

**THE EFFECTIVENESS OF WORD SEARCH PUZZLE IN VOCABULARY  
MASTERY AT SEVENTH GRADE OF SMPN 12 MATARAM IN  
ACADEMIC YEAR 2014/2015**



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### **RATIFICATION**

A journal entitled **“The Effectiveness of Word Search Puzzle in Vocabulary Mastery at Seventh Grade of SMPN 12 Mataram in Academic Year 2014/2015”** by Ni Made Nila Lohita Anggreni (E1D110022) has been accepted by the board of advisor;

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## **ABSTRACT**

### **THE EFFECTIVENESS OF WORD SEARCH PUZZLE IN VOCABULARY MASTERY AT SEVENTH GRADE OF SMPN 12 MATARAM IN ACADEMIC YEAR 2014/2015**

By

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This research aimed at evaluating the effectiveness of word search puzzle in vocabulary mastery of junior high school level. It was conducted because, commonly, teaching vocabulary was implemented through opening dictionary or dictation. In doing the research, the design used was called experimental research that took place in SMPN 12 Mataram. Target population was all VII grade students consisting of 254 students, while samples population were VIIC and VIID classes consisting of 31 students which were selected as experimental and control group by cluster random sampling technique since there were no special classes. To find data of the research, pre test and post test were administered to both of group. Results of the tests were compared to see whether there is any difference between the groups. When result found and consulted with the t-table, it showed that mean of deviation scores of experimental group (18.97) was higher than control group (10.16). While consulted with the t-table, the final result was 3.06 which also indicated that it was higher than the critical value for significance level .01 (2.660) and significance level .05 (2.000) with degrees of freedom 60 of confidence level. Also, when it was computed with eta formula, it showed that word search puzzle gave 13% contribution for vocabulary teaching. Therefore, it means that Word Search Puzzle is effective in teaching vocabulary.

Key words: *vocabulary, mastery, word search puzzle*

**ABSTRAK**  
**KEEFEKTIFAN DARI PERMAINAN CARI KATA**  
**DALAM MENINGKATKAN KOSA KATA**  
**DI KELAS TUJUH SMPN 12 MATARAM**  
**TAHUN AKADEMIK 2014/2015**

Oleh

**NI MADE NILA LOHITA ANGGRENI**  
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Penelitian ini bertujuan untuk mengevaluasi keefektifan permainan Teka-Teki Cari Kata dalam penguasaan perbendaharaan kata di tingkat sekolah menengah pertama. Penelitian ini dilaksanakan karena biasanya pengajaran kosa kata dilakukan melalui cara membuka kamus atau mendikte. Dalam kegiatan penelitian, model yang digunakan adalah penelitian eksperimen yang berlokasi di SMPN 12 Mataram. Target populasi dari penelitian ini adalah semua siswa kelas VII yang terdiri dari 254 siswa, sementara contoh dari populasi adalah kelas VIIC dan VIID yang terdiri dari 31 siswa yang dipilih sebagai kelompok eksperimental dan control melalui tehnik acak karena tidak adanya kelas yang special. Untuk mendapatkan hasil penelitian, “pre test” dan “post test” digunakan pada kedua kelompok. Hasil dari tes akan dibandingkan untuk melihat apakah ada perbedaan dari kedua kelompok. Ketika hasilnya ditemukan dan diperiksa dengan “t-table”, dapat dilihat bahwa nilai rata-rata dari kelompok eksperimental adalah 18.97 yang lebih besar daripada kelompok control yang mendapatkan nilai rata-rata 10.16. Saat di periksa dengan “t-table”, hasil akhir yang 3.06 juga lebih besar daripada tingkat 0.01 (2.660) dan 0.05 (2.000) dengan “degrees of freedom” sebesar 60. Ketika di hitung dengan rumus “eta” juga, hasil menunjukkan bahwa permainan cari kata ini memberikan kontribusi sebesar 13% dalam pengajaran kosakata. Maka, ini berarti bahwa permainan Teka-Teki Cari Kata itu efektif dalam pengajaran kosa kata.

