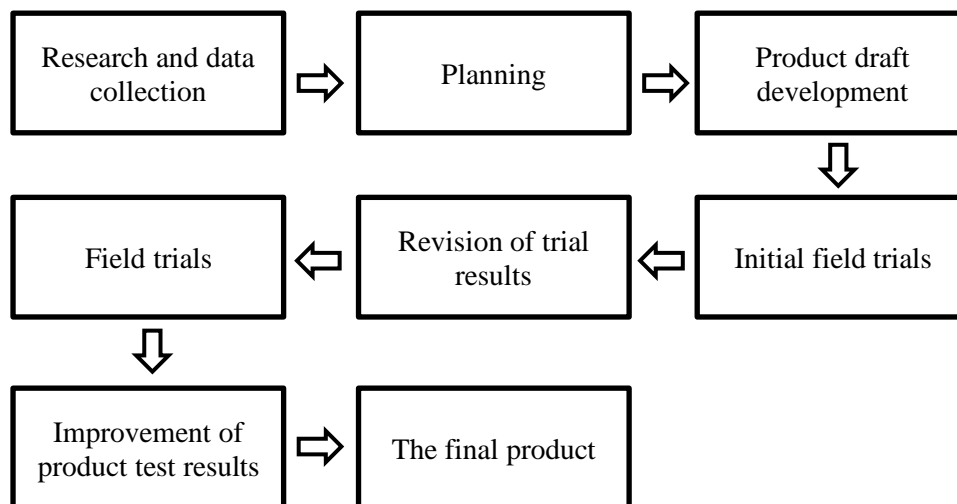


Figure 1. Flowchart of Research and Development Procedures

The research population was carried out on fifth grade students at SDN 2 Court. The sample used for the experimental class is the VA class while for the control class is the VB class. The data used in this study are qualitative and quantitative data. Data collection techniques using questionnaires, interviews, and observation. Furthermore, for data analysis techniques using feasibility tests and effectiveness tests.

RESEARCH RESULTS AND DISCUSSION

Research and Data Collection

At this stage data collection, identifying and summarizing the problems were carried out through literature review, field observations, interviews and making a State of Art. Pd. some problems were found. This obstacle is the lack of use of learning media by teachers in water

cycle material so that students find it difficult to understand learning, especially the use of android-based media. The learning outcomes of class V students in the water cycle material are still low, namely most of them still score below the KKM. Based on the description above,

Planning

Product planning includes the development and implementation of designs and the preparation of research instruments. The instruments developed used media, material and language validation questionnaires, as well as questionnaires for small and large group tests.

Product Draft Development

Researchers carry out the development and implementation of the design. Researchers designed a brush learning media that raised water cycle material. Then the researcher determines the tools and materials then the researcher sketches the design of the learning media. The following is an overview of the development of the product draft.



Figure 2. Home Page

On the initial page there is an identity with the name and logo of the University. Muhammadiyah University Tasikmalaya



Figure 3. Initial View Page

On this page contains the name of the application, and the login button.



Figure 4. Material page

The material presented is material related to the water cycle which is equipped with "back" and "continue" icons.



Figure 5. Test Display Page

In the evaluation there are 10 questions regarding the water cycle. If we click on the correct answer, a sign will appear ✓ and there is an automatic writing of your correct answer and the slide will automatically move to the next question. If we click on the wrong answer, an x will appear. Your answer is wrong.



Figure 6. Developer Profile Page

The profile page contains information about the development of the sikair application maker. Apart from developing product drafts, instrument preparation and validation were also carried out. In material validation or media validation, a Likert scale is used and there is a suggestion column aimed at students because the content of the material is in accordance with KD and the Sikair (Water Cycle) learning indicator is also very interesting and suitable for use in elementary schools because it can increase student learning motivation.

Early Stage Revision

At this stage a revision was produced, namely improvements to the gift, the dubbing sound to be re-recorded. Besides that, the next suggestion is to improve the writing of PUEBI on Android-based interactive learning media.

Field Trials

Field trials were carried out twice, namely in small group trials and large group trials. From this small group trial, an average score of 3.54 was obtained. Based on the results obtained, the feasibility category of the Android-based interactive sikair learning media was in the "Very Eligible" category in the small group trial. From this large group trial, an average score of 3.63 was obtained. Based on the results obtained, the feasibility category of Android-based interactive learning media is in the "Very Eligible" category in the large group trial

In addition to group trials, a feasibility test was also carried out through validation. The results of the media expert validation obtained quantitative data in the form of the values obtained in the table above, from the efficiency aspect, they got a score of 4.00, namely getting a very good category, from the display aspect, they got a score of 3.00, including the good category, and from the benefit aspect, they got a score of 3.75. included in the very good category. The final sum of all aspects gets a value of 3.6 divided by the number of criteria from the instrument, namely 4, so $3.6/4$, namely $0.9 \times 100\% = 90\%$ with a very good category and a proper assessment statement. Based on the media expert's validation that the use of media is very good and feasible to use.

