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Implementation of Learning Media Android-Based Integer in Class VI Elementary School

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ABSTRACT

The background of this research is that most teachers have started to integrate technology into the learning process but still needs to be improved. To overcome these problems teachers need to innovate in overcoming problems in the learning process. One of them is the development of android-based learning media with the ADDIE model research approach. Data collection techniques used instruments in the form of interviews, and questionnaires. Collected data were analyzed, practicality, and effectiveness using a predetermined formula. The implementation results obtained, the development of android-based learning media based on the results of the practicality analysis of android-based learning media has a value of 80.00% in the very practical category, and the effectiveness of android-based learning media has a value of 81.64% with a very high category.

Keywords: Implementation, Media, Integers, Android, Elementary School

INTRODUCTION

Education is a need to increase human dignity and to perfect the development of the individual human being himself. In addition, education is an institutional activity, namely schools that are used to master attitudes, knowledge, and habits. In line with that, Batubara (2015) emphasized that education greatly influences human life, especially education in the field of mathematics. Mathematics is a compulsory subject at the level of formal education. In line with the opinion above Kartikasari (2018) math in everyday life can help solve problems, such as helping humans with social, economic, and natural problems.

In the current technological developments known as the 4.0 era, this technological progress can be felt in various fields, such as in the field of education which has a significant positive impact. In this 4.0 era, students no longer depend on teachers as learning resources, with the presence of the internet and electronic media that students can use them easily without being limited by space and time so that students can study at any time without having to be accompanied by a teacher. Karseno (2021) emphasized that teachers must be able to take advantage of technological developments in the learning process, in line with that Mulyadi (2019) explained that teachers are required to be able to integrate technology into the learning process both in the form of learning resources and in the form of learning model.

Technological developments in education have led to many concepts about technology-based education such as the concept of m-learning using mobile devices which are considered to make it easier for students in the learning process because mobile is more flexible for students to use as a learning resource. Android-based M-learning, namely

integrating technology with learning materials. According to Purnami et al (2021) M-learning is a solution to overcome problems in conventional learning and M-Learning can improve the overall learning system by using devices such as smartphones, laptops, and tablet PC.

Bani & Masruddin (2020) explained that mobile devices such as smartphones can be developed as m-learning media because of smartphones. Using an operating system in the form of Android, iOS, Windows Phone, etc. In this technology-literate era, almost all students already have smartphones, but in reality, the use of smartphones has not been used as fully as possible to support the learning process. According to Mukhtar & Putri (2021) at this time it is still rare for students to access mathematics learning applications on their smartphones, they use smartphones only to access entertainment applications, such as music, social media, cameras, games, and so on. To create a learning process that can increase student learning motivation, namely by using Android-based learning media. One way to deal with students who are less motivated to learn mathematics is by utilizing Android-based learning media. Asmara (2015) explained that Android-based learning media can make students more concentrated and motivated to solve problems. Based on the development of technology and science, encourages the world of education to improve to carry out updates and utilize existing technology in the learning process.

Based on observations at Elementary School 3 Pamuatan, Kupitan Sub-district, Sijunjung Regency, it was found that most teachers had started to get used to using Android-based learning media during the COVID-19 pandemic, but still needed to be improved, especially for high classes in mathematics. Andriani (2022) explained that during the Covid-19 pandemic, teachers and students used information media as learning media, the teacher and students are accustomed to using Android as a learning medium, so based on this, teacher innovation is needed to develop valid, practical and effective learning media. In addition, the researchers also conducted interviews with students who stated that most of them were familiar with technology-based learning media during the learning process during the pandemic. in using technology-based learning media in the learning process during the pandemic and after the pandemic. Based on this, the presence of learning media that is interactive and close to the world of students will certainly increase their learning motivation and can help teachers create meaningful learning for students and help students to obtain satisfactory learning outcomes, namely achieving the minimum completeness criteria (KKM) that school setting. To realize this, teachers are required to be able to increase competence and professionalism in preparing learning media. Based on observations made in class VI of Elementary School 3 Pamuatan, Kupitan Sub-district, Sijunjung Regency, it is known that the results of the Odd Semester MID exam for class VI students of Elementary School 3 Pamuatan, Kupitan Sub-district, Sijunjung Regency have the Minimum Completeness Criteria for mathematics subjects of 75, students who meet the Criteria Minimum Mastery there is 27.27%, namely 3 students, while 81.81%, namely 9 students do not meet the Minimum Mastery Criteria.