*Kata kunci : kosa kata, penguasaan, permainan teka-teki cari kata*

## **1. INTRODUCTION**

In High School level, listening, speaking, reading, and writing are skills that should be mastered by students. However, before mastering those skills, students need to master vocabulary. Without having sufficient lexical knowledge, they will not be able to listen, speak, read, or write in English well. However, lack of vocabulary is a problem faced by most of students. This is due in part teachers in school do not pay special attention on this matter. They prefer to teach students by asking them to write list of words and by opening thick dictionary only or directly answering questions in work sheet without focusing on teaching words in English. Listing words from thick dictionary will make students feel bored and giving question in work sheet will make students confused because they are already given questions in English without knowing how to answer them in English. Those activities can also be recognized as factors that make problem in learning English. Thus, knowing more vocabularies is a qualification for being successful in language learning since it can advance the other four skills and teaching vocabulary should be applied in high school interestingly.

Actually, vocabulary can be learnt through a lot of interesting ways. One way that can be used in teaching vocabulary is using a game. Game is an interesting and enjoyable activity with a set of rules which is played individually or in group. Game can make the teaching learning process enjoyable and fun for students. If the students have already been fun in learning, learning materials can be easily understood. That was the reason of researcher choosing game for teaching vocabulary. One of games chosen here was named as Word Search Puzzle game. This is one of puzzle game where students need to find the listed hidden words that may be hidden in any direction: horizontally, vertically, diagonally, forwards and backwards. By doing this game, students would get new method in learning vocabulary, they could find a lot of new vocabularies in a fun way, and it could enhance their word knowledge. Then, the researcher tried to use this puzzle game to teach vocabulary for seventh grade students through experimental research because students in this grade really needed vocabulary knowledge as their first step in high school level of learning English and Word Search Puzzle game could make the teaching learning process fun. Therefore, this background brought the researcher to carry out a research under a title "The Effectiveness of Word Search Puzzle in Vocabulary Mastery at Seventh Grade of SMPN 12 Mataram in Academic Year 2014/2015".

### **1.1. Statement of the Problem**

- a. Is Word Search Puzzle effective in mastering vocabulary at seventh grade of SMPN 12 Mataram in academic year 2014/2015?
- b. To what extent is the effectiveness of Word Search Puzzle in mastering vocabulary?

### **1.2. Purpose of the Study**

Purpose of this study is to examine whether Word Search Puzzle is effective or not in mastering students' vocabulary at seventh grade of SMPN 12 Mataram in academic year 2014/2015 and to know to what extent this Word Search Puzzle is effective in mastering vocabulary.

## 2. LITERATURE REVIEW

Vocabulary is a core component of the language proficiency and provides much of the basis for how well learners speak, listen and write (Richards & Renandya, 2002). Candlin (1988) mentioned that vocabulary is at the heart of language teaching in terms of organization of syllabus, the evaluation of learner performance, and the provision of learning resources. The acquisition of an adequate vocabulary is essential for successful second/foreign language use because, without an extensive vocabulary, it will be impossible for language learners to use the structures and functions they have learned for comprehensible communication (Rivers, 1983). Nation (1990) also claimed that both researchers and students think that vocabulary is extremely important and feel that inadequate, receptive and/or productive vocabulary is an obstacle in using a foreign language. Furthermore, Levine and Reves (1990) noted that lack of adequate proficiency is often cited by English as a foreign language students as one of the obstacles to text comprehension.

Thornbury (2002) said that lack of vocabulary knowledge impedes language comprehension and production. Allen (1983) also said that in order to get native-like mastery over a language, learners must learn thousands of words. It can be concluded that that without words to express a wider range of meanings, communication in an L2 just cannot happen in any meaningful way (McCarthy, 1990). Then, vocabulary can be said as a crucial part in mastering four English skills because all skills need vocabulary. Thornbury (2002) stated that teaching vocabulary plays an important role in language acquisition because the mastery of vocabulary will help students to master all the language skills (speaking, listening, writing, and reading). Surely, students will not be able to speak, listen, write, or read if they do not have sufficient word knowledge. Listening skill needs vocabulary to ease students in understanding what speakers say. Speaking skill needs vocabulary to ease students to speak, communicate, or share their ideas each other. Reading skill needs vocabulary to ease students in comprehending phrases, sentences, or even paragraphs. Writing skill needs vocabulary to ease students to write and put all their ideas in a paper easily when they want to make sentences or paragraphs. Thus, it is a must for students who want to master all the four language skills to increase their vocabulary knowledge first. If they do not have sufficient vocabulary, certainly, those students will find difficulties in learning English. Moreover, according to Beck & McKeown (cited in Lehr et al,2002), they stated that early vocabulary researchers report that figures ranging from 2,500 to 26,000 words in the vocabularies of typical grade 1 students and from 19,000 to 200,000 words for college graduate students. It obviously means that seventh grade students really need vocabulary to fulfill their necessity in vocabulary learning. While learning a language cannot be reduced to only learning vocabulary, but it is also true that no matter how well the student learns grammar, no matter how successfully the sounds of L2 are mastered, without words to express a wide range of meanings, communication in an L2 just cannot happen in any meaningful way (Brown, 2007).

