

The Influence of Mobile Learning Toward 10th Graders' Test Score

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Abstract: Embracing technology in learning and education is needed to answer the challenge of this era. Mobile learning approach is one of a kind. Technology allows student to learn anywhere and anytime. Using mobile learning is considered to improve students' learning outcomes. The purpose of this study is to know about different learning outcomes between mobile learning approach and conventional approach, specifically in the test score. This study is quantitative pre-experimental design research, and the design uses One-Shot Study Case method. The subject of this study is 10th grade students of SMA Panjura Malang. 15 students in experimental group and 15 more in control group. The results showed that there was no significant difference from the utilization of mobile learning to 10th graders' test score. The student can still finish their test with the same result. Thus, mobile learning can still be considered as an alternative learning approach, but not much different with conventional learning in terms of test score.

1 INTRODUCTION

Studies show that the education world faces a great challenge to change and use variations of learning that fit the current development. The 21st century students' needs and characteristics has been drastically changed. Traditional learning approaches make learners consuming passive content that there must be a change, or at least complemented by a more interactive and creative learning process (Jovanovic, Chiong and Weise, 2012). Thus, an adaptation of modern technology in education is needed to answer this challenge.

The way to answer this challenge is embracing technology to learning. There are a lot of new innovations today in combining learning and the latest technology. For example, mobile learning. Mobile learning is learning across multiple context, through social and content interaction, using personal electronic devices (Crompton, 2013). Mobile learning is a form of distance education that use mobile device like smartphone, PDA, tablet and other electronic devices to bring learning more accessible.

The use of internet and smartphone in Indonesia has been very familiar. Digital Research Institute, eMarketer, estimates the active user of smartphone in Indonesia in 2018 will be more than a hundred million users (Rahmayani, 2015). More specifically, the Indonesian Internet Service Providers Association

(Asosiasi Penyelenggara Jasa Internet Indonesia, abbreviated APJII) mentioned that the total of internet users has reached 54.68% of the total population of Indonesia, mostly by using smartphone (Asosiasi Penyelenggara Jasa Internet Indonesia (APJII), 2017). Besides, APJII (2017) stated that 49.42% of the total users are 19-34 years old, the school and productive age.

By the availability of resources, familiarity of the internet, and also smartphone and majority of Indonesian teenager who cannot be separated today, mobile learning is considered to be well applied in Indonesia. Mobile learning could be a problem solving to the characteristic of Indonesian students. Mobile learning is seen as a new alternative of learning model in Indonesia.

Some previous studies regarding mobile learning showed that mobile learning brings out some positive impacts. Hwang & Chang, who researched about a formative assessment-based mobile learning approach to improve the learning attitudes and achievements of students found that the proposed approach not only promotes the students' learning interest and attitude, but also improves their learning achievement (Hwang and Chang, 2011).

(Wang *et al.*, 2009) on his research entitled "The impact of mobile learning on students' learning behaviours and performance: Report from a large blended classroom" found that mobile learning is

much better to enlarge students in the learning process. Students in this class changed from passive learners to truly engaged learners who are behaviourally, intellectually and emotionally involved in their learning tasks. Besides, Nassuora who study about student acceptance of mobile learning in higher education in Saudi Arabia found that the acceptance level of student on mobile learning is on the high level (Nassuora, 2012). The researcher surveyed 80 students and half of that were not familiar with mobile learning, but still had a good perception.

To be noted that those studies were not conducted in Indonesia. In other words, there are so much difference in the settings and characters. Then, by the availability of resources and chances to utilize mobile learning, is mobile learning truly fit the education of Indonesia? Many researches on mobile learning conducted in Indonesia, yet no one has investigated the influence of mobile learning. Mostly about the development of mobile learning media to solve the school problem, with no continuance. Therefore, the researcher is willing to conduct a research regarding the interference of mobile learning compared to conventional method in Indonesia, specifically on the interference of mobile learning toward learning achievement.

2 METHOD

This study has been conducted using pre-experimental design with One-Shot Study Case design. The class was divided into 2 groups, experimental group (i.e. treated with mobile learning) and control group (i.e. treated with conventional method). Both groups were given a pre-test to understand the initial state. Then, the treatment was given to each group. At the end of the study, they were given a post-test to measure the achievement.

2.1 Step

The initial step is identifying the problems and objectives. The researcher was visiting SMA Panjura to find the problems through observation and teacher interview. At this step, the researcher evaluated whether mobile learning could be applied.

Then, the researcher analysed the core competence needed by the subjects. The subjects should be able to operate mobile learning resources (i.e. smartphone, internet) and have the prior knowledge of the material given. The fruitfulness of the study truly depends on those things.

