Dictionary Use to Increase Students' Vocabulary Mastery: Electronic Dictionary or Printed One?

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Abstract: Dictionary usage is one of potential vocabulary learning strategies in developing learning process. With the development of digital technology, types of learners' dictionaries have been diversified during the last two decades. This study had been designed to investigate whether students taught with e-dictionary achieve vocabulary score better than students taught without e-dictionary. The study employed a quasi-experimental study, particularly none-equivalent control group design pattern in which two groups studied vocabulary, one by using electronic dictionary (experiment class), and the other by using printed dictionary (control class). After ensuring the homogeneity, two classes were finally chosen as the sample of this research as the experiment class and control class. Both of classes consisted of 34 students with almost similar English subject average score. Result indicated that there was a significant difference between the achievement of the experimental and control groups. The means were 61.426 for the control group, and 71.471 for the experimental group. These differences in the students' vocabulary learning scores were attributed to the method of instruction used in the study; electronic dictionary. In addition, the result of independent samples test (α = 0.05, df = 68-2 = 66) showed that t-value was higher than t-table (3.825 ≥ 1.9966) and Sig (2-tailed) was smaller than 0.05 (0.00 ≤ 0.05). In summing up that the use of e-dictionary proved to be a powerful tool for improving students' achievement in vocabulary learning.

1 INTRODUCTION

There has been a widely spread belief that EFL curriculum in Indonesia changed over the time. Different approaches, methods and techniques have been introduced to best facilitate English language learning as well as to meet to the perceived needs and demand both at micro and macro levels (Hakim, Riswanto, & Rafiska, 2016). The rapid change and development of technology also affected teaching learning process within the classroom. Nowadays, electronic dictionaries become one of the most popular electronic materials among English language learners, mostly from Taiwan, Japan, Hong Kong, and Indonesia. "87% of the Chinese English as a second language (ESL) students in Vancouver that had been surveyed, had an electronic dictionary." (Tang, 1997). In line with the phenomena above, more students in more countries finally have their electronic dictionary in their gadget, such as in their phones, android, and laptop. This fact also happens to the Indonesian people.

Based on the researchers' observation and interview with students in some senior high schools in the tenth grade in the country, most students had their electronic dictionary in their electronic devices, such as hand phone. In addition, there is only a small number of students who bring printed dictionaries to the classroom. They claimed that bringing printed dictionary is more complicated than an electronic dictionary in their gadget. However, based on the researchers' interview with some English teachers in the same schools, their vocabulary mastery was not considered good. When they were in teaching and learning process, some students were still confused to define a word's meaning, even to pronounce that word correctly. Moreover, when their teacher asked them to define a word, they were frequently silent; they did not know the definition. In addition, the result of their English test is still not satisfying the teacher. Actually, this case happened because electronic dictionary is not used effectively in this school. Although most of students had their own electronic dictionary in their hand, they were still afraid of using it in front of their teacher since electronic gadgets (including phone or laptop) was not allowed during teaching and learning process in the school. Their English teachers also do not permit their students to use an electronic dictionary. It is a must for students to use a printed dictionary when

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English subject is being taught. The teachers admitted that they did not know whether the electronic dictionary is effective or not to use electronic dictionary in English teaching and learning process.

Regarding to the teachers' fear of letting students use electronic dictionary, although more learners appeared to take advantage of the technology, there is little research on how learners use electronic dictionaries, and how electronic dictionaries are related to English vocabulary learning and English learning in general. In addition, even though learners seem to be very excited about electronic dictionaries' convenience, many educators and researchers are concerned about their potentially negative effects on language acquisition. They are doubt about the value of electronic dictionaries for some reasons, such as their poor quality and the possibility of encouraging translation rather than guessing. "Using their intuition or personal experience rather than empirical evidence, some educators even advocate banning the use of electronic dictionaries in their classes" (Tang, 1997).