In fulfilling students' need of vocabulary, it becomes main role for teachers to know specifically what to teach to students. According to Nation (2001), there are some aspects students need to be taught before they are said that they really know vocabulary. These aspects include:

- a) The meaning of the word
- b) Its spoken and written forms

- c) What “word parts” it has (e.g., any prefix or suffix)
- d) Its grammatical behavior (e.g., its word class, typical grammatical patterns it occurs in)
- e) Its collocation
- f) Its register
- g) What associations it has (e.g., words that are similar or opposite in meaning).
- h) What connotations it has
- i) Its frequency

However, according to Moras (2001), teaching vocabulary in school level is usually incidental without considering all those aspects and vocabulary expansion will happen through practice of other language skills.

Usually, in school teaching process, students are only given a lot of list of words to fulfill their vocabulary need. It is obvious that in learning English, there is no special attention in vocabulary teaching. Vocabulary is taught only as additional material which is less important than grammar and text. In fact, (Moras, 2001) said it is widely accepted that vocabulary teaching should be part of the syllabus, and taught in a well-planned and regular basis. Commonly, teacher uses dictionary only to teach vocabulary and asks students to write new words with their meaning. How can students use language effectively if their knowledge is nothing but list of words only? Certainly, that teaching learning process will make students feel bored and think that learning vocabulary is not interesting and tiring. The learning situation should be ended as soon as possible. Those teachers should use other ways to make teaching learning process satisfying so the learners can gain a great success in their vocabulary learning. Furthermore, Slaterry and Wilis (cited in Marthdiana, 2012) suggested some ways to teach students effectively:

1. Make learning English enjoyable and fun.
2. Don't worry about mistake. Be encouraging and make sure children feel comfortable and not afraid to take part.
3. Use a lot of gestures, action, pictures to demonstrate what you mean.
4. Talk a lot to them use English, especially about things they can see.
5. Play game and sing a song.
6. Tell simple stories in English, using pictures and act with different voices.
7. Don't worry when they use their mother tongue. You can answer a mother tongue question in English and sometimes repeat in English what they say in their mother tongue.
8. Consistently recycle new language but don't be afraid to add new things or to use words they do not know.

In this research, the researcher used Game as a new fun method to learn English effectively. Game is an interesting and enjoyable activity that has a set of rules and played individually or in group. According to Lewis (cited in Paramita, 2012) he stated that the useful of games are to attract students to learn English because it is fun and make them want to have experiment, discover, and interact with their environment. To assess the effectiveness of learning vocabulary through games in classroom, it is very important to find out whether learners benefit from such experience. Moreover, it is crucial to see whether games can be effective in helping learners feel more comfortable and interested in the subject of vocabulary (Huyen & Nga, 2003). Harmer (2001) explained that games give learners a feeling of competition to participate in the process of learning vocabulary and motivates them to repeat them with enthusiasm. He also

maintains that games which depend on an information gap encourage learners to negotiate with a partner to solve a puzzle, draw a picture, and find similarities and differences between the pictures.

Then, it is obvious that game has a role as an interesting strategy to help teachers in managing class to be more effective, pleasant, attractive, enjoyable, interesting, and not boring for students. It is because game has a lot of benefits, usages, or advantages in teaching learning vocabulary. Yong Mei and Yu-Jing (2000) stated some reasons of using game in class:

1. Games are fun and students like to play them. Through games they experiment, discover, and interact with their environment.
2. Games add variation to a lesson and increase motivation by providing a plausible incentive to use the target language.
3. The game context makes the foreign language immediately useful to the students. It brings the target language to life.
4. The game makes the reasons for speaking plausible even to reluctant students.
5. Through playing games, students can learn English the way children learn their mother tongue without being aware they are studying; thus without stress, they can learn a lot.
6. Even shy students can participate positively.

