



The Effect of Digital Flashcard on Students' Vocabulary Mastery: An Experimental Research at SMPN 12 Padang

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Abstract

This research is quasi-experimental research. The purpose of this research is to find out the effect of digital flashcards on students' vocabulary mastery at SMPN 12 Padang. The population of this research were the first-year students of SMPN 12 Padang. The research sample was 27 students of class VII.3 as the experimental class and 27 students of class VII.9 as the control class. The instrument of this research was vocabulary test that was conducted into two tests, pre-test and post-test. The instrumentation was created into 20 short answer questions. Based on the data analysis by using Paired Sample T-test in SPSS 26 for windows, the mean of pre-test score in the experimental class was 47.2 while the mean of post-test score in experimental class was 82.0. It can be concluded that the students' who are taught by using digital flashcards as teaching media are better than students who are taught by using conventional media. The significance of the test is 0.000 which is lower than the significance level that is 0.05 with 5% of degree. Moreover, it is also found that the students' score is improving especially for the students in the experimental class which gained 34.8 of their average score.

Keywords: Digital flashcard, vocabulary, and vocabulary mastery

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INTRODUCTION

Vocabulary is one of the crucial components that should be mastered in order to support four skills; listening, speaking, writing, and reading. Harmer (2001) states that vocabulary is one of the most essential components of language and the first things which applied linguists turned their attention. The main point of the statement above is vocabulary should be mastered in language learning. According to Nation (1990), vocabulary mastery is the knowledge that involves understanding the meaning of words and being able to match each word with a synonym or an equivalent word in their language. It means that vocabulary mastery is dealing with the meanings and words. Vocabulary is the key to success in language learning. It can help people read well and comprehend the text well. Therefore, mastering vocabulary can help people to convey their idea in a spoken and written form easily. Otherwise, the students whose less vocabulary will be difficult on understanding the text and expressing ideas in English orally and in written form. So, teachers need ways to help students on developing students vocabulary mastery. Many ways can be done on developing students' vocabulary mastery. Teachers can give an illustration, contextual, and media in teaching vocabulary. This is supported as Munir (2016) states that media is an effective way for teaching and learning vocabulary.

Media is a tool that has an important role in teaching-learning the English language. It can facilitate teachers to transfer or deliver the material to the students. According to Sadiman (2010), teaching media is the things used to transfer messages and attract the students' attention, feeling, and thought that can support the process of learning. Hamer (2016) mentions that media is useful to motivate the students in learning English vocabulary. Based on the statement above, it can be concluded that media is an important tool for teaching vocabulary.

Teachers commonly use various types of media. Media can be classified as follows; a. audio media which means the information only can be heard, b. projected still media, the media need a projector to show the information, c. visual media that shows the information which can be read and seen (Sahid, 2010). The example of visual media is animation, flipchart and digital flashcard. Cross (1991) explains that a flashcard is a simple picture on a piece of card that is used as visual aids teaching and learning process. It means that digital flashcard is one of teaching media that can help teachers in teaching vocabulary well. Additionally, the characteristics of flashcards are having two sides front and back, the front side consists of a picture or symbol, the backside consists of definition or explanation, simple and easy to create. According to

Based on the observation of students at SMPN 12 Padang, the students still have difficulties understanding the new word in the sentence. For instance, the teacher's utterance cannot be caught by the students. This is probably due to the limitation of vocabulary. Moreover, there is a tendency that students are unable to communicate in English, especially with the teachers and peers. One of the possibilities is similarly due to the lack of vocabulary.

Nevertheless, digital flashcard is not commonly used by the English teachers. The teachers are using the whiteboard and orally in teaching vocabulary. For instance, the teachers let the students find out the meaning of the word in a dictionary. The dictionary has only a temporary function. Consequently, the students are not evolving their vocabulary properly. Thus, the teachers should find innovative ways on improving students' vocabulary mastery.

The studies about media have been done by many writers. Some previous studies are relevant to this research. First, Rohman (2016) with the research's title *The Effectiveness of Using Pictures in Teaching Vocabulary*. It shows that using pictures was effective in teaching vocabulary. Second, Khair (2018) researched *The Influence of Using Word Wall On the Students' Vocabulary Mastery at The Second Semester of the Eighth Grade of Smp Dwi Pangga Bandar Lampung in the 2017/2018 Academic Year*. It shows that word wall can improve students' vocabulary mastery. It can be shown by the students' scores in which they achieved high scores after the researcher implemented the treatment of word wall in learning vocabulary. Third, Nugroho (2012) investigated *Improving Students' Vocabulary Mastery Using Flashcards*. Based on his research, flashcards can improve students' vocabulary mastery. It was proved by the test's result. Moreover, there was an improvement in the students' motivation on learning English. It could be seen from students' attention in the learning process.

