

The Effect of Crossword Puzzles on Learners' Vocabulary Development in EFL Context

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ABSTRACT

Vocabulary mastery plays an important role in learning English. The teacher's role is very important in helping students achieve their goals because acquiring a sufficient number of words is a fundamental requirement for English proficiency. This drives this study to investigate the effectiveness of the usage of crossword puzzles to enhance vocabulary mastery. This study was conducted at SMP Annur Assalafy Pasuruan. This study was conducted in a design of experiments, a semi-empirical study using quantitative techniques. The sample used in this study included students from class 7 of SMP Annur Assalafy Pasuruan, with a total of 36 students in the two classes. Class 7A is the control class and Class 7B is the experimental class. The instrument used in this survey is a multiple-choice question with up to 20 test items. The records series strategies used in this study have been pre-test, treatment, and post-test. The results of this study show that the use of crossword puzzles effectively improves students' vocabulary. According to the SPSS calculation results, the scores obtained in the experimental classes after treatment are higher than those obtained before treatment. Therefore, from the hypothesis test, the value of Sig is 0.00, which is < 0.005 , so H_0 is not accepted and H_a is accepted. This means that media crosswords puzzle influence English vocabulary (Y). As a result, crossword puzzle affect the increase in English vocabulary proficiency among 7th-grade students of SMP Annur Assalafy Pasuruan.

Keywords: Crossword Puzzles, Vocabulary, EFL

INTRODUCTION

The ability to use language effectively is essential to learning English. To learn and teach effectively, students must have extensive knowledge of the English language and understand its meaning. Students will be able to understand the verbal and written language if they have mastered vocabulary. Adjectives, verbs, and nouns are introduced to students. A good grasp of vocabulary will also improve language proficiency. A large vocabulary makes it easier to understand what you hear or read. In her seventh grade at SMP Annur Assalafy Pasuruan, many students are still struggling with learning English. This official English subject is still considered

difficult for them. The lack of knowledge related to English vocabulary makes it difficult for them to understand and learn English. When taking an English class, especially when the teacher introduces new vocabulary, they struggle to recognize a sufficient number of new English words. An instructor could be very vital to assist college students to reap their goals, due to the fact gaining knowledge of enough variety of phrases within the vocabulary is a fundamental requirement for mastering English. For this reason, the person conducting this study focused on the effects of using crossword puzzles to improve vocabulary knowledge.

According to Zhang (2018), the success of learning vocabulary is not only determined by teaching techniques and learning materials but also influenced by motivation and learning strategies. Referring to Puspitarini & Hanif (2019), the function of learning media is to overcome various obstacles during the learning process carried out in the classroom and as software or hardware to help convey material from the teacher to students. Thus learning media can make the learning process more efficient and effective. Saxena, Nesbitt, Pahwa, and Mill (2009) consider crossword puzzles as a very interesting word game that can be enjoyed by many people, so students must always compete to find the correct answer to get a good score, which will create healthy competition. High solidarity will make it easier for them to answer the crossword puzzle and other friends in the group also know the correct answer.

This is reinforced by the existence of research journals with the same topic in the form of research designs that use pre-experimental design method with one-group pretest and posttest technique through a quantitative approach. This study had a major influence on the vocabulary skills of pre- and post-training students using crossword puzzles (Silalahi et al., 2019). Subsequent research examined by Orawiwatnakul (2013) states that mastering the crossword puzzle vocabulary for Thai students is a satisfying way to increase their vocabulary. Students learn languages through crossword puzzles very effectively. Vocabulary proficiency is one aspect of English as foreign language fluency. In acquiring knowledge about the 4 language skills, vocabulary is one of the fundamental factors that need to be mastered. Knowledge of words is needed to learn the four language skills because they will not be able to do the four skills without vocabulary. Students practice their language skills more effectively because they master vocabulary better. Having more word lists in their memory can improve their ability to speak clearly and effectively in English (Jambari, et al., 2021). Consequently, it is easier for people who have learned a sufficient amount of the language than those who have not. Vocabulary is a fixed set of phrases that make up language. According to Brown (2001), phrases are the basis of language. And that means that the most important thing about a language is its phrases. Other language skills can no longer exist without phrases.