According to Langeling and Malarcher (1997), using game in classroom has some benefits also:

1. In affective aspect, games can lower affective filter, encourage creative and spontaneous use of language, promotes communicative competence, motivates, and also fun.
2. In cognitive aspect, game can be used as reinforces, reviews and extends, and focuses on grammar communicatively.
3. In class Dynamics, games can be used to make student centered lesson. Teacher acts only as facilitator, builds class cohesion, fosters whole class participation, and promotes healthy competition.
4. As adaptability, games are easily adjusted for age, level, and interests, utilize all four skills, and require minimum preparation after development.

Bradley (cited in Tuan, 2012) also stated that games have some characteristics that are advantageous to language learners as follows:

1. Games engage all students in the learning process. When students play games in pairs or groups, they have the opportunity to recognize and appreciate the contributions of others and use team-building skills. Some classroom games focus on individuals working to win against all other peers in the class. This type of game works well with students who are highly motivated and competitive.
2. Games provide an opportunity for collaboration and/or cooperation. Classroom games provide an opportunity for students to collaborate and cooperate with each other, while working towards a common goal - winning. In some games, students are paired or grouped, which may lead to peer tutoring and the use of cooperative skills in order to win. They may not realize that they are actually learning, but they are working together towards a common goal.
3. Games provide an enjoyable learning experience. Creating a fun and enjoyable learning environment is a large first step toward motivating students. Research indicates that classroom games are effective strategies that facilitate learning.
4. Games help engage all students, provide an opportunity for collaboration and/or cooperation, and provide an enjoyable learning experience.



Harmer (2002) explained that games give learners a feeling of competition to participate in the process of learning vocabulary and motivates them to repeat them with enthusiasm. He also maintains that games which depend on an information gap encourage learners to negotiate with a partner to solve a puzzle, draw a picture, and find similarities and difference between the pictures. Also, Hadfield (1998) stated some kinds of games which can be applied by teacher in teaching vocabulary:

a. Sorting, ordering, or arranging games

For example, students have a set of cards with different products on them, and they sort the cards into products found at a grocery store and products found at a department store.

b. Information gap games

Information gap games can involve a one-way information gap, such as the drawing game just described, or a two-way information gap, in which each person has unique information, such as in a Spot-the-Difference task, where each person has a slightly different picture, and the task is to identify the differences.

c. Guessing games

These are a variation on information gap games. One of the best known examples of a guessing game is 20 Questions, in which one person thinks of a famous person, place, or thing. The other participants can ask 20 Yes/No questions to find clues in order to guess who or what the person is thinking of.

d. Search games

These games are yet another variant on two-way information gap games with everyone giving and seeking information. Find Someone Who is a well-known example. Students are given a grid. The task is to fill in all the cells in the grid with the name of a classmate who fits that cell, e.g., someone who is a vegetarian. Students circulate, asking and answering questions to complete their own grid and help classmates complete theirs.

e. Matching games

As the name implies, participants need to find a match for a word, picture, or card. For example, students place 30 word cards, composed of 15 pairs, face down in random order. Each person turns over two cards at a time, with the goal of turning over a matching pair, by using their memory.

f. Exchanging games

In these games, students barter cards, other objects, or ideas. Similar are exchanging and collecting games. Many card games fall into this category, such as the children's card game Go Fish

g. Role-play games

Role play can involve students playing roles that they do not play in real life, such as dentist, while simulations can involve students performing roles that they already play in real life or might be likely to play, such as customer at a restaurant. Dramas are normally scripted performances whereas in role plays and simulations, students come up with their own words, although preparation is often useful.

In this research, the researcher chose "search game" in teaching vocabulary and one of search game that can be used in this research is "Word Search Puzzle".

There are number of different types of word puzzle game. They are:

1. Crossword Puzzle

Crossword Puzzle is a word puzzle that usually takes the form of a square or a rectangular grid of white and black shaded squares. The goal is to fill the white squares with letters, forming words or phrases, by solving clues which lead to the answers. In languages that are written left-to-right, the answer words and phrases are placed in the grid from left to right and from top to bottom. The shaded squares are used to separate the words or phrases.

2. Code Words Puzzle

Code Words Puzzle is a word puzzle where we need to fill in the words in the crossword-style grid. Each letter of the alphabet has been substituted for a number between 1 and 26. There are no clues but there is given one word filled in to help on filling.

3. Word Search Puzzle

Word Search Puzzle is a word game that consists of the letters of words placed in a grid, which usually has a rectangular or square shape. The objective of this puzzle is to find and mark all the words hidden inside the box.

