## THE USE OF WORD SEARCH PUZZLES TO TEACH STUDENTS' VOCABULARY MASTERY

#### **AN ARTICLE**

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### THE USE OF WORD SEARCH PUZZLES TO TEACH STUDENTS' VOCABULARY MASTERY

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#### **Abstract**

The purposes of this research are to investigate the significant difference between the pre-test and post-test of the vocabulary mastery and to find out the effect size after being taught by using Word Search Puzzles of tenth grade students of SMK PGRI Pontianak. The form of this research is a pre-experimental study with one group pretest and post-test design. The sample of this research is class X TSM of SMK PGRI Pontianak that consists of 31 students. The technique of data collection is measurement technique and tool of data collection is a test in form of essay test. The research findings showed that the mean score of pre-test is 59.74 while the mean score of post-test is 73.09. It shows that Word Search Puzzles had improved students' vocabulary mastery. The result of t-test is 6.53. It is higher than t-critical value (6.53 > 2.042) in level of 0.05. As the result, the alternative hypothesis (Ha) is accepted. The calculation of effect size of the treatment is 1.17. It is higher than 0.8 and categorized as "High" based on the t-table. It could be concluded that Word Search Puzzles is highly effective to teach vocabulary mastery to the tenth grade students of SMK PGRI Pontianak.

Keywords: Word Search Puzzles, Teaching Vocabulary

#### INTRODUCTION

English is concluded as one of subjects on vocational high school and it becomes a subject that has influenced students' final examination. Some schools give special attention to this subject. Based on the curriculum of KTSP Tahun 2006 of Vocational High School on lish subject, students are expected to be able to achieve the criteria in the compentences. One of the standard competences on syllabus vocational high school is focused to mention and describe such as noun or a person in the context of daily life. The skills couldnot be applied without the important part of language such as vocabulary. To achieve this standard competence the students should acquire the vocabulary first, because without vocabulary the students will learn nothing. So, the students need to have a large number of vocabulary in order to be able to learn those four skills. In teaching

vocabulary, the researcher applied word search puzzles.

Using word search puzzles as a teaching technique could be encouraged the students vocabulary such as these previous researches. In the first previous research, Ria Damayanti H. (2014) in "Teaching Vocabulary Through Word Search Puzzle to the Fifth Grade Students of SDN 01 Ngaglik Blitar" selected word search puzzles in conducting her pre-experiment design. She used this word game in teaching vocabulary. From her research, this word game was described effective in improving her students' vocabulary achievement because the student's got significant scores in the post-test. For the second previous research, Vossoughi and Zargar (2009) also selected word search as a treatment in teaching vocabulary for their students in Iran. They choosed homogeneous sex for their sample, they are females. In the result of their

experiment they stated that the students' score increased significantly. Therefore, the researcher is still curious how word search puzzles could be used to teach vocabulary to the students of SMK PGRI Pontianak.

Futhermore. conducting by research there are two specifically purposes, the purposes of this research are: (1) To investigate the significant difference between the pre-test and post-test of the vocabulary mastery after being taught using Word Search Puzzles of the tenth grade students of SMK PGRI Pontianak in Academic Year 2017/2018. (2) To find out the effect size of using Word Search Puzzles on the vocabulary mastery of the tenth grade students of SMK PGRI Pontianak in Academic Year 2017/2018 is.

Since, the focus of this research is vocabulary teaching, it is necessary to know what is vocabulary in this context and how to teach the vocabulary.

Vocabulary is one of important factors in all language teaching, learners must continually be learning words as they learn structure (Edward, 1997). Vocabulary is core component of language proficiency and provides much of the basic for how well learners speak, listen, read, and write (Richards & Renandya, 2002). It is a set of lexemes, including single words, compound words and idioms (Richard et al, 1985). The words are important for the foreign language learners in delivering their ideas and feelings in speaking or writing.

There are different kinds of vocabulary according to different experts point of views. Thornbury (2002) devided word into three different aspects, they are word classes, word family and word formation. Since, the focused of this research is word classes.