According to research conducted by O'Dell, Read, and McCarthy (2000), vocabulary can be considered an important area of language teaching, and exams are necessary to assess students' academic progress. And to find out if their vocabulary knowledge is enough to meet their communication needs. Vocabulary evaluation seems easy because there is always a list of words available as a basis for selecting a set of words to be tested. These media tests are lighter to write and grade, and they use the test time effectively. In particular, multiple preference questions

have been widely used in standardized tests. Some professionally produced wanted vocabulary quizzes are quite reliable and successfully differentiate beginners based on their level of vocabulary knowledge.

Tests containing items such as the image above continue to be written and used by language teachers and are used to assess students' progress in learning vocabulary and to diagnose gaps in knowledge of the language they are learning.

Several studies have shown that the use of crossword puzzles can significantly improve language learners' vocabulary fluency. For example, research by Ekayani and Thohir (2019) proves that after using this crossword puzzle, students' vocabulary fluency increases significantly.

Another second study by Sitompul and Juliana (2020) shows that with each exam, student learning outcomes improve. In the previous test for the experimental class, students obtained a score of 62.67 which increased to 76.83 on the last test. Table t is bigger than table t ($0.234 > 0.05$) and Sig. (double-sided) 0.000 is less than alpha: 0.05. Based on the quantitative results, H_a was accepted and H_o was disqualified. It can be concluded that riddles affect the vocabulary development of students who do not speak English

The third study by Sadiyah, Septiani, and Kareviati (2019) The first test showed that the experimental group had a mean score of 41.83, and the second test after receiving the puzzle treatment showed a score of 75.67. This means that teaching English vocabulary using crosswords is an effective way to improve students' vocabulary. The fourth research by Rochmadhoni, Nur (2022) showed that in the pretest, The test group average was 73.226 and 89.677 in the posttest after the crossword puzzle. This means that teaching English vocabulary using crossword puzzles is an effective way to improve students' vocabulary.

Several previous studies have discussed the effect of crossword puzzles on increasing vocabulary significantly. The only difference is that previous research was carried out at advanced and well-known public or private schools. In contrast to the current research, researchers are trying to research private schools which are geographically located in villages and are less well-known. It turns out that the results are not much different from previous research, students are more interested and motivated to learn, and in short, teaching English vocabulary with crosswords is an effective medium for increasing student vocabulary.

Vocabulary teaching is one of the essential elements of language learning. Without know-how of vocabulary, youngsters will now no longer be capable of specific and writing their thoughts the usage of grammar, and organizing them into significant sentences. In teaching vocabulary, teachers must lead the right technique. Teachers can create an activity that can be applied in the classroom. Games can be another way to help teachers teach vocabulary to children. This will make the learning situation more interesting.

METHOD

This research was carried out using the experimental concept. explained quasi-experiments with a quantitative approach. A quasi-experiment was proposed to examine the causal relationship between crossword puzzle play and vocabulary

proficiency. The author used two sample classes throughout this study, including one of the features of the quasi-experiment.

The determination of classes used as experimental and control classes is not random. It's based on the teacher's grades. Then, The experimental class was treated with a crossword puzzle, While The control class was treated without using crossword puzzles.

Population and Sample

The Population used in this study are all students in grade VII SMP Annur Assalafy Pasuruan. The sample used for this study was 7th-grade students of SMP Annur Assalafy Pasuruan, totaling 36 people. The author uses a technique called purposive sampling to select a sample. Deliberate sampling techniques are determined by certain considerations.

Research Instrument

The use of research instruments is a tool or media used by researchers in collecting data. Furthermore, structured data is an important ingredient to be used to answer problems, look for something to use for purposes, and prove hypotheses. The reason for this observation is to measure the level of effectiveness of the treatment given. The tools used in this measurement are called research instruments. The instrument is first detailed in the form of an instrument grid listed as follows:

Test questions

The English vocabulary questions in this study were in the form of multiple-choice. the academic achievement test consists of simple English material-based questions with basic English vocabulary and spelling skills. The calculation of the English vocabulary test tool uses a 0-1 type scale or a Guttman scale. Score 1 of the item is assigned to students who answer correctly, if wrong answers will be scored 0.