Following the explanation above, media such as pictures, word walls, and flashcards were proved to be effective in improving students' vocabulary mastery. Based on these considerations, this study is expected to bridge the gap for developing

language skills. Thus, the researcher conducted experimental research with the title “The Effect of Digital Flashcard on Students’ Vocabulary Mastery at SMPN 12 Padang”.

METHOD

The researcher used quasi-experimental research. According to Sugiyono (2015), quasi-experimental research is development research of true experiment design which has experimental group and control group.

The research design that the researcher used is pre-test and post-test. In this research, the researcher taught two classes; experimental class and control class. the experimental class has been taught by using digital flashcards while the control class has been taught by using conventional media.

The population of this research was the seventh-grade students of SMPN 12 Padang. The researcher used the purposive sampling technique to choose the samples. The researcher chose two classes of the students to be divided into experimental class and control class. The samples consisted of 54 students; they are VII.3 as experimental class and VII.9 as control class.

The instrumentation of this research is a vocabulary test. This vocabulary test is divided into some parts of speech, they are nouns and verbs that corresponding to the base competencies. It has been given to the seventh-grade students of SMPN 12 Padang. The test was conducted on short answer questions. Each pre-test and post-test consisted of 20 questions which were created by the researcher. There are two aspects related to the instrumentation: first, validity. According to Ary (2014), validity as the degree to which an instrument measures what it claimed to measure. Moreover, validity is an important consideration in evaluating the instrumentation of the research. This research used the expert validator to test the validity of the instrumentation. The researcher consulted to one of the lecturers in the English Department of Universitas Negeri Padang. The validator in this research is Ms. Dinovia Fannil Kher, S.Pd, M.Pd. Furthermore, the researcher measured the item validity of the vocabulary test by using SPSS. Second, reliability. In this research, the researcher used Kuder – Richardson 20 Formula, as follows:

$$r_i = \frac{k}{(k-1)} \left\{ \frac{s_t^2 - \sum p_i q_i}{s_t^2} \right\}$$

- Notes: r_i = Reliability Kuder-Richardson 20
 k = The total number of questions
 p = Proportion of the correct answers
 q = Proportion of the incorrect answers
 s_t^2 = Total Variant

The result of the reliability test was interpreted to see whether the questions are reliable or it must be revised. The researcher classified the reliability coefficient taken from Guilford cited in Nuryana (2016) as follows:

Reliability Test-Coefficient	Classification
0.80-1.00	More Highly
0.60-0.80	High
0.40-0.60	Fair
0.20-0.40	Low
<0.00	Very Low

The researcher collected the data through a test. There are two kinds of tests that are used in this research; pre-test and post-test. Both of the tests are arranged into 20 short answer questions which are created by the researcher. The test is given for both the experimental class and control class. The purpose of this test was to identify the effect of digital flashcards on students' vocabulary mastery. A pre-test was used to know how far the students' vocabulary mastery was before the researcher gives a treatment. Moreover, the post-test was used to know how far the improvement of students' vocabulary mastery was after using digital flashcards.

The measurement of the students' vocabulary mastery based on the criteria taken from Harris cited in Fiantina (2017) as follows:

No	Score	Level of ability
1	81-100	Excellent
2	61-80	Good
3	41-60	Mediocre
4	21-40	Poor
5	0-20	Very poor

Quantitative data analysis was used by the researcher, which is numerical data that can be formulated using statistical methods. The researcher analyzed the data by using Paired Sample T-test. Paired Sample T-test is used to compare two data between students' pre-test scores and post-test scores to find out the significant difference in students' vocabulary mastery. Before the researcher analyzed the data by using a T-test, the researcher measured the normality and the homogeneity of the data. It is used to see whether the data is normally distributed and homogenous or not. Normality test and homogeneity test is done by using IBM SPSS 26 version for Windows.

1. Normality Test

The normality test is used to show whether or not the data come from a normal distribution. The normality test in this research will use *Kolmogorov – Smirnov* method in IBM SPSS 26 version for Windows. This test was done in both pre-test and post-test from experimental class and control class. The normality test was analyzed by using the Kolmogorov Smirnov formula as follows:

$$KD : 1,36 \frac{\sqrt{n_1 + n_2}}{n_1 n_2}$$

Notes: KD = Kolmogorov-Smirnov
n1 = The total number of Sample obtained
n2 = The total number of Sample expected

The data is normal distribution when the significant value is higher 0,05 than ($P > 0,05$). Otherwise, the data is not normal when the significant value is lower 0,05 than ($P < 0,05$).