Word classes are devided into eight different word classes. They are noun, pronoun, verb, adjective, adverb, preposition, conjunction, and determiner. Futhermore, a word family is how words may share the same base but take different endings. Whereas, word formation is the creation of a new word by derivation and composition.

According to its classes, Morley (2000) elaborates that words are traditionally allocated to one of the following classes:

noun, pronoun, article, verb, adjective, preposition, conjunction interjection; and genitive phrase. There are the brief explanation especially about noun and adjective according to Seaton and Mew (2007): (a) A noun is a part of speech that denotes a person, animal, place, thing, or idea. There are two types of noun, there are common and proper noun. Common nouns are words for people, animals, places, or things. Whereas, the proper noun is names for particular people, places or things. They always begin with a capital letter. (b) An adjective is a describing word. It tells you more about a noun e.g big, small, colorful, smart, etc. An adjective usually appears before the noun it describes. Sometimes, the adjective appears after the noun later in the curriculum, sentence. Based on vocabulary being taught in this experiment included nouns and adjetives because they are the kinds of word which are mostly used in descriptive text.

Therefore, Thornbury (2002) state that to master vocabulary means need to mastery these elements in a vocabulary, those are pronunciation, spelling, length and complexity, grammar, definition and range, connotation and idiomaticity. knowing a word involves form, definition and use (Nation, 2001).

In this research the three elements of vocabulary to be taught. They include the spelling, the definition and how to use the words in the sentences. Meanwhile, Word Search Puzzles was chosen to be a vocabulary teaching technique to teach those three vocabulary components to students of SMK PGRI.

According to Vossoughi and Zargar (2009, p.80) stated: "Word-search-puzzle game is one of many instructional games that reinforce word-level onto a grid and persuades the class to make suggestions for the puzzle clues. A simpler but still popular alternative word puzzle is the word-search". The word search puzzles contains with more than ten list of words. The objective of this puzzle is to find and mark all the words hidden inside the box. The words may be horizontally, vertically or diagonally. Often a list of the hidden them out. Many word search games have a theme to which all the hidden words are related.

Word search puzzles is a game for teaching vocabulary it belongs to identifying tasks. Thornbury (2002, p.95) states: "Identifying is also the process learners apply in tasks in which they have to unscramble anagrams, or when they have to search for words in a 'word soup'". Word search puzzles could be found in magazines and also provided in workbooks. Word search puzzles have more than ten words that provided in a clue list. Nation (2001) also said that the vocabulary could be learned in lists. It is used to be easier the students absorb material in their learning process and it is a one of review and assesses new vocabulary. The aim of this research is that the researcher wants to explore deeper on how this game could work to increase students' vocabulary in SMK PGRI Pontianak.

In addition, Shutterland (2009, p.12) said that word search will train students' focus in indentifying words which are hidden in the in the puzzle, exercise students' brain and also help the sudents with the visual and hand-eye coordination in solving a puzzle. Solving word searches has another real benefits, there are five benefits according to Sutherland (2009): (1) Word search puzzles keep the brain active. (2) puzzles increase Word search the vocabulary. Vocabulary-building is one of the biggest benefits of solving word searches. (3) Word search puzzles help to learn new languages. (4)Word searches are a great way to improve your spelling. word search could actually help you *learn* to spell better by actively looking for the set of letters in order and the puzzle helps to cement their spelling in your brain.(5) Word search puzzles train our brain to recognize patterns the ability to identify letters, faces, and all manner of objects — is a basic cognitive skill (the others include such useful games as decision-making, focus and concentration, memory, problem solving, and categorization). Considering some good points of Word Search Puzzles, the researcher implemented it as another experiment which was simultaneous coping with the students problem mention above.

Vocabulary teaching aims at enabling learners to understand the concepts of unfamiliar words, gain a greater number of words, and use words successfully for communicative purpose. A procedure is a series of clearly defined steps leading to learning goal.