Niemi (2009) stated there are some advantages that can be taken when teachers teach vocabulary to students using Puzzle:

- a) Improve vocabulary

Solving a puzzle helps improve students vocabulary. Once students have found the word and it fits, they're elated with their success. After doing numerous puzzles students will become familiar with words they never know about before. This can enrich their vocabulary.

- b) Stimulate problem solving skills

Doing word search puzzle can stimulate students' skills in problem solving. By reading the clues and looking at the corresponding list of words, students will try to find the hidden words. They will think the answer by seeing the clue given, not being told by teacher. This can stimulate student's skill in problem solving. In other word, it can sharpen students' thinking skill.

- c) Improve focus and attention

When students have a word search puzzle, they have to search words which are hidden to find the meaning. They will see the clue to help them. This can improve their focus and attention. Students will stay focus because they have an attention on the clue to find the meaning.

- d) Give students a successful experience

Doesn't it feel fantastic when they complete a puzzle? It gives students a good feeling for the whole day because they can solve a puzzle. It will challenge them to do it more until they complete the whole puzzle. It will give a satisfaction feeling and become a successful experience for them.

In teaching vocabulary using Word Search Puzzle, the researcher needs to develop a teaching learning process to be exciting, interesting, and enjoyable. Here are some steps which can be used for teaching vocabulary through Word Search Puzzle:

- 1) This word search puzzle can be used in all levels. But, the learning materials should be suitable with their level ages. The vocabulary is about days, time, and months as

- learning material based on the book for Junior High School students in seventh grade for first semester that can be useful to enrich their word knowledge.
- 2) First, teacher in school doesn't give list of words in teaching vocabulary. He/ she will present a word search puzzle as an example learning material. This puzzle is a sample and will be solved together with students so all students will understand how to fill the puzzle.
  - 3) After understanding how to solve the word search puzzle, teacher will ask students to make 2 groups to have a game of word search puzzle. In the game, the two groups have to compete to solve the puzzle. The winner is the group that can solve puzzle quicker and correct.
  - 4) Word search puzzle may consist of at least 40 words. The words may be hidden in any direction: horizontally, vertically, diagonally, and forwards and backwards (Vossoughi and Zargar, 2009). In this game, teacher doesn't point students one by one to find the hidden words. He/she will ask the two groups to be ready. The groups will form a line and turn back to walls side. They may not see the white board because the word search puzzle is adhered on the whiteboard. Then, teacher will ask them to be ready, count one until three, and they start the play. Here, teacher gives card which is filled by words in Indonesian or clues in English and students have to find the meaning or answer in Word Search Puzzle. Group that can find all the words quicker and correct will be the winner. .
  - 5) After all puzzles are finished, teacher explains the words again just to ensure all students understand all the meaning.

By doing those activities, students will feel comfortable in learning because they can play while learning. Furthermore, their vocabulary will be increased too.

### **3. RESEARCH METHODOLOGY**

The design used in this research was known as Experimental Research. It meant that researcher tried an experiment to prove the theory used. Creswell (2009) said that in an experimental, it tests an idea (practice or procedure) to determine whether it influences an outcome or dependent variable. Furthermore, it determined whether participants who experience the idea can perform better than those participants who do not experience it. In the other words, this kind of research focused on treatment and outcome.

This experimental research had been done in SMPN 12 Mataram for seventh grade students. There were two classes observed and these classes were called as experimental and control group. A reason why the researcher used this design was to measure difference between the two classes. Yusra (2009) also stated that experimental research allows researcher to use various measurements in research design.

#### **3.1. Population and Sample**

According to Arikunto (2006), population was the whole research objects. In this research, the population was all seventh grade students of SMPN 12 Mataram academic year 2014/2015. Population for all seventh grade students was 254 students consisting of 7 classes. Every class consisted of 30 – 36 students. Certainly, it was impossible to do research in all classes. According to Yusra (2009), sample was the smaller group or subject of population. Then, the researcher only took two classes (VII C and VII D) as sample of research by random sampling technique. First, the researcher had cards with 7 names of

classes (for example: VIIA, VIIB, and so on), all the cards were shuffled, and then 2 cards were taken randomly without seeing what cards they were. Finally, the cards showed VIIC and VIID names, so the classes were selected as samples. Additionally, the reason to use this sampling technique was since there was no special class in SMPN 12 Mataram. All classes had same characteristics of students in terms of cleverness and similar number of students. There were no superior classes or poor classes. So, all classes had same probability to be selected.