The use of electronic dictionaries in foreign language learning settings has been reported to facilitate vocabulary enhancement, often better than paper dictionaries" (Fageeh, 2014). Zarei & Gujjar (2012) investigated the contribution of electronic and paper dictionaries to Iranian EFL learner's vocabulary learning and concluded that newly electronic dictionaries on CD-ROM, internet, or as hand-held one, have better contributions to vocabulary learning in EFL students. This is somehow due to their high capacity of vocabulary, their speed in looking new word up, their low weight, colorful LCD, stylish character and many others in compression with paper back dictionaries which are fragile, heavy to handle and time consuming while looking up new words. In addition, paper dictionaries will become out-of-date after publishing, while electronic dictionaries can be easily up-dated by connecting to the internet. In addition, Flynn (2007)from School of Humanities, University of Birmingham, United Kingdom investigated the effects on vocabulary knowledge and reading comprehension by using three classes completed with electronic dictionaries, printed dictionaries, and no dictionaries for each. He concluded that electronic dictionary users were able to achieve significantly higher scores than students that did not use dictionaries. Moreover, electronic dictionary users scored significantly higher than printed dictionary users on the immediate post-test productive measure.

Regarding to the previous researches above, as a scholar or a candidate of teacher, the researchers were interested in investigating the effect of using e-dictionaries toward students' vocabulary mastery. It is important to prove the effect of electronic dictionaries on students' vocabulary mastery at other places or objects and other participants or subjects since all of previous studies above were conducted at students of university in Iranian and Japan, or foreign countries.

Whether negative or positive, the new technology with new functions seems to have affected the way students consult a dictionary, although it is not known exactly what the effects are. Given the popularity of electronic dictionaries among Indonesian students, more research is needed to uncover how electronic dictionaries affect English learning so that educators can provide students with informed advice. This study was conducted to investigate the effect of electronic dictionary on students' vocabulary mastery at the tenth grade students of Senior High School Number 3 Bengkulu, Indonesia.

2 LITERATURE REVIEW

Vocabulary is one of language components, especially in English, that can affect the all macro skills. In other words, good vocabulary mastery is very important for everyone who is learning a language because, besides grammar, it is always related to listening, speaking, writing, and reading. In order to comprehend more about why vocabulary has an important role in learning the language, it is better to look at the definition of the vocabulary first.

In Merriam-Webster (n.d.), vocabulary is defined as a list or collection of words and phrases usually alphabetically arranged and explained or defined; a sum or stock of words employed by a language, group, individual, or work or in a field of knowledge; a list or collection of terms or codes available for use (as in an indexing system); and a supply of expensive techniques or devices (as of an art form). In addition, Hornby, Cowie, & Lewis, (2000) defines vocabulary as all the words that a person knows or uses; all the words in a particular language; the words that people use when they are talking about particular subject; and a list of words with their meaning, especially in a book for learning foreign language.

Besides those definitions, some experts proposed some other definitions. According to Richards &

Renandya (2002), vocabulary is the core component of language proficiency and provides much of the basis for how well learners speak, listen, read, and write. In addition, Richards & Schmidt (2013) said that vocabulary is a set of lexeme, including single words, compound words, and idioms. Furthermore, regarding to vocabulary term, Ur, (2011) stated that vocabulary can be defined, roughly, as the words we teach in the foreign language.

From the all definitions above, it can be summarized that vocabulary is the core component of language proficiency that consists of a set of lexeme which provides much of the basis for how well learners speak, read, listen, and write. Moreover, it can be summed up that vocabulary is all the words that are known and used by a person in a language, completed with their meanings and the meanings are used depend on the context. Furthermore, those definitions clearly show that vocabulary, besides the other English components and skills, is the first and very basic element that should be learned by English learners to master English well. Thus, learning vocabulary is a crucial matter in developing learners' English.

2.1 What is Vocabulary Mastery?

In brief, vocabulary mastery can be defined as a number of vocabulary (words) that owned by a language user in a language, which contains information about its meaning, form, and usage in the context of communication. It is a very basic knowledge that learners should master first before mastering English overall. It is because vocabulary learning is a principal issue for English learning because it comprises the basic building blocks of English sentences. Furthermore, vocabulary takes an important part in the language use, particularly when students want to convey and share their opinion orally and written. The students can speak fluently and have a good writing if they have some vocabularies. Besides, it is also one of the factors to master English as a foreign language. Alqhatani, (2015) said; in order to understand the language, vocabulary is crucial to be mastered by the learner.