Nation (2001)mentioned some techniques in teaching vocabulary there are how to teach the form that focused on spelling and definition that focused on lexical meaning. Some of techniques that could be used to teach the form of vocabulary are visually, tactilely, and aurally. Visually means by showing the written form of the word. Meanwhile, tactilely is by writing the word letter by letter and aurally is by saying the words. For its definition of a word, some technique that could be used are demonstration, pictures and explaination. Demonstration means by gesture or perfoming an action. For the pictures, it could using photograph or from magazines. For the explaination, it could used by translating or describing.

Based on the theories above there are many possible ways that could help the researcher conducts the teaching and learning especially in teaching vocabulary. It is important to decide one of techniques that would be used in this research. In this research the researcher used tactilely technique in teaching vocabulary, because it has the same criteria with the technique that used by the researcher. It works by scaning the word and connecting letter by letter. Futhermore, in teaching word definition the researcher used explaination technique, because the students were asked by the teacher to find out the definition of the word in dictionary.

The implementation of this game is following the procedures introduced by Munawaroh (2013). In her article she said that there are suitable procedures to use word search puzzles in teaching process: (1) The teacher gives clear instruction to explain the games rules. Games have many rules, word search has rules too. Before the game is played surely the teacher must show the rules for the students. So, the students understand and they can play the game. (2) The teacher giving an example of playing the games. After the teacher has showed the rules, she/he must gives an example to play the game. Of course after the teacher gives the example of the games surely they can play it. (3) The students focus on the teacher instruction. Beside the teacher explains about the game then gives some instructions, the students must focus. So, they will know about the game. (4) Teacher giving the word search games and ask the students to arrange the words. After the students clear enough with the explanation and the instruction from the teacher then they play the game. (5) Teacher gives 20 minutes to finish their work, then the students discuss together. The researcher conducted and adopted all procedures following Munawaroh (2013) and did little modification on first step and fifth step. The modification as follow: (1) The teacher gives clear instruction to explain the games rules. Games have many rules, word search has rules too. Before the game is played surely the teacher must show the rules for the students. The rule was adopted from Shutterland (2009). (5) Teacher gives 25 minutes to finish their work, then the students came in the front of the class and memorize at least 10 words and discuss together.

Based on the explanation above, these steps were implemented in the teaching and learning process. These steps were leaded the teacher and the students in explore new words during solving the puzzles.

#### RESEARCH METHODOLOGY

Cohen et all, (2007, p.281) in his book mentioned there are three kinds of experimental design there are trueexperiment, quasi-experiment, and preexperiment. In doing this study the researcher choosed pre-experimental research method by using one group pre-test and post-test design because the researcher wants to know the effect size of using Word Search Puzzles in teaching students vocabulary by comparing before and after giving treatment. According to (cohen et all, 2007, p.282) The one group pre-test and post-test design could be formulated as:

Table 1. One Group Pre-test Post-test Design

Pre-test	Treatmen	Post-test
Opre	X	Opost

Note:

Opre: Pre-test is the first test that used to measured students'ability of the vocabulary before the researcher giving thetreatment.

X: Treatment did in two times.

Opost: Post-test is the second test that used to measured students'vocabulary achievement after the researcher giving the treatment.

Tool of data collecting is an item that could be used to get and collect information from the test form. The tool of data collecting of this research is used written test form, there were matching and arranging. The researcher want to know the students' vocabulary improvement in meaning, spelling, and the use of the words in a sentence as the goal in this research, this instrument presented in a *figure .1.* as reference in collecting students' score based on the aspects of word knowledge.