On the next step, the researcher prepared the learning material, such as, mobile learning, lesson plan, and pre-test and post-test based on the identification of the problems and objectives, and the core competence of the subjects. The researcher tested the validity and reliability of the material. If some weaknesses found, the researcher would evaluate and tested it back to meet the standard.

The subjects were 30 10th grader students who have the same level. The researcher divided them into 2 groups, 15 students in the experimental group, and 15 students in the control group. The data collection was begun with pre-test. Then, the subjects were treated based on the group. At the end, post-test was given to evaluate their achievement. The data was being statistically analysed by the researcher. Figure 1 is a flowchart that describes the step-by-step research.

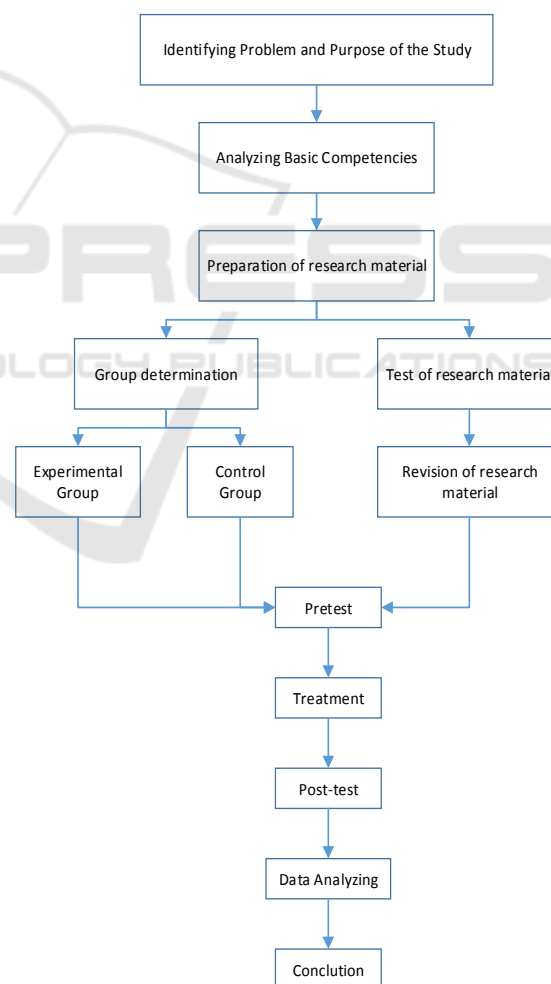


Figure 1: Flowchart step by step research.

2.2 Time and Place

The research was carried out about four months. Starting from February to May 2017. The location is SMA Panjura Malang, Indonesia. And the sample is 10th grade high school students.

2.3 Analysis Technique

After collecting the data, the researcher analysed the data again to conclude the result of the study. On this study. The analysis began with the pre-requisite test. The pre-requisite test analysis is needed to know whether the hypothesis testing could be carried on, and whether the data was valid and reliable.

The pre-requisite test includes normality and homogeneity test. Normality test is a test conducted with a purpose of assessing whether the data distribution in a group of data or variable is normal. The normality test in this study used Komlogorof-Smrinov (K-S) test with a significance $\alpha = 0.05$. Meanwhile, the homogeneity test is a test regarding the variances of two or more distributions. In this study, the homogeneity test used Levene's test with a value $g f \alpha = 0.05$.

After that, the researcher analysed the data with hypothesis testing. The hypothesis testing used 2-tailed independent sample t-test. The significance $\alpha = 0.05$. The result of the hypothesis testing would later conclude the result of the study.

The step of analysis technique used by the researcher is shown on Figure 2.



Figure 2: Analysis technique outline.

3 RESULT AND DISCUSSION

The result of the pre-test can be seen in the Table 1.

Table 1: This caption has one line so it is centered.

	Minimum Score	Maximum Score	Mean
Experimental Group	60	90	71.33
Control Group	40	90	76.00

Based on the Table 1, the control group has a better mean score than experimental group with 76.00. The maximum score for both are 90. While by

the minimum score, the experimental group has a higher score with 60. Based on the data, there are such differences on initial state of both groups, but not that significance. So, the study could still be continued. After giving the treatment and post-test, the following result are found.

Table 2. Post-test result descriptive statistics.