Based on the opinion about vocabulary mastery above, it can be said that it is quite complicated to master vocabulary since it is the main elements of language skill. If the students want to speak English, they have to know some vocabularies first. If they require to be able to write, they also have to learn some vocabularies. And if they want to comprehend what people speak through listening, they have to study some vocabularies too.

From those explanations, it can be concluded that vocabulary is involved in each aspect of our live, and it is crucial to be acquired, especially when we talk**.** By mastering vocabulary well, it avoids mistakes in delivering message either through speaking or writing and receiving message either through listening or reading. Mastering vocabulary will help the language learners, particularly English, to convey message without feeling stuck because of thinking about what vocabulary should be said.

2.2 Printed Dictionary vs Electronic Dictionary

The experts had proposed some definitions of electronic dictionary. Aust, Kelley, & Roby, (1993) defined an electronic dictionary as an electronic aid that offers immediate access to reference information with a clear and direct return path to the target information. In the same way, another expert stated that electronic dictionary refers to a dictionary used in electronic background whether in a compact disc or online. The difference between printed and electronic dictionary is that the latter can handle a larger amount of data and operate translation. This efficiency found in the electronic dictionary has made it more practical and feasible to combine sound, visual and text (Omar & Dahan, 2011).

Being able to have good vocabulary mastery requires a comprehensive training and a deep understanding on how to use dictionary. EFL learners should be familiarized with different kinds of dictionaries in the market as well as their advantages and disadvantages. To collect data insulting to the form of an electronic dictionary or printed dictionary is a remarkably hard task. According to Cerna (as cited Zarei & Gujjar, 2012), publication of dictionaries is a challenging and time-consuming enterprise with its own peculiar difficulties. The same or similar problems may exist in the preparation of electronic dictionaries.

Before the emergence of electronic science and the development of electronic dictionaries, traditional printed or paper dictionaries were pursuing. Features like shape, size, and quality were different, but application policies were the same. As mentioned in Encarta Dictionary on CD-ROM version 2005, from the age of Sumerian, when the first dictionary was used, until recently paper dictionaries have been the only source for vocabulary learning and research works.

3 METHODS

Based on the objective of study, the research method used in this study was quasi-experimental study, particularly nonequivalent control group design pattern. This design is almost similar to pretest-posttest control group design, but in this design, either experiment group or control group was not chosen randomly.

Thompson & Panacek (1995) also stated that a quasi- experimental design often have manipulation of the independent variable or control of the study setting, but rarely have randomization.

The population of this research was the tenth grade students of senior high school number 3 Bengkulu, Indonesia. The total number of students was 302 students, which are divided into nine classes. To determine the number of sample in this research, it was considered based on the problem, the objective, hypothesis, research method, and instruments besides the time, power, and fund. From those considerations, so the technique used to take the sample was purposive sampling. Purposive sampling was sample-determining technique through particular consideration (Sugiyono, 2010). This technique was used by considering the research design used which needed control class and experiment class.

Determining the classes that were the sample of this research was seen based on the ability level owned by each sample class. So, the researcher used every class' average score from all classes in the population. In addition, the number of students in the class also considered it. In other words, the sample of this research was homogeneous in terms of grade, the number of students, and English average score.

Based on data above, so sample for this research was class X MIA 1 as control class (learning vocabulary using printed dictionary) and X MIA 2 as the experiment class (learning vocabulary using electronic dictionary).

4 RESULT AND DISCUSSION

4.1 Pre-Test Result

Pre-test was conducted for both experiment class and control class in Senior High School Number 3 Bengkulu, Indonesia. The pre-test was given before the instructional intervention to measure the starting of the two classes; experiment and control class. This test was the way to see the students' vocabulary mastery before the researcher gave the instructional intervention. The researcher took X MIA 2 as the experiment class and X MIA 1 as the control class. In pre-test, students were asked to do the test which consisted of questions, and it was multiple-choice question with five options; A, B, C, D and E. Both groups were given the same questions, and they had to do the pre-test individually in 80 minutes. The pre-test result was analysed by using IBM SPSS Statistics 20. The following table was the result of pre-test scores got from the experiment and control group.

