

The influence of the use of crossword puzzle on the vocabulary mastery among the second semester students of the English Education Department of Muhammadiyah University Metro

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ABSTRACT

This study aims to find out the influence of crossword puzzles on vocabulary mastery among the second semester students of the English Education Department of Muhammadiyah University Metro. The design of this research is experimental, which means that the research method requires two variables to compare the influencing factors. The data were quantitative in nature. Data collection was performed through the implementation of pre-test and post-test. The research chose the second semester students of the English Education Department of Muhammadiyah University Metro as the population. The students were divided into two groups, namely experimental and control groups. The experimental group consisted of 16 students. The data were collected with the implementation of pre-test and post-test as the instruments. The data analysis showed that the mean score of the post-test was higher than that of the pre-test ($85.12 > 50.50$). It showed that the t ratio was higher than t table ($16.651 > 2.131$) and the sig. 2 tailed was lower than sig. level ($0.000 < 0.05$). Therefore, the alternative hypothesis (H_a) is accepted and the null hypothesis (H_o) is rejected. This means that the use of crossword puzzles influences students' vocabulary mastery.



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1. Introduction

English is the native language of the people of the United Kingdom. However, nowadays it has become the main international language (Dutta, 2019; Rao, 2019). Vocabulary is the most important part of every language, including English. Vocabulary mastery will greatly help us to be able to speak, write, or understand a message. Mastery of vocabulary will affect a person's ability in using the language either in oral or written form (Ha, 2022; Bashori et.al., 2021; Ricketts et.al., 2021). When people want to speak, they should be able to organize the words to convey the meaning. By all means, they should be able to spell words and write them down. Palupi and Faliyanti (2018) state that the more words you know, the more you will be able to understand what you hear and read, and the better you will be able to say what you want to speak and write. Vocabulary comprises all the words used in English. Mastering the vocabulary would make learning English easier, whether it is in making sentences or in having conversations (Soifah & Pratolo, 2020; Leona et.al., 2021; Shahriarpour, 2014). Therefore, learning English vocabulary becomes indispensable.

Vocabulary exists in any of the four English skills, i.e listening, speaking, reading, and writing. Vocabulary is the collection of words that speakers understand both in terms of meaning and use (Lessard-Clouston, 2013; Hasan et.al., 2022). Vocabulary consists of words that construct a language. Rahmadi in (Ratnawati et al., 2013) explains that many students have a problem with vocabulary mastery. According to Richard in (Anwar & Efransyah, 2018), vocabulary is one of the most obvious components of language and the first factor in communication. Vocabulary has an important role in communication between humans both orally and in writing.

Mastering a word means mastering the aspects of word knowledge. Hornby in (Sukirman & Ningsih, 2016) argues that vocabulary is a total number of words which make up a language. Vocabulary is the most important or the main supporting aspect in someone's ability like listening, speaking, reading and writing (Khafidhoh & Carolina, 2019). Richards and Renandya (Utami, 2014) mention that vocabulary is a core component of language proficiency and provides much of the basis of how well learners speak, read, listen, and write. Vocabulary is not the one that makes a text difficult but it is a very important feature affecting readability and is a major factor in most readability measures.

This research implemented some literature studies based on the research title. The first was the previous research by Melasari, Ismawati, and Nanda (2019) entitled "The effect of using crossword puzzle on students vocabulary mastery among the eleventh grade students of SMA Muhammadiyah 2 Bandar Lampung in academic year 2017-2018". In this research, the significant difference showed that the t-count was higher than the t-table ($4.454 > 1.9966$) and the sig. 2-tailed value was lower than sig. level ($0.000 < 0.05$).

The second research was the one by Anwar and Efransyah (Anwar & Efransyah, 2018), entitled "Teaching English vocabulary using crossword puzzle game at the seventh grade students". The result showed that the sig. 2-tailed was lower than sig. level ($0.000 < 0.05$).

Then the last research was the one conducted by Ratnawati, Bindarti, and Rofiq (2013) entitled "The effect of using crossword puzzles on vocabulary achievement of the eight year students at SMP Negeri 5 Jember". The result of data analysis on this research showed that the statistical value of the t-test was 2.54 and it was higher than the t-table 1.67.