Table 2. The Elements In Vocabulary (Adopted From Thornbury, 2002)

The Elements In Vocabulary	Descriptions	
1. Spelling	- The act of forming words correctly	
	- The way that a particular word is written	
2. Grammar	The rules in a language changing the form of words and joining them into sentences	
3. Definition	The things or ideas that some body wishes to communicate to other by what they say or do	

But in this research, the researcher choosed three aspects that appropriate in scoring students' vocabulary. The researcher does some modifications on the table 2. The modified figure is as follows:

Table 3. Table Scoring Of Student's Individual Score

The items to be evaluated for each part of test	Score	
	Correct number	Incorrect number
1. The word's definition	1	0
2. Spelling – written	1	0
3. The sentence' pattern	1	0

Note:

Min. Score : The lower score (0) Max. Score : the highest score (100)

By computing the results of the students in the pre-test and post-test, the researcher compared and measured the effect size of this research.

To determine the effect size of the treatmen, the score was measured using following formula according to Siregar, (2015, p. 152-154):

$$t = \frac{\overline{X} - \overline{Y}}{\sqrt{\frac{S1^2}{n1} + \frac{S2^2}{n2} - 2r\left(\frac{S1}{n1} + \frac{S2}{n2}\right)}} \dots (1)$$

#### Where:

t = t-test with correlated data

x =the students' mean score before the treatments

y = the students' mean score after the treatments

S12= the number of variant score before the treatment

S2<sup>2</sup>= the number of variant score after the treatment

SI = the number of variant before the treatment

S2 = the number of variant after the treatment

To compute the students' mean score before and after the treatments, these following formulas were used:

(1) To find out the average of students' score before the treatment the researcher used the formula:

$$\overline{Xi} = \frac{\sum Xi}{n} \qquad \dots (2)$$

(2) To find out the average of students' score before the treatment the researcher used the formula:

$$\overline{Y}i = \frac{\sum Yi}{n} \qquad \dots (3)$$

Where:

Xi : the data of the students' score before the treatment

Yi : the data of the studens' score after the treatment

n : the number of students

The result of the students' mean score is categorized into its qualification. To know the improvement is as follow:

Table 4.
The Criteria Of Students' Score

Range	Qualification	
86-100	Good to Very Good	
70-86	Average to Good	
50-70	Poor to Average	
00-50	Very poor	

- (3) To compute the students' variant score before and after the treatments, these following formulas were used:
  - a) To find out the students' variants before the treatment (S1<sup>2</sup>)

$$S1^2 = \sum \frac{(Xi - \overline{Xi})^2}{n-1}$$
 .....(4)

b) To find out the students variants after the treatment (S2<sup>2</sup>)

$$S_2^2 = \sum \frac{(Y_i - \overline{Y_i})^2}{n-1}$$
 .....(5)

Where:

S1<sup>2</sup>: the number of variant before the treatment

S2<sup>2</sup>: the number of variant after the treatment

- (4) To find out the standard deviation
  - a) To find out the students' standard deviation before the treatment

$$S_1 = \sqrt{\frac{\sum (X_i - \overline{X})^2}{n-1}}$$
 .....(6)

b) To find out the students' standard deviation after the treatment

$$S_2 = \sqrt{\frac{\sum (Yi - \overline{Y})^2}{n-1}} \qquad \dots (7)$$

Where:

S1: the students' standard deviation before the treatment

S2:the students' standard deviation after the treatment

(5) "r" in the t-test formula was computed using this following formula:

$$r = \frac{n(\sum XY) - (\sum X)(\sum Y)}{\sqrt{[n(\sum X^2) - (\sum X)^2][n(\sum Y^2) - (\sum Y)^2]}}$$

r : correlation coefficient score
 X : measuring score pre-test
 Y : measuring score post-test

(6) To determine the effect size of the treatment, the following formula was used:

$$ES = t \sqrt{\frac{1}{n}} \qquad \dots (9)$$

Where:

ES = effect size

t = the result of the t-test

N = Number of student

The result is categorized as follows:

Effect Size	Qualification
$Es \leq 0.2$	Low
$0.2 \le \mathrm{Es} \le 0.8$	Moderate
$Es \ge 0.8$	High

### RESEARCH FINDING, HYPOTHESIS TESTING AND DISCUSSION

#### **Research Finding**

In this research, the purpose of the researcher is to know the use word search puzzle game to improve the students' vocabulary mastery of tenth grade in SMK PGRI Pontianak. The researcher involves a class that consists of 31 students.