Table 1: Descriptive Statistics for Pre-Test Result

Group	N	Min	Max	Mean	SD	SE Mean
Exp.	34	20.0	65.0	42.132	12.6601	2.17118
Control	34	22.5	65.0	45.441	11.7175	2.00953

As displayed in Table 1, the mean scores of experiment group and control group are 42.132 (SD = 12.6601) and 45.441 (SD = 11.7175), respectively. In addition, the lowest score in the experiment class was 20, and the highest score in the same class was 65. Whereas, the lowest and the highest score in control class were 22.5 and 65, respectively. In order to explore the significance of the mean differences of the experiment and control classes, another independent sample t-test was employed. The results of the t-test are shown in Table 2.

Table 2: Independent Samples t-test for Pre-Test

Pre-Test Diff.	Paired Difference			*t*	*df*	Sig. (2-tailed)
	Mean	SD	SE			
Experiment-Control	-3.3088	18.57337	2.9548	-1.118	66	0.267

Table 2 shows that obtained t-value for 66 degrees of freedom is −1.118. Meanwhile, t-table was found 1.9966 at level of significance = 0.05 with *df* = 66, two tailed of test. The t-value was compared to the t-table, and t-value was found smaller than t-table. It means that there is no significant difference between the groups at the beginning of instructional intervention and they are homogenized. The result of students' pre-test in both experiment and control class is illustrated in the figure below.

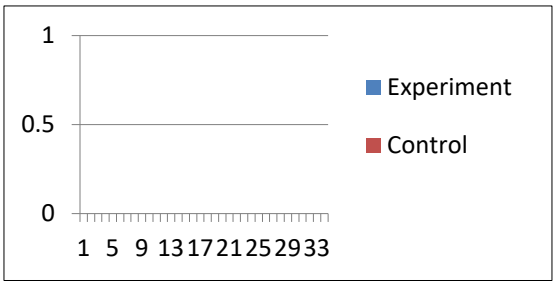


Figure 1: Pre-Test Score

Figure 1 indicated that students' vocabulary mastery was still low at the beginning. It can be seen from mean score of experiment class, which was only 42.132, and control class, which was only 45.441. From this result, the researcher concluded that the average score for both classes were low; two groups had similar background knowledge.

4.2 Instructional intervention

After giving pre-test, the researcher gave the instructional intervention to both experiment class and control class which was helped by an English teacher of Senior High School Number 3 Bengkulu, Indonesia. In teaching and learning process, the researcher used electronic dictionary as the instructional intervention in experiment class while in control class, the researcher only used printed dictionary in teaching and learning process. The researcher did the instructional intervention as many as eight (8) meetings in X MIA 2 as the experiment class. The limitation of the time for conducting more meetings was caused by the curriculum rule where the process of teaching for vocabulary could only be done during General English class that was only done twice a week. Moreover, it was also caused by the semester examination that was held earlier than semesters before.

4.2.1 Instructional Intervention for Experiment Class (Using Electronic Dictionary)

The researcher gave the instructional intervention to the students by using electronic dictionary (E-Dictionary). Since the material of study had to be taught in all of the four skills (listening, speaking, reading, and writing), in the first meeting, the researcher gave the material about Recount Text by reading a text entitled "Meeting My Idol" with some highlighted words inside. Then, a vocabulary exercise was given to the students. In this section, students had to find the definition of each word by using monolingual electronic dictionary and matched it with the available definitions beside the list of highlighted words. While the students were finding the definition of the unknown words and did the exercise, the researcher monitored students' activity. The researcher gave the instructional intervention until the students got a good progress at the end of meeting.

4.2.2 Instructional intervention for Control Class (Using Printed dictionary)

Different to experiment class, students in control class were taught directly by their English teacher, not by the researcher. It is due to avoiding biased in taking the data. In the control class, the teacher gave the same material as the experiment class related to the four English skills without using electronic dictionary. In other words, students in control class only used printed dictionary to find the definition of the unknown words and did the exercise after reading the text. In teaching, the teacher gave the material, explained the whole material based on the lesson plan that had been designed, gave some examples, gave some material about English vocabulary, asked the students to do some task, and asked them to collect their task.

4.3 Post-Test Result

After the researcher had done the instructional intervention by using electronic dictionary for eight (8) meetings, the researcher gave the post-test for both classes at the last meeting. The post-test instrument was same as the pre-test instrument, and the researcher gave the same instrument to the students without informing them first. Post-test was aimed at knowing whether there was a significant effect of electronic dictionary as a instructional intervention that was given to the experiment class or not.