The following are the procedures of the Kolmogorov Smirnov Test by using SPSS:

1. Open SPSS
2. Input the data into data view
3. Set the data variables
4. Click analyze - descriptive statistic - explore
5. Add variables into the dependent list and factor list
6. Click plots – normality plots with tests – continue
7. Click Ok

2. Homogeneity Test

The homogeneity test is used to know the homogeneity or similarity of the data between the population of the experimental class and the control class. The homogeneity test was tested by using IBM SPSS 26 version for Windows. This test also was done in pre-test and post-test results from the experimental class and control class. The homogeneity test was analyzed by using Levene's Test formula as follows:

$$W = \frac{(n - k) \sum_{i=1}^k n_i (\bar{Z}_i - \bar{Z})^2}{(k - 1) \sum_{i=1}^k \sum_{j=1}^k (\bar{Z}_{ij} - \bar{Z}_i)^2}$$

Notes: n = The total number of students

k = The total number of the class

$\bar{Z}_{ij} = |Y_{ij} - Y_t|$

Y_i = an average of group i

\bar{Z}_i = an average of group Z_i

\bar{Z} = an average of group Z_i

If the significant value $< 0,05$, it means the data is not homogenous, and if the significant value $> 0,05$, it means the data is homogenous. The following are the procedures of Levene's Test by using SPSS:

1. Open SPSS
2. Input the data into data view
3. Set the data variables
4. Click analyze - descriptive statistic - explore
5. Add variables into the dependent list and factor list
6. Click plots – power estimation – continue
7. Click Ok

3. Hypothesis Test

After the normality test and homogeneity test will have done in both sample classes, so the researcher did a hypothesis test. The hypothesis test is used to know whether the research hypothesis is accepted or rejected. Thus, the researcher used Paired Sample T-test in analyzing the data. The following are the formulas of Paired Sample T-test:

$$t_{hit} = \frac{\bar{D}}{\frac{SD}{\sqrt{n}}}$$

Where:

$$SD = \sqrt{var}$$

$$var(s^2) = \frac{1}{n-1} \sum_{i=1}^n (x_i - \bar{x})^2$$

- Notes: t = T count
 \bar{D} = The average difference in measurement of 1 and 2
 SD = Standard deviation in the measurement of 1 and 2
 n = Total sample

The following are the procedures of Paired Sample T-test by using SPSS:

1. Open SPSS
2. Input the data into data view
3. Set the data variables
4. Click analyze - compare means – Paired Sample T-test
5. Add variables into paired variables
6. Click Ok

RESULT AND DISCUSSION

Research Finding

1. Data analysis of data collected from Test

a. Normality test

This test is used to show whether or not the data come from a normal distribution. The data were analyzed by the Kolmogorov-Smirnov test in SPSS 26. The scores were analyzed toward several data classes. First, both data from the control class and the experimental class. The result of the normality test could be seen in the following table.

**Table 1. The Normality of Pre-Test
Kolmogorov-Smirnov**

	Statistic	df	Sig.
Experimental Class	.164	27	.061
Control Class	.091	27	.200

The table description above showed the data analysis of students' vocabulary pre-test in both experimental and control class shown that the significance (sig.) value is 0.061 for the experimental class and 0.200 for the control class. If the sig. the level is higher than 0.05 with a 5% degree, the data were normally distributed. From the table can be concluded that the data of the vocabulary pre-test in both classes were normally distributed.

**Table 2. The Normality of Post-Test
Kolmogorov-Smirnov**

	Statistic	df	Sig.
Experimental Class	.130	27	.200*
Control Class	.153	27	.107

The table description above showed that the data analysis of students' vocabulary post-test in both experimental and control class shown that the significance (sig.) value is 0.200 for the experimental class and 0.107 for the control class. If the sig. the level is higher than 0.05 with a 5% degree, the data were normally distributed. From the table, it can be concluded that the data of the vocabulary post-test both groups were normally distributed.

b. Homogeneity Test

This test is used to find out whether or not the sample variance was homogenous or not. The researcher used Levene's test to do the homogeneity test. The data are presented in the table below

Table 3. The Homogeneity of Pre-Test

	Levene statistic	df1	df2	Sig.	Description	
Average	Based on mean	.535	1	52	.468	Homogenous

The table shows that the significance level from the test of homogeneity of the pre-test was 0.468 which is higher than 0.05 with a 5% degree. It can be concluded that the distribution of the pre-test data was homogeneous.

Table 4. The Homogeneity of Post-Test

	Levene statistic	df1	df2	Sig.	Description	
Average	Based on mean	.957	1	52	.332	Homogenous

The table shows that the significance level from the test of homogeneity of the post-test was 0.332 which is higher than 0.05 with a 5% degree. It can be concluded that the distribution of the post-test data was homogeneous.

2. Research finding

These research findings can be seen in the following table. The table shown the total number of students were 27 students in each sampling class.