Based on the above-mentioned information, the researchers conclude that the use of crossword puzzles can influence students' vocabulary mastery, and this research will complement and contribute to the previous findings. Therefore, the researchers are encouraged to conduct a research entitled "The influence of the use of crossword puzzles on vocabulary mastery among the second semester students of the English Education Department of Muhammadiyah University Metro". The difference between this research and the previous ones is that this research was conducted with the second semester students of the English Education Department of Muhammadiyah University Metro and the questions in the pre-test and the post-test introduced unfamiliar vocabulary. In addition, the research has made use of the last ten years of references, and implemented the Statical Package for Social Science (SPSS) version 26 to analyze the data.

Crossword puzzle has been proposed as one of alternative games in teaching-learning (Serna & Azor in Annisa & Marlina, 2014; Pratolo & Hafizhah, 2022). Crossword puzzles are letter games and a form of mind exercise and can be easily integrated in classroom activities (Zamani et.al., 2021). Crossword puzzles come in the form of sets of squares to be filled in with words or numbers, with one letter/number in each square. Synonyms or definitions of words are given with numbers corresponding to numbers in the squares. The idea of using crossword puzzles is in line with the *Standar Proses* in Permendikbud Nomor 22 Tahun 2016 (Permendikbud, 2016) which states that "the learning processes in an educational institution is held in an interactive, inspirational, fun, and challenging way which motivates students to actively participate and provides space for them to develop initiative, creativity, and independence tailored to the talents, interests, and physical and psychological development of the students".

Learning difficulties are situations where students do not learn properly because of certain obstacles or distraction in the learning process in such a way that students cannot achieve the desired results (Djamarah in S & Hum, 2019; Pratolo et.al., 2019; Muluaem et.al., 2022; Gursoy, 2013). From these statements, it can be concluded that crossword puzzle is a popular game that has sets of

grids to be filled with words or letters. It has become one of alternative games in teaching-learning, including language learning.

Upon review of the above problems, the researchers then conducted the study with the following objectives:

1. To find out whether there is any influence of using crossword puzzle on English vocabulary mastery among the second semester English Education Department of Muhammadiyah University Metro.
2. To find out the significance of using crossword puzzle method to English vocabulary mastery among the second semester students of the English Education Department of Muhammadiyah University Metro.

2. Methodology

The research implemented experimental research design. Sugiyono (2016) states that experimental research is a research method used to find the influence of certain treatments on others in control conditions. It means that this research method requires two variables to compare the aspects to be influenced. There are two kinds of variables in common, i.e independent variable and dependent variable. Independent variable is a variable that affects or is the cause of change or the emergence of the dependent variable. In this research the independent variable is the Crossword Puzzle (X) and the dependent variable is the Vocabulary Mastery (Y).

A research instrument is a part of activities to select accurate data (Creswell, 2014). As mentioned by Arikunto, (2014), a research instrument is a tool or facility used by researchers in collecting data in order that the work can be made easier and the results are better, in the sense of being careful, complete and systematic so that they are easier to process. Three types of instruments are recognized, i.e test, questionnaire, and interview. In this research, the test instrument was implemented, consisting of pre-test and post-test. The tests were conducted to measure the students' vocabulary mastery before and after the treatment. In this research, high-level crossword puzzles were introduced to measure the students' vocabulary mastery before and after the treatment.

Sugiyono (2014) states that validity refers to the extent to which the test measures what it is intended to measure. It means that the test measures what is claimed to measure. Expert assessment is conducted to test the validity of an instrument by theoretical concepts and contextual instruments that will be used. The expert to give the evaluation was Fitri Palupi Kusumawati, M.Pd.BI. The evaluation by an expert was done in order to complete the development of instructional capability components, indicator for each component, description of each indicator and correlation of each item to the indicator and component to support operational definition.