1. The analysis of students' score of pretest and post-test

After the researcher collected the students' scores of pre-test and post-test, the researcher compared the result between the pre-test and post-test scores. The aim of calculating the pre-test and post-test scores is to find out the result of t-test since it is required to be calculated in the formula of finding t-test.

- a) The students' mean score of pretest and post-test
  - 1) Pre-test  $\overline{X} = \frac{\sum X}{n}$   $\overline{X} = \frac{1852}{31}$   $\overline{X} = 50.74$
  - Post-test  $\frac{Y}{Y} = \frac{\sum Y}{n}$   $\frac{Y}{Y} = \frac{2266}{31}$

$$\overline{Y} = 73.09$$

The students' different score was taken from the students' mean score of post-test minus the students' mean score of pretest. In this research, the result showed that the students' different score of pretest and post-test was Xd=13.35. The students' different score of pre-test and post-test:

$$X d = \overline{Y} - \overline{X}$$
  
= 73.09 - 59.74  
= 13.35

Table 5.
The Qualifications Of The Students'
Mean Score Of Pre-Test And Post-Test:

Test	Mean	Qualification
	score	
Pre- test	59.74	Poor to Average
Post-test	73.09	Average to
		Good
Interval	13.35	

The students' variant score of pre-test

$$S1^{2} = \sum \frac{(Xi-X)^{2}}{n-1}$$

$$S1^{2} = \sum \frac{7011.93}{30}$$

$$S1^{2} = 233.73$$

The students' variant score of post-test

$$S2^{2} = \sum \frac{(Yi-Y)^{2}}{n-1}$$

$$S2^{2} = \sum \frac{3502.71}{30}$$

$$S2^{2} = 116.75$$

The students' variant score (S<sup>2</sup>) is obtained by squaring the score of standard deviation (S). The aim of calculating variant score is to find out the result of t-test since it is required to be calculated in the formula of finding t-test. The students' variant score of pre-test is 233,73 while in the post-test is 116,75. It shows that the students' variants score in the pre-test is higher than in the post-test. The lower the variant score in the post-test than in the pre-test, the better it would be. It means that the treatments applied have given a positif effect over the research.

The students' standar deviation score of pre-test:

$$S1 = \sqrt{\frac{\sum (Xi - X)^2}{n - 1}}$$

$$S1 = \sqrt{\frac{7011.9}{30}}$$

$$S1 = \sqrt{233.73}$$

$$S1 = 15.2$$

The students' standar deviation score of pre-test:

$$S2 = \sqrt{\frac{(Yi-Y)^2}{n-1}}$$

$$S2 = \sqrt{\frac{3502.71}{30}}$$

$$S2 = \sqrt{116.75}$$

$$S2 = 10.80$$

The score of standard deviation is computed from the total of each students' score that has been subtracted with the minimal score determined. The result of standard deviation in the pre-test is 15,28 while in the post-test is 10,80. It shows a difference, that is, the result is lower in the post-test than in the pre-test. It is said to be good if the standard deviation is smaller because it means that the treatments have given a better improvement on the students' vocabulary mastery.

Measuring the correlation score (r)

$$r = \frac{103099}{153632.26}$$
$$r = 0.671$$

The "r" or correlation score is obtained to fullfill the calculation of the t-test score because it is concluded in the t-test formula especially for the correlated sample test. The "r" score is used to measure the data that is correlated. It means, between the data or sample to be measured for comparing is similar. Here, the research is measuring and comparing the result of the treatment of the same group, that is to see if there is an effect after being given the treatment in the one clas. So, the calculation of the "r" score is needed in this research with two correlated sample.

Computing the t-test

$$t = \frac{-13.35}{2.04}$$

$$t = -6.53$$

t-test is obtained to continue the computation for the effect size. The t-test was resulted and it was -6.53. After computing the t-test, it was continued to determining the t-critical in order to compare both the t-test and the t-critical whether the t-test is higher than the t-critical or the t-critical is higher than t-test, so that it could be decided if null hypothesis or alternative hypothesis is accepted or rejected.