The result of the post-test score in experiment class is better than in control class. It can be seen from the students' post test score. The result of post-test was analyzed by using IBM SPSS Statistics 20. The result of post-test from statistical computation is shown in the following table.

Table 3: Descriptive Statistics for Post-Test Result

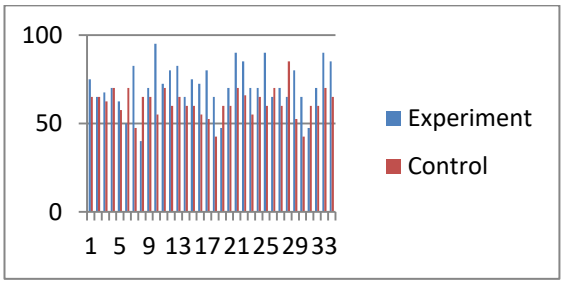
Group	N	Min	Max	Mean	SD	SE Mean
Exp.	34	40.0	95.0	71.471	12.7938	2.1941
Control	34	42.5	85.0	61.426	8.4128	1.4428

As table 4.3 indicates, the mean score of post-test in experiment group is 71.471 (*SD* = 12. 7938), while that of control group is 61.426 (*SD* = 8.4128). Moreover, the lowest score in the experiment class was 40, and the highest score in the same class was 95. Whereas, the lowest and the highest score in control class were 42.5 and 85, respectively. In order to examine the differences and see whether they were significant, an independent sample t-test was applied. The results are demonstrated in Table 4.

Table 4: Independent Samples t-test for Post-Test

Post-Test Difference	Paired Difference			*T*	*df*	Sig. (2-tailed)
	Mean	SD	SE			
Experimen t-Control	10.044 1	15.7029 1	2.626 0	3.8 25	6 6	0.0 00

Table 4 clearly indicates that the mean difference of the post-test measured at the time of post-test was significant, indicating that the type of dictionary did have an influence on vocabulary scores. With set level of significance = 0.05 and *df* = 66, it was found that t-value was higher than t-table (3.825 ≥ 1.9966), and Sig. (2-tailed) was smaller than 0.05. Therefore, it is concluded that there is a significant difference in vocabulary scores of the experiment and control groups on the post-test and that the experiment group performed better on the test. It could be claimed that the experiment group significantly outperformed the control group in vocabulary test. The total score of students' post-test in both experiment and control class is drawn in Figure 2.



As displayed in Figure 2, there was difference between students' post-test score in experiment class and control class. Students' vocabulary achievement in both experiment class and control class increased to moderate level. However, there was still a significant difference between both classes' mean score. It can be seen from mean score of both experiment class and control class, which was 71.471 and 61.426, respectively. In conclusion, students taught by using e-dictionary achieved vocabulary score better than those taught without e-dictionary or by using printed dictionary.

4.4 The Normality of the Data

Before analyzing the data, the normality of the data should be measured. It can be seen on the charts below.

4.4.1 The Result of Pre-Test Score Normality Test

The result of normality data test for pre-test score both in experiment and control class is demonstrated in Table 5.

Table 5: Normality Tests of Pre-Test Score

Group	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Exp.	.148	34	.05 6	.954	3 4	.1 6 5
Control	.145	34	.06 9	.951	3 4	.1 2 9

As Table 5 indicates, the significance values of experiment class and control class pre-test score calculated by Shapiro-Wilk formula were 0.165 and 0.129, respectively. It means that they are higher than the level of significance (0.05). So, it can be assumed that the data in pre-test results were distributed normally.

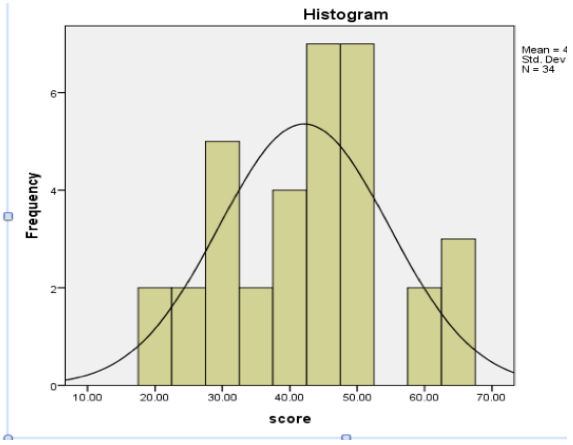


Figure 3: Histogram of Pre-Test Normal Data in Experiment Class

Meanwhile, the histogram of pre-test scores normal data in the control class is illustrated in Figure 4;