Table 01  
*Experimental and Control Group*

Group	Pre-test	Independent variable	Post-test
A	X1	X	X2
B	Y1	-	Y2

Where:

- A = experimental group
- B = control group
- X1 = pre-test for experimental group
- X2 = post-test for experimental group
- Y1 = pre-test for control group
- Y2 = post-test for control group
- X = the experimental group that would be treated by using word games
- = the control group that would be treated with conventional approach

### 3.2. Method of Data Collection

#### a. Kinds of Data

Kind of this data was quantitative data in vocabulary mastery. It meant that data of the vocabulary test could be measured specifically and written down with exact numbers. The data used would be taken from result of students' pre - test and post – test to be analyzed further by the researcher.

#### b. Source of Data

Source of this data was seventh grade students that had been selected by researcher as research sample.

#### c. Technique of Data Collection

To collect data in this research, the researcher administered pre-test and post-test.

### 3.3. Instrument and Data Collection

#### 3.4.1. Type of Research Instrument

In collecting data, surely, the researcher needed an instrument in form of objective test. This type of test contained various kinds of tests, such as multiple choices and matching test. Multiple choices test consisted of 20 questions with 4 options (a, b, c, d) that students needed to answer correctly. Meanwhile, matching test consisted of 20 items on the left side that students needed to pair to the best answer on the right side. So, the total number of this objective test was forty. It was considered with the time allotted on the test. On the forty questions, 1 point would be given for the correct answer and the wrong answer would get 0 point. It meant that the maximum correct answer was 40, while the minimum was 0. The kind of test was simple and it could measure students' ability of vocabulary correctly. It was because purpose of the test was to

know students vocabulary knowledge and in objective test, students were asked to choose the best answer of words. Also, both of the group, experimental and control group had the same test. The result of the test then was analyzed by the researcher as the main data of this study.

### 3.4.1.1. Test Validity

According to Hughes (2003), a test that provided consistent measures of precisely the abilities that we are interested in is said to be valid. It meant that a test could be valid if it already measured what was supposed to measure. In this research, the researcher took content validity as a way to see whether the test was valid or not by concerning what went into the test. Content validity means that the test should represent as far as possible the areas to be assessed. So, before writing a test, the researcher should make table of specification of areas to be tested based on the purposes of the assessment. The Table of Specification mentioned here could be seen in appendix 01.

### 3.4.1.2. Test Reliability

Reliability was one of important elements of test quality. A test was said reliable if scores of students were consistent and accurate. It meant that the test measured consistently and will produce similar or same result if it was replicated one more. Reliability test was conducted in experimental class one week after having post test. All those experimental students who had done the post test was asked one more to finish the same test without being taught again. The purpose was to see whether the test was reliable or not. If it had similar or same result, it could be said that the test was reliable enough. In order to make test more reliable, the test should be provided with a clear and explicit instruction with a detailed scoring key. In making a test reliable, a test – retest could be used. According to Hughes (2003), test - retest reliability was an estimate of the consistency of scores with a given test which are obtained by testing the same people with the same test at two different times. So by having test-retest to students and if the result would not be so different, then, the test given could be said as a reliable test. Moreover, to ascertain the reliability of a test, researcher used test- retest method through the following formula:

$$\begin{aligned}
 r_{xy} &= \frac{n \sum XY - \sum X \sum Y}{\sqrt{[n \sum X^2 - (\sum X)^2][n \sum Y^2 - (\sum Y)^2]}} \\
 &= \frac{31 (178693,75) - (2400 \times 2280)}{\sqrt{[31(187587,5 - (2400)^2)] [31(171975 - (2280)^2)]}} \\
 &= \frac{5539506,25 - 5472000}{\sqrt{[5815213 - 5760000] [5331225 - 5198400]}} \\
 &= \frac{67506,25}{\sqrt{[55212,5] [132825]}} \\
 &= \frac{67506,25}{\sqrt{[234,97] [364,45]}} \\
 &= \frac{67506,25}{85636,44} = 0,79
 \end{aligned}$$

Where:

r = the correlation of coefficient  
 n = number of samples  
 x = score of the test  
 y = score of re – test

After calculating the data, Yusra (2009) said next step needed was to check the table for the interpretation of r value:

Table 02  
*Interpretation Table*

r value	r interpretation
.80 – 1	very strong
.60 - .79	Strong
.40 - .59	Average
.20 - .39	Low
.0 - .19	very low

(Yusra, 2009)

According to the table, 0, 60 – 0, 79 score was indicated strong while the result of the formula was 0, 79. Then, the researcher came to the conclusion that the test was reliable.