Data Collecting Technique

The most important goal of research is to get data. method of data collection used in this researchers are:

a. Pre-test

The goal is to know the average score of student vocabulary proficiency before being given treatment The teacher gives a vocabulary take a look at along with 20 questions for every individual. When students have completed the task, then the answers will be collected and graded. The pretest was distributed to both groups, namely the first control group and the second experimental group.

b. Treatment

Students learn to use crossword puzzles as a learning tool. The treatment was given in several meetings. The teacher gives a crossword puzzle to the students. The teacher gives the rules for playing the crossword puzzle. The teacher forms students into several groups; each group consists of two students. Each institution includes students. The teacher distributes crossword puzzles to each group. Each group solves the provided crossword puzzle. Then the solution sheets have been

collected. Then the coach and students talk to find a solution. a treatment will be given to the experimental group, while the next group, namely the control group, studied without using crossword puzzles. The teacher distributes crossword puzzles to each group. Each group works on the given crossword board. Then the answers from each group were collected. After that, The teacher and all students from each group will discuss their answers.

c. Post - Test

When processing is complete, it is followed by a post-test to detect whether There is a difference between the average score of the pre-test and post-test. The teacher gives each student a vocabulary test with 20 questions. After students complete the exercise, the answer sheet is collected and graded. After the researchers accumulated the data, data was analyzed using three tests, namely: standardization test, homogeneity test, and hypothesis testing.

RESULT AND DISCUSSION

In this stage, The researcher explains the results of the study and the researchers include a discussion of several previous research theories, as well as the implications and limitations of this research.

Test Validity

Before the device is tested on students, they must first consult with experts (people who are experts in English studies). A validation test is used to measure the validity of a device. A tool or questionnaire is said to be valid if questions about the tool or questionnaire can display something that will be measured using the tool (Ghozali, 2018). A significance test was carried out by comparing the scorer with the scorer panel. Items, questions, or variables that are declared valid if the r number is more significant than the number of r tables and the score is positive. And declared invalid if the number r is smaller than the number r table. Content validity is the validity used in this study.

Table 1: Validity Tes

Question Item	r _{count}	r _{table}	Description
Q1	0,652	0,361	Valid
Q2	0,556	0,361	Valid
Q3	0,533	0,361	Valid
Q4	0,615	0,361	Valid
Q5	0,396	0,361	Valid
Q6	0,639	0,361	Valid
Q7	0,480	0,361	Valid
Q8	0,665	0,361	Valid
Q9	0,519	0,361	Valid
Q10	0,558	0,361	Valid
Q11	0,650	0,361	Valid
Q12	0,559	0,361	Valid
Q13	0,599	0,361	Valid
Q14	0,427	0,361	Valid
Q15	0,472	0,361	Valid
Q16	0,380	0,361	Valid
Q17	0,432	0,361	Valid
Q18	0,589	0,361	Valid
Q19	0,537	0,361	Valid
Q20	0,664	0,361	Valid

Table 1 shows the correlation coefficient score for each test item with a score greater than that of the r-table (0.36). The question is valid and can be tested on the respondents, If $r\text{-count} > r\text{-table}$.

Reliability Test

Based on the α -Cronbach formula, the functional reliability test results are as follows:

Table 2: Reliability Test

Intrument Test	Coefficient Reliability	Critical Score	Description
Question Test	0,876	0,7	Reliable

After testing its validity, the next step is to check its reliability. Instrument reliability testing was carried out using the Cronbach Alpha reliability test. Based on the test results, the researcher obtained a score of $\alpha = 0.876$. These figures explain that the tools used in this study are very reliable. The calculations were obtained through the SPSS version 17 computer assistance program.

Normality test

To check whether the study data is normal or not, it is necessary to check the normality. The formulation used to test the normality of information is the Kolmogorov-Smirnov formulation. Test data are pre-test and post-test data in the experimental class and control class. In calculating with this formula, if the resulting index (P) is > 0.05 ($\alpha: 5\%$), the records from these observations are usually distributed (Nurgiyantoro et al., 2004).

Analyzing data using SPSS version 17 generates an index that can indicate whether the data is generally distributed. The results of the normality test are shown in Table 3.

Table 3 Normality Test

Class	P	Description
Pre-test Experimental Class	0,599	P > 0,05 = Normal
Pre-test Control Class	0,750	
Posttest Experimental Class	0,679	
Posttest Control Class	0,593	

Table 3 explains that the index resulting from the normality test for the experimental class pretest data is $0.599 > 0.05$ ($\alpha:5\%$) and $0.750 > 0.05$ ($\alpha:5\%$) resulting from the control class pretest data. Meanwhile, from the post-test data normality test, the experimental class obtained an index of $0.679 > 0.05$ ($\alpha:5\%$) and $0.593 > 0.05$ ($\alpha:5$ from the control class posttest data. Because all calculations produce an index > 0.05 ($\alpha: 5\%$), then the data used in this study can be said to be normally distributed.