Table 5. Descriptive Statistic

	N	Minimum	Maximum	Mean	Std. Deviation
Pre-Test	27	5	90	47.22	22.116
Experiment					

Post-Test Experiment	27	35	100	82.04	15.766
Pre-Test Control	27	10	95	47.78	24.742
Post-Test Control	27	20	100	57.96	19.575
Valid N (listwise)	27				

The data above were taken from two classes VII.3 as experimental class and VII.9 as control class. The total number of students was 54 students which are divided into 27 students for the experimental class and 27 students for the control class. The score above is the result of the pre-test conducted before the researcher did the treatment for the students. The minimum score of the experimental class was 5 while the maximum score of the experimental class was 90. Otherwise, the minimum score of the control class was 10 while the maximum score of the control class was 95. The mean of Pre-test experimental class was 47.2 while standard deviation 22.1 while the mean of Pre-test control class was 47.7 with the standard deviation was 24.7.

The minimum score of Post-test experimental class was 35 while the maximum score of the experimental class was 100. Otherwise, the minimum score of Post-test control class was 20 while the maximum score of the control class was 100. The mean of Post-test experimental class was 82.0 with standard deviation was 15.7 while the control class was 57.9 with standard deviation was 19.5.

The collected data was analyzed by using Paired Sample T-test to answer this research problem formulation whether there were significant differences between the mean scores in the experimental class and control class.

Table 6. Paired Sample Test
Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre-Test Experiment Post-Test Experiment	-34.815	24.158	4.649	-44.371	-25.258	-7.488	26	.000
Pair 2	Pre-Test Control Post-Test Control	-10.185	18.733	3.605	-17.596	-2.775	-2.825	26	.009

The table above is the result of the data after analyzed pre-test and post-test both of the classes by using the Paired sample test in SPSS 26. The table shows the significant value (2-tailed) is 0.000 for the experimental class and 0.009 for the control class ($p < 0.05$). Thus, the results of the experimental class and control class experiencing changes. It can be concluded that the treatment can improve students' vocabulary mastery. Therefore, it means that H_0 is

rejected and H_a is accepted. It can be concluded that there is a significant difference between the mean students learning outcomes in the experimental class and control class.

Based on the analysis above, it shows that $t_o > t\text{-table}$. It can be concluded that there was a significant effect of using digital flashcard on students' vocabulary mastery: An Experimental Research at SMPN 12 Padang.

Discussion

The researcher conducted a quasi-experimental using digital flashcard and without using digital flashcards were running well. The purpose of this research is to find out whether or not the digital flashcard is effective in students' vocabulary mastery in the first year of SMPN 12 Padang. Based on the collected data, the digital flashcard was effective on students' vocabulary mastery. Before the researcher gave a treatment, the researcher did pre-test to know students' ability on vocabulary. The students' pre-test was 47.2. After the researcher gave a treatment, the researcher did post-test to know students' final ability on vocabulary. The students' post-test score was 82.0. The findings of this research were similar to the research conducted by Nugroho (2012), in his research entitled "Improving Students' Vocabulary Mastery Using Flashcards". His research showed that flashcard can improve students' vocabulary mastery. Thus, the conclusion is the digital flashcard has a good effect on students' vocabulary mastery.

CONCLUSION

The research was conducted for VII.3 as the experimental class and VII.9 as the control class at the first year of SMPN 12 Padang in the 2021/2022 academic year. Based on the findings and discussion, several conclusions can be described, the first is the students who are taught by using digital flashcards as media have better vocabulary mastery than the students who are taught by using conventional media in the SMPN 12 Padang. Then, the students who are taught by using digital flashcard as media significantly improved their vocabulary scores from 47.2 of pre-test to 82.0 of post-test. While the students who are taught by using conventional media was slightly improved from 47.7 of pre-test to 57.9 of post-test.

Furthermore, after the researcher conducted the test; pre-test, and post-test, and gave the treatment for four times, the researcher concludes that the use of digital flashcard as media are effective on improving students' vocabulary mastery at SMPN 12 Padang. By using digital flashcards can make students easier to expand their vocabulary.

Based on the conclusion above, there were some suggestions for English teacher, students, and next researcher as follows:

1. For Teacher
 - a. The English teacher is suggested to use digital flashcard as a media in the teaching and learning process to improve students' vocabulary mastery.
 - b. The teacher should be more creative in the teaching and learning process in order to increase students' motivation in learning English.
2. For Students

- a. The students should develop their vocabulary by using interesting media such as digital flashcard because it can attract the students' interest and motivation in the learning process.
 - b. The students should practice the vocabulary that they have learned with their friends, family or teacher.
3. For The Next Researcher
- a. The next researcher is suggested to use digital flashcard in other topics.
 - b. The next researcher can apply digital flashcard at different level.

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