Computing the effect size

$$ES = 6.53\sqrt{\frac{1}{31}}$$
  
 $ES = 1.168$ 

From the detailed computation above, the effect size of the treatment is 1.168. The effect size is categorized as high because ES 0.8 > 1.168. So the alternative hypothesis that states word search puzzles

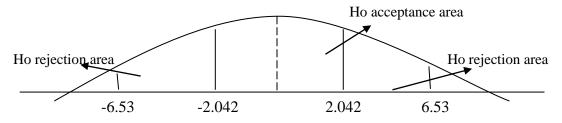
improves the students' vocabulary is accepted.

#### **Hypothesis Testing**

From the result of computation above, the researcher used the significant standard  $\alpha = 0.05$ . Then, find the t-critical at the distribution of t with determination: db = n - 1, db = 31 - 1 = 30. So that,  $t(\alpha, db) = t(0.05, 30) = 2.042$ .

The researcher compared t-ratio and t-critical. The value of t-ratio is 6.53 and the value of the table t-critical is 2.042, it concluded t-ratio value > t-critical value. It means that Ha which stated that there is any significant difference between pre-test and post-test of vocabulary mastery after being taught by using Word Search Puzzles is accepted. For the clearer understanding of these findings, look at the graphic 1. below.

Based on the graphic, it could be concluded that the t-test  $=\pm 6.53$  is in the null hypothesis (Ho) rejection area. It means that the alternative hypothesis (Ha) is accepted.



Graphic 1. The Determination Of Null Hypothesis (Ho) On Two Correlated Sample Test

#### Discussion

Base on the research finding, the researcher analyzed the significance of students' score of pre-test and post-test by using t-test formula. Based on the computation, the result showed that t-test score is 6.53 and t-table is 2.042 at 0.05 the degree of freedom (df) = N-1 (31-1= 30). Because of the t-test is negative, that the test was did from the left side or t-test > t-table (-6.53 > -2.042). It means that the use of Word Search Puzzles to teach students' vocabulary mastery had different

significant result which the alternative hypothesis (Ha) "There is any significant difference between pre-test and post-test of vocabulary mastery after being taught by using Word Search Puzzles on the tenth grade students of SMK PGRI Pontianak" was accepted. For the effect size of this research is 1.168. It categorized as high because ES 0.8 > 1.168 which the alternative hypothesis is accepted.

The result of this research strengthen the previous researh findings that

mentioned by Ria Damayanti H and Vossoughi and Zargar stated that word search puzzles highly influenced the achievements of students vocabulary mastery.

### CONCLUSION AND SUGGESTION Conclusion

Based on the research findings, the conclusion of this research could be described as follows: (1) Word search puzzle improved the students' vocabulary mastery. It was shown by the students' mean score of post-test which is higher than the students' mean score of pre-test, and the effect size is categorized as high. (2) Word puzzle has strengths search weaknesses. Therefore, the strengths of word search puzzle are motivated the students to learn new vocabulary, it trained the students spelling, it helped the students to memorize the words, and it was fun for the students. However, the weaknesses of word search puzzle are that it spent a lot of time so the students' did not finish the puzzle on time, and it was a little bit hard to do for the students. The students sometimes cheated other group to find out some answer. However, it is still considered as significant to teach vocabulary mastery on the tenth grade students of SMK PGRI Pontianak in academic year 2017/2018.

#### Suggestion

By looking at the research findings and what happened during the research, there are some suggestions that the researcher would like to expose to improve the teaching learning process, especially in vocabulary. Teachers teaching suggested to apply word search puzzles. Since, there are some weaknesses in applying the technique. There are some points that teachers should do to anticipate those weaknesses: (1) In applying word search puzzle, teachers need to control the students' timing and manage the class well. (2) The teachers should give the punishment to the students if they cheat other students to find out the answer.

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