Homogeneity Test

In addition to checking whether the distribution of the sample is normal, it is also necessary to check the homogeneity and variance of the samples taken from the same population. After testing the uniformity of variance using SPSS version 17, the following data were obtained.

Table 4. Homogeneity Test

Class	Fcount	Ftabel	P	Description
Pre-test Experimental Class	0,087	4,130	0,770	Fh < Ft = Homogen
Pre-test Control Class				
Post-test Experimental Class	0,889		0,352	
Post-test Control Class				

Table 4 shows that the Fount (Fc) obtained from the homogeneity test of variance before and after the test is 0.087 and 0.889, respectively, which is smaller than Ftable (Ft) 4.130, so it can be said that the distribution of the test before and after testing the data shows homogeneity.

The Difference in Experiment Class and Control Class

Independent t-test is an analytical technique to identify the difference in lexical fluency among experimental class and control class. The t-test results are independent of the pretest and posttest calculations to experimental and control classes using SPSS program version 17 and the summary table of independent t-test results with pre-and post-test. Test calculations for the experimental and control classes can be seen in Table 5.

Table 5 Group Statistics

Treatment Group		N	Mean	Std. Deviation
Pre -Test	Experimental class	18	68.89	8.670
	Control class	18	67.22	8.440
Post -Test	Experimental class	18	79.72	8.824
	Control	18	68.61	7.823

As shown by the data presented in Tables 5 and 6, there are differences in the results of signal data (two sides) before and after processing. From these results, It can be concluded that there is a difference in content quality between experimental class and control class. after receiving posttest Since the value sig(2 - tailed) is $0.000 < 0.05$, it means that there is a difference in the result with a score of $\text{sig} < 0.05$.

Table 6 the Independent Sample Test

		The Levene's Test for Equality of Variances		The t-test for Equality of Means		
		F	sig	t	df	Sig. (2-
Pre test	The Equal variances assumed	.087	.770	.584	34	.563
	Equal variances not assumed			.584	33.976	.563
Post test	Equal variances assumed	.889	.352	3.998	34	.000
	Equal variances not assumed			3.998	33.518	.000

The Effect of Crossword Puzzle on The Vocabulary Improvement of The Experiment Class

Paired t-test is an analytical technique to determine the effect of vocabulary proficiency between experimental class and control class. A summary of calculation of Paired T-Test pre - test and post - test for the experimental and control classes is given in table 7.

Table 7: Paired Sample Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Post Test Experimental	79.72	18	8.824	2.080
	Pre Test Experimental	68.89	18	8.670	2.043
Pair 2	Post Test Control	68.61	18	7.823	1.844
	Pre Test Control	67.22	18	8.440	1.989

Table 8 Paired Sample Correlations

		N	Correlation	Sig.
Pair 1	Post Test Experimental & Pre Test Experimental	18	.669	.002
Pair 2	Post Test Control & Pre Test Control	18	.896	.000

Table 9 Paired Sample Test

		Paired Differences			t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean			
Pair 1	Post Test – Pre Test Experimental	10.833	7.123	1.679	6.453	17	.000
Pair 2	Post Test – Pre Test Control	1.389	3.760	.886	1.567	17	.135

From the data presented in Tables 7, 8, and 9, The influence of Sig (2-tailed) data before and after treatment can be seen. From these results, it can be concluded that there is an influence on the fluency of vocabulary in the experimental class after being given treatment because the score is sig. (2-tailed) $0.000 < 0.05$. While the sig. (2-tailed) in the control, the class has no impact because of the sig. $0.135 > 0.05$. Thus, from these data, It can be concluded that the method of solving the crossword has a great influence on the mastery of the vocabulary of the students of the experimental class with a relatively large score. (2 tails) $0.000 < 0.05$.

Hypothesis Testing

To answer the research question, the researcher presents two hypotheses, null speculation and probability speculation. The H_0 (Null hypothesis) says that "No increase to students' vocabulary after being taught through crossword puzzles". Alternative hypothesis H_a (hypothesis) says that "a significant increase to students' vocabulary when learning with crosswords". H_0 test result is rejected and H_a is accepted, meaning that it has a significant effect on the fluency of students' vocabulary before and after learning to use crossword puzzles as the medium. like Table 10.