Low learning outcomes, because during the learning process students do not understand the material have an impact on low learning outcomes. This is to the results of interviews with the class VI teacher at Elementary School 3 Pamuatan, Kupitan Sub-district, Sijunjung Regency, that when learning mathematics during the COVID-19 pandemic, students used technology-based learning media, as well as when the pandemic ended students were getting used to using technology-based media. but the media used has not been able to significantly improve student learning outcomes.

METHODS

The procedure and development model in this study is the ADDIE development model, which consists of stages (analysis, design, development, and implementation). The ADDIE stage is used to describe a systematic approach. All elements of the model are related to one another starting from analysis, design, development, implementation, and assessment. The development stages in implementing the development of android-based learning media in mathematics subjects in class VI schools are as follows: 1) Analysis. Before entering into the development of Android-based learning media, the researcher conducted a needs analysis; 2) Design. Based on the results of the needs analysis, the researcher proceeded to the initial product design stage to be developed; 3)Development. This stage is a process for realizing Android-based learning media products; 4) Implementation. After the product developed is declared valid, the product developed is tested in the learning process; 5) Evaluation. Evaluation is the last stage in the development of android-based learning media with integer material for grade VI elementary school students. Evaluation is a process to see whether the product being developed can be used or not. Evaluation plays a role in perfecting or improving Android-based learning media products. This evaluation is carried out by a team of experts and evaluates the results of validation and product trials.

RESULTS

3.1 Practicality Test Results

A. Observation of Learning Implementation

Observation of the implementation of learning at the implementation (implementation) stage is focused on seeing whether learning is carried out by the designed lesson plan and seeing the obstacles in its implementation. Data on the observation of the implementation of learning on implementation (implementation) were taken from observations of the implementation of the lesson plans obtained from observers at each meeting. Observations were made using the RPP observation indicators. The results of observing the implementation of the RPP can be seen in the following Table 1 below.

Table 1. Results of Observation of Learning Implementation Implementation Stage

Meeting	Percentage of observer ratings (%)	Average (%)	Category
I	91	80.00	Practical

Based on Table 1 above, it can be explained that the implementation of learning at the implementation stage is 80.00% in the practical category. This shows that the RPP that is made is carried out well.

B. Filled out by Students at the End of Implementation

The results of student response sheets on the practicality of android-based integer learning media at the implementation stage have a value of 82.02% in the very practical category. It is very practical to mean that the number of learning media is the Observation Result of the Use of Android-Based Integer Learning Media Observation of the use of Android-based integer learning media was carried out by looking at student activities when using the developed Android-based integer learning media. The observed aspects are 1)

students understand various concepts in the android-based integer learning media; 2) students understand the steps of the activities in the android-based integer learning media; 3) students are interested and motivated to read and use number learning media rounded numbers based on android; and 4) students are active and enthusiastic about doing assignments in the learning media for integers based on android. The results of observations on all aspects of the Android-based integer learning media students have no difficulty understanding various concepts in the Android-based integer learning media because the media developed has detailed instructions so that the learning process can be carried out properly. Based on the observations made during the learning process using the Android-based integer learning media, all aspects of the Android-based integer learning media are easily understood by students and have no problems in their use. Thus it can be said that the use of Android-based integer learning media based on observations that have been carried out at the implementation stage can be said to be quite practical.

C. Teacher Responses to the Practicality of Android-Based Integer Learning Media

Assessment of the teacher's response is given to find out the teacher's opinion on the android-based integer learning media that has been compiled. Based on the results of the mean calculation, it can be concluded that the teacher's response to the practicality of android-based integer learning media at the implementation stage has a value of 92.80% in the very practical category.