	Minimum Score	Maximum Score	Mean
Experimental Group	50	90	72.33
Control Group	45	90	78.67

The mean score of the control group is still better than the experimental group by 72.33 compared to 78.67. The maximum score stays the same, 90 for both. Then, the minimum score of the experimental group stays higher compared to the control group by 50,

Based on both pre- and post-test, the initial state of the subjects before and after treatment has no significant difference. The control group stays better on mean score either on pre- or post-test. The experimental group stays higher on the minimum score. The maximum score stays constant at 90. The result indicates that no significance difference of two applied method. But, the hypothesis testing could still be done to the data to have a more reliable conclusion.

Thus, to continue testing the hypothesis, the data should pass the pre-requisite test. First, normality test. The normality test in this study used Komlogorof-Smrinov (K-S) test with significance $\alpha = 0,05$. The first normality test had been done to the pre- and post-test result of the experimental group. The result shown at Table 3.

Table 3: Normality test result experimental group.

	Pretest-experiment	Posttest-experiment
N	15	15
Normal Parameters ^{a,b}	Mean	71.33
	Std. Deviation	10.259
Test Statistic	Absolute Positive	.265
	Absolute Negative	.145
	Liliefors	.265
Asymp. Sig. (2-tailed)	.200 ^{c,d}	.200 ^{c,d}

- a. Test distribution is normal.
- b. Calculated from data
- c. Liliefors significance correction
- d. This is a lower bound of the true significance

In the Table 3, shows that normality score on Sig (2-tailed) for pre-test and post-test from experimental group are 0.200. If Asymp. Sig (2-tailed) more than 0.05 or equal, data distribution are normal. Which is means in this case, the data of pre-test and post-test experimental group have normal distribution. Table 4 shows the result of normality test for pre-test and post-test control group.

Table 4: Normality test result control group.

		Pretest-control	Posttest-control
N		15	15
Normal Parameters ^{a,b}	Mean	76.00	78.67
	Std. Deviation	12.564	11.412
	Absolute Positive	.183	.244
	Negative	.133	.160
		-.183	-.244
Test Statistic		.183	.244
Asymp. Sig. (2-tailed)		.188 ^c	.200 ^{c,d}

- a. Test distribution is normal.
- b. Calculated from data
- c. Lilliefors significance correction

In the Table 4, shows that control group normality score on Sig (2-tailed) for pre-test are 0.188 and post-test are 0.200. Same like before if Asymp. Sig (2-tailed) more than 0.05 or equal, data distribution are normal. Which is means in this case also, the data of pre-test and post-test control group have normal distribution.

After we know that all data have normal distribution, next is homogeneity test. The test for homogeneity determines if two or more populations have the same distribution of a single categorical variable. In this study, the test using Levene's test with value $g f \alpha = 0,05$. Table 5 shows the result of test for homogeneity pre-test and post-test.

Table 5: Result test of homogeneity for pre-test.

Lavene Statistic	df1	df2	Sig.
.005	1	28	.944

Table 6: Result test of homogeneity for post-test.

Lavene Statistic	df1	df2	Sig.
.029	1	28	.866

In the Table 5 and Table 6, shows that Sig (2-tailed) for pre-test are 0.944 and post-test are 0.866. If Sig more than 0.05 or equal, then data are homogeneous. So, data of pre-test and post-test are homogeneous and hypothesis test can be done.

After the data pass all prerequisite test, the next is hypothesis test. This is to examine differences in learning outcomes between experimental groups that use mobile learning and control groups that use conventional learning with ordinary teachers. Hypothesis test using 2 tailed independent sample t test. The formulation of the hypothesis is as follows:

H0 : There's no significant difference from using mobile learning to the learning outcomes for 10th graders.

H1 :There's significant difference from using mobile learning to the learning outcomes for 10th graders. The results are shown in Table 7.

Table 7: Result of independent sample test.

	Group	Sig. (2-tailed)	Mean
Posttest	Experiment	0.125	72.33
	Control	0.125	78.67

Table 7 shows the number of significance obtained is 0.125. And it's greater than 0,05. Then, H0 is accepted. Conclusion is there's no significant difference from using mobile learning to the learning outcomes for 10th graders. Mobile learning can still be considered as an alternative learning approach, but not much different with conventional learning in terms of learning outcomes.

4 CONCLUSIONS

The comprehensive study about mobile learning was still necessary. It is because the mobile learning in Indonesia was in the early stage. This preliminary study could support the other research or developing mobile learning technology for student in the future especially in Indonesia. All the data that are derived from the result brings out the final points. The researcher deduces some great deals that there is no difference between the class with mobile learning and the class with conventional learning. Mobile learning still can be used as an alternative learning approach, but not necessarily, the result will be better than conventional learning.

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