

# Mobile learning android based teaching materials: efforts to provide Indonesian learning based on technology in elementary school

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**Abstract.** Technology-based learning is an obligation that must be applied today by teachers. Likewise in primary schools, the use of technology is not only intended as a means of learning, but instead provides direction to students to be wise in using it. In the past few years, the tendency of students to play online games has become a popular attraction among children. So as to be able to divert all the attention of children and do not even care about the environment. Based on this phenomenon, researchers conducted research by packaging teaching materials into systems based on Android 2-dimensional mobile learning applications with the aim of diverting attention and stimulating student motivation to achieve maximum learning outcomes. In addition, in this study reinforcement is given to students how to use technology in everyday life wisely in order to minimize the impact of trends on technology, especially mobile phones.

## 1. Introduction

The development of science and technology desawa is experiencing very rapid development. The influence of technology in human life today is very large for every activity undertaken. Likewise with education, for learning, the use of technology is very helpful for teachers in the implementation process. The development of science and technology leads to increasingly significant changes and leads to a practical era. In the education sector, the development of information technology penetrated the management system and also the learning system in the classroom [1]. Moreover, today the use of smartphones is very easy to operate by children. smartphones that are very easy to carry anywhere are very easy to access a variety of learning resources and are affordable as media will greatly impact students [2] [3]. Thus one alternative learning supplement that can provide opportunities for students to learn on their own is done anywhere and anytime [4]. Curriculum changes that occur, are expected to make major changes to the national education system. The 2013 curriculum is a curriculum that can equip students with a variety of attitudes and abilities in accordance with the demands of the times and technology [5].



Mobile learning is a technology that is supported by flexibility in use to be one of the answers in the modern era. Many things nowadays are very easy to reach via smartphones. For example, shopping, discussion, transactions, learning resources or other things have been done online and reached with smartphones in the palm of your hand. which can be supported by smartphone technology or other devices that are not limited by time and space. The use of such technology in learning is often referred to as mobile learning [6]. Thus, students can use their cellphone or PDA (Personal Digital Assistant) to access the information they need [7]. The emergence of mobile learning is motivated by several things including: (1) The penetration of mobile devices is very fast. (2) More than a PC. (3) Easier to operate than a PC. (4) Mobile devices can be used as learning media [8]. Android is also an open source operating system so it is relatively easier to develop applications. The ease of software development using Android is an advantage of the Android operating system. Learning media that will be created is an Android application that will display learning material [9].

This learning shows opportunities to create learning that is meaningful, interactive, inspiring, fun, challenging, motivating students to participate actively [10]; [11]. Through mobile learning students can be made more attractive in colorful and accompanied by clearer conceptual portrayals. Students will more easily use the media because it can be used. mobile learning has 3 advantages which can facilitate the mobility of the technology, increase the desire of students to learn increased learner mobility, and the third is to increase mobility in the learning process in the aspect of information mobility and evaluation of the mobility of the learning processes [12]. M-learning demands the activeness of students. Through m-learning students can find or retrieve information about learning material directly in accordance with the provisions and criteria set [13].

## 2. Method

This study is a Quasy Experiment study with a Pretest-Post Test Control Group Design research design [14]. The population in this study were fifth grade students of SDN 1 Kalapadua, Lemahsugih Sub-District, Majalengka Regency, West Java. The sampling technique used was simple cluster random sampling technique. The sample of this study is two classes, namely class VA and class B. The division is class VA as an experimental group and VB as a control group with a total of 63 students.

Data analysis techniques used in this study include the normality test, the homogeneity test of the variance of the pre-test and post-test scores by calculating the F value, Anacova to determine the difference in the effect of learning in the two groups. The main information obtained is hypothesis testing to find out whether there is a linear relationship between covariate and response variables and to determine the effect of different treatments on response variables.

## 3. Result and discussion

Based on the results of the processing of descriptive statistical data and ANOVA shown successively in Tables I and II. From these outputs it can be seen that the significance level for the variable of learning motivation is very small under 0.05. This means that at the 95% confidence level it can be said that there is a linear relationship between the use of 2D-based Android mobile learning teaching material and textbooks and the scores obtained by students (post test scores). This statement indicates that Anacova's assumptions have been fulfilled. This test is done by eliminating the influence of using Android-based 2D mobile learning teaching materials first. Furthermore, testing is carried out to determine the effect of differences in the use of Android-based 2D mobile learning teaching materials on the grades obtained by students in this case is posttest. This test is done by eliminating the influence of learning motivation from the use of Android-based 2D mobile learning teaching materials. From the results of processing it can be seen that the significance level for the teaching material textbook variable is very small, far below 0.05; so it can be concluded that at the 95% confidence level there is an influence of Android-based 2D mobile learning teaching materials on the grades obtained by students.

**Table 1.** Descriptive statistics

Dependent Variable: Postes Value			
Teaching Material	Mean	Std. Deviation	N
Experiment	83,8883	6.43662	30
Control	68.0925	7.57932	36
Total	75.2724	10.59387	63

**Table 2.** Tests of between-subjects effects.

Dependent Variable: Postest Value						
Source	Type III Sum of Squares	df	Mean Square	F	Sig	
Corrected Model	7290.632 <sup>a</sup>	2	3645.316	5.320E4	.000	
Intercept	7.393	1	7.393	107.892	.000	
Mobile_Learning_2D_Based_Android	3207.768	1	3207.767	4.681E4	.000	
Textbooks	5.757	1	5.757	84.022	.000	
Error	4.317	63	.069			
Total	381246.847	63				
Corrected Total	7294.949	65				

a. Squared= 999(Adjusted R Squared= 999)

To determine the effect of differences in learning strategies using 2D-based Android mobile learning teaching materials on the scores obtained by students simultaneously can be seen from the significance numbers in the Corrected Model section. It is seen that the significance level is also very small, far below 0.05. Thus, at a 95% confidence level, it can be concluded that simultaneous student motivation and learning strategies by using Android-based 2D mobile learning teaching materials affect the scores obtained by students.

Based on the research results obtained significant differences in learning outcomes between before learning (pretest) and after learning (posttest). The average pretest value obtained in the experimental class was 64.78; the average pretest value in the control class was 65.09. After learning by using Android-based 2D mobile learning teaching material, the average post-test scores in the experimental class were 83.89; while the average post-test scores in the control class were 68.50. Thus an increase in learning outcomes by 29.50%. The difference in learning outcomes at the time of the pre-test and post-test shows that the 2D-based android mobile learning teaching material can improve student learning outcomes.

For the calculation of the percentage of questionnaires obtained an average result of 88.39% which is included in the quite good category. This shows the good response from students towards the use of 2D android-based mobile learning teaching materials. Using m-learning as a learning material can make learning more interesting.

#### 4. Conclusion

Based on the results of the study, the use of Android-based 2D mobile learning teaching materials makes students very enthusiastic. The use of smartphones as tools for learning increases student motivation. This can be seen from an increase in student learning outcomes. Based on the calculation data shows there is a significant increase in learning outcomes in students who learn by using 2D-based mobile learning instructional devices android. Different learning outcomes show that there is a significant

influence on the learning strategies used. Student motivation or level of interest can be used as a predictor for student success or learning outcomes. Learning strategies that use Android-based 2D mobile learning teaching materials can increase student motivation and interest in the lesson well.

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