Data collection was conducted with the implementation of pre-test, treatment, and post-test. The pre-test was conducted before the treatment to obtain the real value before crossword puzzles were introduced. The post-test was conducted after the treatment in four meetings. In this section, the researchers were supposed to obtain the information whether or not the use of crossword puzzles had an influence on the vocabulary mastery.

The data were then analyzed using normality test and homogeneity test. The normality test was conducted using the Chi-square formula (Arikunto, 2014). The Chi-square formula was selected for this research since the acquired data were more than 30 and they were split into two groups, i.e the experimental group and control group. The formula is as follows :

The hypothesis formula

Ho : samples come from the population that has normal distribution.

Hi : samples do not come from the population that does not have normal distribution.

The statistic formula of the test is :

$$x^2 \text{ count} = \sum_i^k = l \frac{(O_i - E_i)}{E_i}$$

Notes :

X² = Chi-square

O_i = Frequency Observes

E_i = Frequency Expectation

K = Interval Class

The criterion is, if X²count ≤ X²table with dk = k – 3, then the data is normal.

Homogeneity test is done to measure which item can be used to determine data variation. After the values of the variance and average of class are obtained (Experiment class and Control class), when the samples come from population with normal distribution, then the next is done, the researcher used t-test with the formula as follows :

The hypothesis formula :

H₀ : a₁₂ = a₂₂ both samples have the equality of variants.

H₀ : a₁₂ ≠ a₂₂ both samples have difference of variants.

The used statistic formula of the test is :

$$F = \frac{\textit{biggest variants}}{\textit{smallest variants}}$$

The test criterion

Accepted H₀ if Fratio ≥ F ÷ ½ a (V₁ – V₂), with V₁ = n₁ – 1 and V₂ = n₂ – 1

(Roni, Merga, & Morris, 2020)

3. Findings and Discussion

This section is intended to answer the research question whether crossword puzzles have influence on vocabulary mastery among the second semester students of the English Education Department of Muhammadiyah University Metro. Furthermore, this section is also meant to prove the researchers' hypothesis with the use of the t-test formula. The criteria for testing the hypothesis are explained as follows : if the value of t obtained is higher than the value of t-table at the significant level of 0,05, then the hypothesis is accepted. In contrast, if the value of t obtained is lower than t-table at the significant level of 0,05, then the hypothesis is rejected.

3.1. The first Hypothesis testing

The researcher proposed alternative hypothesis (H_a) and null hypothesis (H₀) as follows :

Alternative Hypothesis (H_a) : There are influences of crossword puzzles on the mastery of English vocabulary among the second semester students.

Null Hypothesis (H₀) : There are no influences of crossword puzzles on the mastery of English vocabulary among the second semester students.

To prove the first hypothesis, the researcher applied the t-test formula and computed it using the SPSS program. Statistically, (H_a) is accepted if the t-ratio is higher than the t-table. On the other hand, (H₀) is accepted if the t-ratio is lower than the t-table. The summary of complete calculation can be seen in the following [Table 1](#):

Table 1. The Result of t-test

		Paired Samples Test					<i>t</i>	<i>df</i>	Sig. (2-tailed)
		Paired Differences			95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Post Test - Pre Test	34.625	8.318	2.079	30.193	39.057	16.651	15	.000

The result of the analysis as presented in Table 1 indicated that the value of t-ratio (16.651) was higher than t-table (2.131) at the significance level 0.05 and the significance (0.000) was lower than 0.05. Because of this, the hypothesis was accepted. It means that teaching vocabulary using crossword puzzle for the second semester students of the English Education Department of Muhammadiyah University Metro influenced students' vocabulary mastery.

3.2. The Second Hypothesis Testing

The second hypothesis is drawn as follows :

Alternative Hypothesis (Ha) : There are influences of crossword puzzles on the mastery of English vocabulary among the second semester students.

Null Hypothesis (Ho) : There are no influences of crossword puzzles on the mastery of English vocabulary among the second semester students.