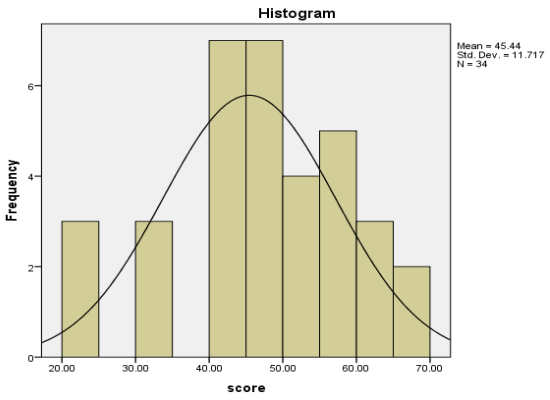


Figure 4: Histogram of Pre-Test Normal Data in Control Class

The pre-test result of both experiment class and control class was almost similar where the pre-test mean score of experiment class was 42.132 (the average of students' mastery was 42.132 x 100% = 42.132%), and pre-test mean score of control class was 45.441 (the average of students' mastery was 45.441 x 100% = 45.441%). The qualification of the students' achievement level is shown in Table 4.6.

Table 6: Scale Interval Percentage of the Students' Achievement

Interval Percentage	Qualification
90% - 100%	Very Good
80% - 89%	Good
60% -79%	Moderate
40% - 59%	Low
0% - 39%	Failure

Since the average of students' mastery in experiment class was 42.132% and in the control class was 45.441%, it is concluded that both classes were in low qualification level.

4.4.2 The Result of Post-Test Score Normality Test

The result of normality data test for post-test score both in experiment and control class is displayed in Table 7.

Table 7: Normality Tests of Post-Test Score

Group	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Exp.	.159	34	.028	.951	34	.130
Control	.168	34	.016	.938	34	.053

As displayed in Table 7, the significance values of experiment class and control class post-test score calculated by Shapiro-Wilk formula were 0.130 and 0.053, respectively. It means that they are higher than the level of significance (0.05). So, it can be assumed that the data in pre-test results were distributed normally.

The histogram of post-test scores normal data in the experiment class is illustrated in Figure 5

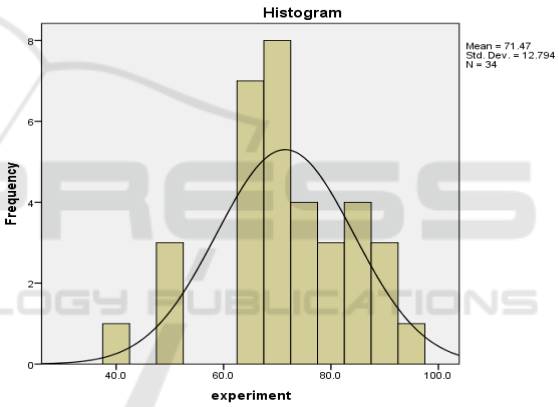


Figure 5: Histogram of Post-Test Normal Data in Experiment Class

Meanwhile, the histogram of post-test scores normal data in the control class is illustrated in Figure 4.6.

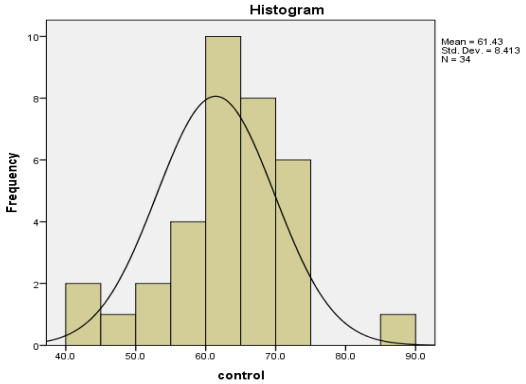


Figure 6: Histogram of Post-Test Normal Data in Control Class

The post-test result of both experiment class and control class was different where the post-test mean score of experiment class was 71.471 (the average of students' mastery was 71.471 x 100% = 71.471%), and post-test mean score of control class was 61.426 (the average of students' mastery was 61.426 x 100% = 61.426%). Based on the table of scale interval percentage of the students' achievement, the qualification of students' achievement for both classes was increasing from low to moderate. However, there was still significant difference between the post-test mean score achieved by experiment class and the post-test mean score achieved by control class.