### 3.4.2. Data Collection Procedure

In collecting data of this study, instrument used by researcher was known as Pre Test and Post Test. Pre-test was an instrument which was conducted to get data from students. It was given to them before vocabulary was taught to the classes. While, post-test was the last step in collecting data either in experimental class or control class. It was given to the classes after being given treatment / vocabulary teaching. Object of the post test was to find out improvement of students' vocabulary after being treated by the researcher. At the end, the two tests would be analyzed to see the difference scores. By analyzing the scores with some formulas, it could be seen whether Word Search Puzzle was effective or not in improving students vocabulary.

### 3.5 Data Analysis

After collecting all the tests, first, the researcher calculated students' scores of pre-test and post-test of experimental and control group using following formula:

$$S = \frac{T}{N} \times 100$$

Where:

- S = total score
- T = students' score
- N = total numbers of question

(Arikunto,2006)

Then, the score of both experimental and control group would be calculated using the following procedures:

$$Mx = \frac{\sum X}{N}$$

Where:

$M_x$  = mean score of experimental class  
 $X$  = deviation score of pre-test and post test  
 $N$  = number of samples  
 $\Sigma$  = sum of . . .

(Arikunto,2006)

While, the formula for control group was applied as follow:

$$M_y = \frac{\Sigma y}{N}$$

Where:

$M$  = mean score of control group  
 $Y$  = deviation score of pre-test and post-test  
 $N$  = number of the samples  
 $\Sigma$  = sum of . . .

(Arikunto,2006)

Next, the researcher calculated square deviation of both of groups using the following formula:

$$\Sigma x^2 = \Sigma dx^2 - \frac{(\Sigma dx)^2}{N} \quad \text{and} \quad \Sigma y^2 = \Sigma dy^2 - \frac{(\Sigma dy)^2}{N}$$

Where:

$\Sigma x^2$  = square deviation of the experimental group  
 $\Sigma y^2$  = square deviation of the control group  
 $\Sigma dx$  = deviation score of the experimental group  
 $\Sigma dy$  = deviation score of the control group  
 $N$  = number of sample

(Arikunto,2006)

Next, the researcher compared scores of experimental and control class to know whether it was significant or not using a formula. The formula that could be used was:

$$t = \frac{M_x - M_y}{\sqrt{\left[ \frac{\Sigma x^2 + \Sigma y^2}{N_x + N_y - 2} \right] \left[ \frac{1}{N_x} + \frac{1}{N_y} \right]}}$$

Where:

$M_x$  = score of experimental group  
 $M_y$  = score of control group  
 $X$  = deviation score of pre-test and post-test of experimental group  
 $Y$  = deviation score of pre-test and post-test of control group  
 $\Sigma x^2$  = square deviation of the experimental group  
 $\Sigma y^2$  = square deviation of the control group  
 $N$  = number of sample  
 $N_x$  = sample of the experimental group  
 $N_y$  = sample of the control group  
 $\Sigma$  = sum of . . .

(Arikunto,2006)

After calculating the data and finding the answer, the researcher had to know the effectiveness of the Word Search Puzzle was in teaching vocabulary. Formula that had to be used was:

- Degree of Freedom:  $(Df) = (N_x + N_y) - 2$

- Eta :  $\eta^2 = \frac{t^2}{t^2 + df}$

(Yusra,2009)

Through the eta formula, researcher could find to what extent the Word Search Puzzle game could give significant effect in vocabulary teaching for seventh grade students so result of the research could be explicit and clear.