Table 10: Paired Sample test

		The Paired Differences			t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean			
Pair 1	Post -Test – Pre -Test Experimental	10.833	7.123	1.679	6.453	17	.000
Pair 2	Post Test – Pre Test Control	1.389	3.760	.886	1.567	17	.135

Based on the information provided in Table 10, that there is the significant influence on student's vocabulary mastery before and after learning crossword puzzles because of the sig. < 0.05 t significance score table or t-test < 0.05, Ghozali (2018) says that to identify each independent variable in the dependent variable, then use the t test. If count > table or t test the significance value < 0.05, one can conclude that the individual independent variables have a significant effect on the dependent variable.

DISCUSSION

Increasing students' vocabulary through crossword puzzles in learning English vocabulary for 7th graders at SMP Annur Assalafy Pasuruan.

Saxena, Nesbitt, Pahwa, and Mill (2009) consider crossword puzzles as a very interesting word game, and many people like this game. A high sense of togetherness causes students to answer crosswords more easily, and other students in the group also know the correct answer.

Based on test results the hypothesis using t-test as shown in Table 10, crossword puzzles can increase students' vocabulary in learning English vocabulary by students. grade 7 SMP Annur Assalafy Pasuruan. There was a significant increase in the final test score, as indicated by the t-data. Crossword puzzles increase vocabulary for students in Learning English vocabulary for grade 7 students at SMP Annur Assalafy Pasuruan.

This examine corroborates preceding studies conducted by Sisilahi et al., (2019) on same topic, and they used a pre-test design approach in the form of a group pre-test-post-test design using a quantitative approach. Their observations confirmed the considerable improvement in students' vocabulary fluency before and after introducing crossword puzzles. Another study by Anwar and Efransyah (2018) used quantitative methods and pre-empirical study design conducted in class. They claim that teaching English vocabulary with crossword puzzles is effective in increasing students' vocabulary. This research also gives the same results as Anwar and Efransyah (2018).

Crossword puzzles are effective in improving the English vocabulary of 7th graders SMP Annur Assalafy Pasuruan.

Using crossword puzzles is very effective for learning English vocabulary. there is a variation in value between average pre - test and post - test in experimental class. The sum of the scores on post - test has a higher value than the sum of the scores on pre - test. And total post-test value of the control class is lower than that of the experimental class. In conclusion, Crossword puzzle learning media is effective in increasing English vocabulary of grade 7 students at SMP Annur Assalafy Pasuruan.

Previous research by Panjaitan and Amanarsih, (2020) on the same topic, used a class-action research method approach. Based on the research results, there has been an increase in students' vocabulary skills in each cycle. Using puzzle games can make students extra involved and stimulated to learn. The conclusions, jigsaw puzzles are effective in increasing students' vocabulary. Research conducted by Orawiwatnakul (2013) shows that knowing vocabulary through crosswords for

Thai students is a great way to develop their vocabulary. It is considered a powerful learning medium for students to learn vocabulary.

Crossword puzzles are defined as effective games for learning vocabulary in the classroom. Crosswords offer many advantages. Students in this crossword puzzle can maintain interactive relationships with their peers and this game allows the teacher to add variety to lessons and increase student motivation. These crosswords can bring the target language to life and make inactive students more active. This crossword game allows students to learn foreign languages easily and without pressure, and at the same time students can participate actively, especially in efforts to improve their English (Manullang et al., 2020). Research conducted by Sadiyah, Septiani, and Kareviati (2019) shows that learning English vocabulary with crosswords is a powerful way to increase students' vocabulary. The study by Sitompul and Juliana (2020) also shows that using crossword puzzles can improve students' vocabulary fluency, which is the same as the findings of this study.

Meanwhile, Dzulfikri (2016) mentioned that the various strategies adopted by the participants in this study would undoubtedly strengthen their retention; thus, their retention of new vocabulary acquired by playing crossword puzzles translated into excellent results in their vocabulary tests.

CONCLUSION

Based on research conducted on the impact of using crossword puzzle learning aids on the English vocabulary level of grade 7 students at SMP Annur Assalafy Pasuruan, there is an effect in academic achievement among students who study with crosswords and those who are taught with conventional teaching methods. In conclusion, the mean of the experimental class is 79.72, while the mean of the control class is 68.61.

From the analysis results of hypothesis testing by t-test, it is found that the sig score of the experimental class is smaller than that of the control class. This is shown from the t-test of the paired SPSS data. So the H₀ is rejected and the H_a is accepted. Thus, there's a difference between those using crossword puzzles and the conventional class in learning English vocabulary because the mean score after the test of the experimental class is higher than that of the control class. Thus, it can be concluded that the use of crosswords in learning English vocabulary of grade VII students at SMP Annur Assalafy Pasuruan school is effective.

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