4.5 The Homogeneity of the Data

4.5.1 Homogeneity of Pre-Test

Levene Statistics in IBM SPSS Statistics 20 was used to analyze the homogeneity of variances of experiment and control class pre-test score. The results are displayed in Table 8 and Table 9.

Table 8: Test of Homogeneity of Variances

Levene Statistic	df1	df2	Sig.
1.259	7	23	.313

Table 9: Analysis of Variances

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1843.172	10	184.317	1.230	324
Within Groups	3445.982	23	149.825		
Total	5289.154	33			

From the SPSS output in both table 4.8 and table 4.9 above, it can be seen that Levene's test was 0.313, and it was bigger than 0.05 (0.313 > 0.05). In other words, it is concluded that the data variances are homogeneous or equal.

4.5.1 Homogeneity of Post-Test

Levene Statistics in IBM SPSS Statistics 20 was also used to analyze the homogeneity of variances of experiment and control class post-test score. The results are demonstrated in Table 10 and Table 11.

Table 10. Test of Homogeneity of Variances

Levene Statistic	df1	df2	Sig.
1.000	5	23	.440

Table 11: Analysis of Variances

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	974.238	10	97.424	.506	.868
Within Groups	4427.232	23	192.488		
Total	5401.471	33			

From the SPSS output in both table 10 and table 11 above, it can also be seen that Levene's test was 0.440, and it was bigger than 0.05 (0.440 > 0.05). In other words, it could be concluded that the data variances are also homogeneous or equal.

4.6 The Analysis of the Pre-Test and Post-Test

In analyzing the pre-test and post-test result, the score of both experiment and control class was compared to know whether any significant difference or not. It can be seen in the following table.

Table 12: The Analysis of Pre-Test and Post-Test

Group	Mean Score		Increasing
	Pre-Test	Post-Test	
Experiment	42.132	71.471	29.339
Control	45.441	61.426	15.985

In the pre-test, the average scores between the experiment class and control class were compared. In experiment class, which was treated by using electronic dictionary, the increasing was higher than control class, which was taught by using printed dictionary. It can be seen that in the post-test result, the mean score in experiment class was 71.471 while in control class was 61.426; the mean scores in both experiment class and control class was increasing as it was compared to the mean score result in pre-test. The increasing of mean score in experiment class was 29.339 points and in control class was only 15.985 points; it showed the different achievement of both classes in post-test.

Based on the data, the result of pre-test in experiment class was: there was 0 (0%) student in Very Good qualification, 0 (0%) student in Good qualification, 5 (14.7%) students in Moderate

qualification, 17 (50%) students in Low qualification, and 12 (35.3%) students in Failure qualification. Meanwhile, in post-test, there were 4 (11.8%) students in Very Good qualification, 7 (20.6%) students Good qualification, 19 (55.9%) students in Moderate qualification, 4 (11.8%) students in Low qualification, and 0 (0%) students in Failure qualification.

Students' pre-test and post-test score in experiment class can be also seen on figure below.

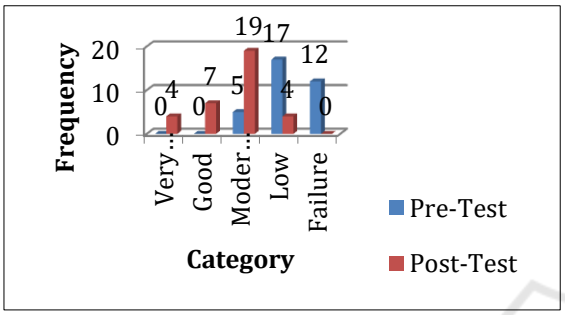


Figure 7: Students' Pre-Test and Post-Test Score in Experiment Class

Based on the figure above, the post-test score was higher than pre-test score. It means that teaching vocabulary by using electronic dictionary could not only increase the students' score in vocabulary test, but also could improve students' achievement in vocabulary mastery.