The results of the material expert validation obtained quantitative data in the form of values obtained in the table above, from the content aspect, a score of 4.00 was obtained, namely getting a very good category, from the format aspect, a value of 4.00 was included in the very good category, and from the learning aspect, a value of 4 was obtained. .00 is included in the very good category. The final sum of all aspects gets a value of 4.00 divided by the number of criteria from the instrument, namely 4, so $4.00/4$, namely $1 \times 100\% = 100\%$, namely 100% with a very good category and a proper rating statement. The results of the validation of linguists obtained quantitative data in the form of values obtained in the table above, namely 4.00 divided by the number of criteria from the instrument, namely 4, so $4.00/4$, namely $1 \times 100\% = 100\%$, namely 100% in the very good category and appropriate assessment statement.

Main Product Revision

In the small group and large group trials, as well as the validation of experts, it was found that the Android-based interactive sikair learning media was "appropriate", so that it could proceed to the next stage. Based on the comments and suggestions of experts who stated that the media was so good that no further revisions were needed to the media.

Main Field Test

In this field test carried out in the experimental class and control class. The results obtained from the experimental class were that the pretest average value was 54.5 and the posttest average was 90. This indicated that the posttest was higher than the pretest. The results of the experimental class research obtained the average N-gain score of 0.80 with the "High" category of interpretation value (80%) Effective, and with a minimum value of 0.4 (40%) and a maximum value of 1.00 (100%). Meanwhile, in the control class, the average pretest score was 41.81 and the posttest average was 5.78. This shows that the posttest is higher than the pretest. The results of the study of the control class obtained the results of an average N-gain score of 0.42 with the category "Moderate" interpretation value (42%) Less Effective, and with a minimum value of 0.33 (33%) and a maximum value of 0.66 (66%)

Final Product Improvement

Refinement of product results is carried out with revised material through a questionnaire that has been distributed to both the media and material expert team or based on the results of group trials. Based on these inputs and results, the researcher as the developer of the media gets an overview of the final product improvement. The following is Figure 6 which describes the results of the final product improvement, namely:



Figure 7. The Barcode for the Brush Application

Discussion

Suitability of Android-based Sikair Interactive Learning Media

The purpose of this study was to develop and test interactive learning media based on Android on the water cycle (theme 8 of our friend's environment - sub-theme 2 of environmental change). fifth grade elementary school. The android-based interactive learning media product of sikair has gone through the stages of validation, development test and

research test so that it is stated that this android-based interactive sikair learning media is feasible and effective and appropriate for teachers to use when learning material. The discussion of the research includes the suitability of Android-based interactive learning media Sikair to improve learning outcomes with learning objectives, as well as implications for services, education and research. Learning media are all things that can be used to deliver insight to students that can arouse students' willingness to encourage the learning process.

This is supported by Arsyad's opinion (2015: 10), educational media, namely all types of media that can be applied to convey information during the learning mechanism to arouse student learning interest. Not only that, other opinions also show that media is a type of supporting tool that can be used to help students achieve their educational goals. The results obtained from this study are in line with the research of Mara et al. (2019) who explained that in facilitating student learning, learning media is needed, so that learning outcomes can be meaningful. Learning media developed must also be adapted to the realm of students' thinking.

Learning media that can be utilized in this problem is by using interactive learning media based on Android. Android-based interactive learning media was chosen as an alternative media to support science learning in water cycle material because it is not yet available in elementary schools. From the results of the interviews, the teacher also explained that almost 99% of all fifth grade students were familiar with Android-based smartphones and could operate them, but were still not using them optimally. Students bring cellphones only for information on pick-up by parents, not only that students always use them during breaks just to watch tiktok, Instagram and YouTube. Until now the teacher has not been able to take advantage of the facility and is eager to take advantage of the facility. Students' cellphones are only stored and are prohibited from being activated during the learning process, but there are still some students who like to open their cellphones during learning. The teacher explains with the help of theme books such as pictures that these efforts are still considered not optimal. In addition, the results of this study are in line with Yuanta's research (2020) that using learning media can improve student learning outcomes. This can be proven by the fact that delivering material to students can be easier than students can also get knowledge more easily (yuanta: 2020).

Implications for Services, Education, and Research

Android-based sikair application learning media can be used in science learning as an effort to understand how the process of the water cycle occurs (theme 8 of the environment, our best friend, sub-theme 2 of environmental change). Learning media based on Android-based sikair applications can be used as reference material for other research. Hopefully, the existence of an Android-based sikair application learning media can provide inspiration for many people, especially teachers or prospective teachers who will create new innovations that are effective and efficient.

CONCLUSION

The conclusion from the research conducted is based on the results of very feasible material validation with a percentage of 100%. The results of the media validation showed that the category was very feasible with a percentage of 90%. The results of the language validation get a very decent category with a percentage of 100%. Then the results of the field test in the experimental class on the N-Gain score obtained a score of 0.80 (effective) while in the control class on the N-Gain score obtained a score of 0.42 (less effective), so from the results of the research conducted the development of brushing media feasible and effective for use in Class V science learning on the Water Cycle material. In this research, in-depth research should be carried out so as to create a product that is needed and useful in the world of education. Besides

that, so that this research can help students to achieve learning objectives and make it easier for educators to convey material in the process of teaching and learning activities. Because the best human beings are those who benefit others.

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