The results of the hypothesis testing could be seen in the following table :

Table 2. The Result of t-test

		Independent Samples Test								
		Levene's Test for Equality of Variances			t-test for Equality of Means					
		<i>F</i>	<i>Sig.</i>	<i>t</i>	<i>df</i>	<i>Sig. (2-tailed)</i>	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Post Test	Equal variances assumed	6.784	.014	2.975	30	.006	17.12500	5.75607	5.36955	28.88045
	Equal variances not assumed			2.975	22.654	.007	17.12500	5.75607	5.20759	29.04241

From the Table 2, it is indicated that the value of t obtained (2.975) was higher than that of t table (2.042) at the significance level of 0.05 and the significance (0.007) was lower than 0.05. Based on the above-mentioned statement, the alternative hypothesis (Ha) was accepted. It means that teaching vocabulary using crossword puzzle for the second semester students of English Education Muhammadiyah University of Metro has resulted in significant difference in English vocabulary mastery.

Based on the current discussion, it is concluded that there are some differences between this research and the three previous researches. The difference exists between this research and the first research by Melasari, Ismawati, and Nanda (2019) entitled "The effect of using crossword puzzle towards students vocabulary mastery in the eleventh grade students of SMA Muhammadiyah 2 Bandar Lampung in Academic Year 2017-2018". The difference is on the result scores of significant differences. In the previous research, the significant difference showed that the t-count was higher than the t-table ($4.454 > 1.9966$) and the sig. 2-tailed value was lower than sig. level ($0.000 < 0.05$). The comparison between the previous research with this research is that the value of significance is higher in this research. The value of significance 2-tailed 0.007 is lower than 0.05.

Furthermore, the differences exist between this research and the second previous research by Yayang Taofik Anwar and Efransyah (Anwar & Efransyah, 2018), entitled "Teaching English vocabulary using crossword puzzle game at the seventh grade students". The result of the sig. 2-tailed is lower than sig. level ($0.000 < 0.05$). The comparison between the previous research and this research in the significance value shows that this research has more significance ($0.007 < 0.005$).

Finally, differences also exist between this research and the third previous research conducted by Ratnawati, Bindarti, and Rofiq (2013) entitled "The effect of using crossword puzzle on vocabulary achievement of the eight year students at SMP Negeri 5 Jember". The result of data analysis in this research showed that the statistical value of the t-test was 2.54 and it was higher than the t-table 1.67. The last previous research was made without using a pretest so that the data were less valid. The difference from this research is that this research used pre-test, treatment, and post-test so that the researchers get more valid data, where the t test 2.975 is higher than the t table 2.042.

From the explanation above, it can be concluded that the use of crossword puzzle has an influence on the vocabulary mastery at a significant level. With crossword puzzles, students find it easier to know the keyword of the word. Crossword puzzles can increase the students' vocabulary mastery. This research has proved that crossword puzzles can influence students' vocabulary mastery among the second semester students of the English Education Department of Muhammadiyah University Metro.

4. Conclusion

The aim of the research is to find out whether there is any influence and the significance of using the crossword puzzle method on English vocabulary mastery among the second semester students of the English Education Department of Muhammadiyah University Metro. In the effort to obtain the data, the researchers implemented the pre-test in only one meeting, four times of treatment, and the post-test. The students were divided into 2 groups, i.e control group and experimental group, with the treatment provided only for the experimental group. The data were collected upon the implementation of the pre-test, treatment, and post-test.

The pre-test was conducted with the experimental and control group, resulting in the mean score of the control group being higher than the experimental group ($54.12 > 50.50$). In the post-test, the mean score of the control group was lower than the experimental group ($68.00 < 85.12$). From the data, it can be concluded that there is influence of using crossword puzzles on the vocabulary mastery among the second semester students of the English Education Department of Muhammadiyah University Metro.

From the data, it can be concluded that the hypothesis is accepted since the score of the experimental group is higher than the one of the control group. Furthermore, the Alternative Hypothesis (H_a) will be accepted if the t-ratio is higher than the t-table. Upon the application of the t-test formula and computation using the SPSS program, it was found that the t-ratio was higher than the t-table ($16.651 > 2.131$) at the significance level 0.05 and the significance (0.000) was lower than 0.05. It means that there is a significant influence of using crossword puzzles among the second semester students of the English Education Department of Muhammadiyah University Metro.

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