Based on the data, the result of pre-test in control class was: there was 0 (0%) student in Very Good qualification, 0 (0%) student in Good qualification, 5 (14.7%) students in Moderate qualification, 23 (67.6%) students in Low qualification, and 6 (17.6%) students in Failure qualification. Meanwhile, in post-test, there was 0 (0%) student in Very Good qualification, 1 (2.9%) student in Good qualification, 24 (70.6%) students in Moderate qualification, 9 (26.5%) students in Low qualification, and 0 (0%) student in Failure qualification.

Students' pre-test and post-test score in control class can be also seen in Figure 8. The post-test score in control class was also higher than pre-test score. However, the increasing of students' score was not very significant. In other words, students taught by using printed dictionary could not achieve vocabulary score better than students taught by using electronic dictionary.

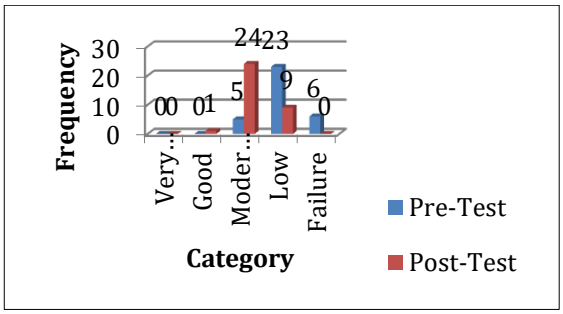


Figure 8 Students' Pre-Test and Post-Test Score in Control Class

5. CONCLUSION

This study investigated if there are any considerable differences between the experimental and control groups' results due to educational method (electronic dictionaries vs. paper dictionaries) on vocabulary learning. Results indicated that there was a significant difference between the achievement of the experimental and control groups, in favor of the experimental group. The means were 61.426 for the control group, and 71.471 for the experimental group. These differences in the students' vocabulary learning scores were attributed to the method of instruction used in the study. This means that the use of ED proved to be a powerful tool for improving students' achievement in vocabulary learning.

The present study also showed that newly invented dictionaries, as hand-held electronic dictionaries, have better contributions to vocabulary learning in EFL students. This is somehow due to their high capacity of vocabulary, their speed in looking new word up, their low weight, colorful LCD, stylish character, and many others in compression with paper dictionaries which are fragile, heavy to handle, and time consuming while looking up new words. Moreover, electronic dictionaries can be easily up-dated by connecting to the Internet, while the paper dictionaries will become out-of-date after publishing.

Using electronic dictionaries gives students more opportunities to acquire a greater understanding of the vocabulary used. In addition, electronic dictionaries provide practice for students by offering a real language experience. Bataineh (2014) supports these findings and reported that using electronic dictionaries to enhance vocabulary learning maybe highly beneficial because it motivates EFL students, stimulates their enthusiasm, enriches the educational environment, emphasize the individual's needs, and reduces the stresses and anxieties associated with

learning a foreign language by making vocabulary and abstract concepts more accessible and easier to understand.

These findings are also consistent with the findings of prior studies using this form of technology in vocabulary learning such as Koga in Amirian & Heshmatifar, (2013) who found that students accessed the contextual meaning more than two times faster with an electronic dictionary than a printed dictionary. Furthermore, the results are similar to those of Hulstijn (1993) who showed that some L2 learners decide not to use the printed dictionary (PD) when meeting unfamiliar words in a text. One of the reasons often reported by students is the time involved in flicking through the dictionary pages and the subsequent disruption of the flow of reading. An electronic dictionary may provide a good solution to this problem since the ease and speed of using may encourage the learner to look up unfamiliar words.

In other words, it can be summed up that students taught with e-dictionary achieve vocabulary score better than students taught without e-dictionary, or by using printed dictionary. This finding indicates that electronic dictionaries are effective to be used in teaching and learning English vocabulary. This is due to the ease of use, and the variety of facilities available on the electronic dictionary, including synonyms, antonyms, words' pronunciation, and practical examples which can help students to be easier to acquire new English vocabulary as well as to be easier to memorize them. Finally, they were easier to answer all questions related to English vocabulary.

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