D. Student Responses to the Practicality of android-based Integer Learning Media

Student assessment is given to find out students' opinions on the practicality of Android-based integer learning media. The Android-based round assessment sheet has attractiveness, the process of use, methods, learning media/resources, and assessment.

2) Effectiveness Test Results

A. Student Activity

As long as the learning activities take place, students are observed using an instrument to observe student activity. Observed student activity namely; 1) pay attention to the android-based integer learning media; 2) listen to the teacher's explanation; 3) ask questions or give opinions; 4) take steps on the android-based integer learning media; and 5) do exercises on the android-based integer learning media. Observational data can be seen in Table 2 below.

Table 2. Results of Observation of Student Activities in the Implementation Stage

No	Assessment indicators	Total	Average	Percentase	Category
1	Pay attention to the teacher's explanation	27,00	7,71	8,44	very high
2	Question and answer	26,00	7,43	8,13	very high
3	Observe reading	26,00	7,43	8,13	very high
4	Write to do something	27,00	7,71	8,44	very high
5	Revise learning outcomes	27,00	7,71	8,44	very high
6	Clearing up misunderstandings	26,00	7,43	8,13	very high
		209	59,71	65,31	very high
Average		26,12	7,46	8,164	

Based on Table 2 above, students at the implementation stage can conclude that student activity on the indicator of paying attention to the teacher is 8.44% in the very high

category, question and answer is 8.13% in the very high category, observing reading is 8.13% in the very high category, writing to do something of 8.44% in the very high category, revising the learning outcomes of 8.44% in the very high category, correcting misunderstandings of 8.13% in the very high category. The overall average student activity is 81.64% in the very high category. It can be concluded that students have paid attention to Android-based integer learning media, listened to teacher explanations, asked questions or submitted opinions, and carried out exercises and steps in each learning activity.

B. Assessment of Learning Skills Using Android-based Integer Learning Media

Process Assessment

Data processing of the assessment process of Mathematics learning skills using integer learning media based on Android can be seen in Table 3 below.

Table 3. Results of Assessment of Learning Skills Process Using Android-Based Integer Learning Media in the Implementation Stage

No	Indicator Evaluation	Average	Category
1	Doing tests	78,71	high score
2	Pay attention Explanation	78,85	high score
3	Ask and answer	76,42	high score
4	Observe reading	78,28	high score
5	Writing does something	77,71	high score
6	Revise results	79,00	high score
7	Straighten error	79,28	high score
8	Do the final test	76,85	high score
Average Amount		78,14	high score

Based on Table 3 above, it shows the results of the assessment of the learning process of Android-based integer learning media for each assessment indicator is in the average range of 76% to 79% which is included in the high category, the average assessment of learning outcomes in indicator I is 78.71% with the high category, the average assessment of the results of the learning process in the second indicator is 78.75% with the high category, the average assessment of the results of the learning process in the third indicator is 76.42% with the high category, the average assessment of the results of the learning process in the fourth indicator is 78.48% in the high category, the average assessment of the learning process results in the fifth indicator is 77.71% in the high category, the average assessment of the results of the learning process in the sixth indicator is 79.00% with high category, the average assessment of the results of the learning process on the VIIth indicator is se a large 79.28% in the high category, the average assessment of the results of the learning process in the VIII indicator is 76.85% in the high category, while the average assessment of the learning process of Android-based integer learning media as a whole has a percentage of 78.14% in the high category, meaning that when the learning process takes place, the activities of students are very good at understanding and using the learning media developed.

C. Assessment of Learning Outcomes using Android-based Integer Learning Media

Assessment of learning outcomes using integer learning media based on Android is carried out through tests. Assessment of learning activity tests aims to determine the level of student knowledge before and after learning using integer learning media based on Android. By the research design model used, the learning outcomes using integer learning

media based on Android can be described as follows.

Table 4. Test-descriptive statistics

Descriptive Statistics						
	N	Minimum	Maximum	Mean	Std. Deviation	Variance
free_tes	11	13,00	24,00	18,3077	2,59710	6,745
post_tes	11	17,00	29,00	24,0513	3,89297	15,155
Valid N (listwise)	11					

Based on Table 4 descriptive statistics, it can be concluded that the pre-test score with a total of 11 students obtained a minimum score of 13, a maximum score of 24, a mean value of 18.30, a standard deviation of 2.59 and a variance value of 6.745, while a post-test score with a total of 11 students people have a minimum value of 17, a maximum value of 29, a mean of 24.05, a standard deviation of 3.89 and a variance of 15.15.

Table 5. Comparison of Pre-Test and Post-Test Results

Score		Average gain score
Pre-test	Post-tes	
$\overline{X}$: 18,30 St.Dev : 2,59 Var : 6,74	$\overline{X}$: 24,05 St.Dev : 3,89 Var : 15,15	5,75

Based on Table 5 above, it can be concluded that the average pre-test value is 18.30, the standard deviation is 2.59 and the variance is 6.74 while the average post-test value is 24.05, the standard deviation is 3.89 and the variance is 15 .15 while the average gain score is 5.75 To find out whether there is a significant difference between the pre-test and post-test values, the researcher conducted a two-way difference test using SPSS 20 software. Before carrying out the different test, the researcher first conducted a prerequisite test, namely the normality test and data homogeneity test, as follows: test for normality and homogeneity of data.

Normality Test

Table 6. Normality test (Software results in Indonesian)

Tests of Normality

	Kelompok	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	Df	Sig.
Nilai	A	,129	11	,100	,972	11	,443
	B	,182	11	,002	,927	11	,114

a. Lilliefors Significance Correction

Based on Table 6 the output of the data normality test using the above analysis, the significance value was obtained in the Kolmogorov-simornof and Shapiro-Wilk tests, the significance value for the pree test was 0.443, thus the significance value was greater than alpha, namely (0.443 > 0.05), so the data can be declared normally distributed at a significance level of 0.05. while the significance value for the post-test was 0.114 thus the significance value was greater than alpha (0.114 > 0.05) so the data could be declared normally distributed at a significance level of 0.05.

Homogeneity Test

Table 7. Homogeneity Test (Software results in Indonesian)

Test of Homogeneity of Variances			
Nilai			
Levene Statistic	df1	df2	Sig.
12,591	1	76	,001

Based on Table 7, the SPSS output above obtained a significance value in the Levene test of 0.001 while the research alpha was set at 0.05, so the data can be said to be distributed homogeneously at a significance level of 0.05 because the sig value <alpha (0.001<0.05).

Table 8. Different Test of Pre-Test and Post-Test Values (Software results in Indonesian)

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	pre_tes & post_tes	11	,267	,012

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	pre_tes - post_tes	-6,23077	5,28882	,84689	-7,94521	-4,51633	7,357	38	,000

Interpretation :
a) In the output of paired samples test: significance value < of alpha or .0.012 < 0.05, so it can have a significant relationship.
b) At the output of the paired samples test: t hit value > t table (7.357 > 2.033) then the data has a different average.
c) The sig value (two tails) < of alpha (0.000 <0.05), so there can be a significant difference between the pre-test and post-test averages

CONCLUSIONS

Android-based learning media on integer material in class VI Elementary School according to observers, teachers, and students. Android-based learning media on integer material is easy to use, useful, and interesting. In general, students enjoy participating in the learning process using learning media based on Android on integer material, but using time in learning is still difficult for students with low abilities. However, the learning process takes place without significant obstacles or runs in normal situations. The effects

observed in the implementation of this learning are activity, motivation, and student learning outcomes. Based on the results of the description and analysis of the data, the level of student activity during the learning process is very high. Student motivation is also very high. Student learning outcomes can be seen from the descriptive statistics that the pre-test score with 11 students obtained a minimum score of 13, a maximum score of 24, a mean value of 18.30, a standard deviation of 2.59, and a variance value of 6.745, while a post-test score with a total of 11 people have a minimum value of 17, a maximum value of 29, a mean of 24.05, a standard deviation of 3.89 and a variance of 15.15.

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