## 4. FINDING AND DISCUSSION

### 4.1. Findings

The data was obtained from pre-test and post-test given to experimental and control group. students' score are presented to describe the data obtained. Below are the records of the students' pre-test scores of experimental and control group:

Table 03

*The Result of Pre-Test and Post-Test for Experimental Group*

No.	Subject	Pre-Test	Post-Test
1.	AS	55	62,5
2.	AZ	50	80
3.	AH	62	82,5
4.	DS	75	90
5.	DL	60	72,5
6.	EJ	52	80
7.	EK	62,5	70
8.	IS	40	77,5
9.	IF	62	80
10.	JA	77,5	67,5
11.	KJ	70	80
12.	LS	45	60
13.	M.RH	55	75
14.	MJ	72	85
15.	MK	47,5	87,5
16.	MH	40	75
17.	MS	42,5	82,5
18.	NB	50	70
19.	NS	50	82,5
20.	OV	72	85
21.	PA	70	85
22.	REF	69,5	85



23.	RM	60	77,5
24.	RA	50	67,5
25.	RM	70	85
26.	RP	50	75
27.	SA	70	72,5
28.	SR	45	67,5
29.	TK	80	87,5
30.	WS	35	72,5
31.	YK	72,5	80
Total Score		1812	2400
The Highest Score		80	90
The Lowest Score		35	60
Mean Score		58,45	77,42
Standard Deviation		12,59	7,71

Table 04  
*The Result of Pre-Test and Post-Test for Control Group*

No.	Subject	Pre-Test	Post-Test
1.	AA	47,5	67,5
2.	AR	32,5	42,5
3.	AS	52,5	62,5
4.	AM	70	77,5
5.	DJ	60	75
6.	EN	50	65
7.	FH	45	50
8.	GP	50	70
9.	HM	35	40
10.	IK	67,5	82,5
11.	KA	75	80
12.	LA	80	82,5
13.	MA	80	82,5
14.	MH	25	37,5
15.	MW	45	20
16.	MS	45	52
17.	RA	50	70
18.	MK	35	40

19.	NO	60	65
20.	NA	67,5	72,5
21.	NJ	67,5	72,5
22.	RJ	55	75
23.	RFT	77,5	82,5
24.	RA	60	72,5
25.	RJ	52	75
26.	SN	57,5	62,5
27.	SK	15	60
28.	TAS	50	65
29.	VYA	60	70
30.	WF	80	82,5
31.	YF	65	75
Total Score		1712	2027
The Highest Score		82,5	82,5
The Lowest Score		15	20
Mean Score		55,23	65,39
Standard Deviation		16,29	15,84

*Table 05*  
*Descriptive Statistical Result*

GROUP	Pre-Test		Post-Test	
	Mean	SD	Mean	SD
Experimental(X)	58.45	12.59	77.42	7.71
Control (Y)	55.23	16.29	65.39	15.84

Based on the table, it can be seen that there is a different mean score between experiment and control group. Both of the group was given pre-test before they were taught by the different method. After the pre-test given, the experimental group was taught by using word search puzzle games while the control group was taught using conventional approach (took a note, opened dictionary to find some words). Then, after getting the standard deviation score of pretest and posttest of both groups, the mean score and square deviation of both groups can be calculated.

First of all, for the experimental group, it was identified that  $\sum Dx = 588$  and  $N_x = 31$ , so the mean deviation of experimental group is as followed:

$$M_x = \frac{\sum Dx}{N}$$

$$= \frac{588}{31}$$

$$= 18.97$$

The result of mean score of deviation score is 18.97. While, the square deviation of experimental group ( $\Sigma x^2$ ) is as followed:

$$\begin{aligned}\Sigma x^2 &= \Sigma Dx^2 - \frac{(Dx)^2}{Nx} \\ &= 15.331,5 - \frac{(588)^2}{31} \\ &= 15.331,5 - \frac{345.744}{31} \\ &= 15.331,5 - 11.153,03 \\ &= 4.178,47\end{aligned}$$

Note:

- Mx = mean score of experimental group
- Dx = deviation score of pretest and post test of experimental group
- Nx = number of of sample
- $\Sigma x^2$  = square deviation of experimental group

Next, for the control group, it was identified that  $\Sigma Dy = 315$  and  $Ny = 31$ , so the mean deviation of control group is as followed:

$$\begin{aligned}My &= \frac{\Sigma Dy}{N} \\ &= \frac{315}{31} \\ &= 10.16\end{aligned}$$

The result of mean score of deviation score is 10.16. Therefore, the square deviation of control group ( $\Sigma y^2$ ) is as follow:

$$\begin{aligned}\Sigma y^2 &= \Sigma Dy^2 - \frac{(Dy)^2}{Ny} \\ &= 6740,5 - \frac{(315)^2}{31} \\ &= 6740,5 - \frac{99.225}{31} \\ &= 6740,5 - 3.200,81 \\ &= 3.539,69\end{aligned}$$

Note:

- My = mean score of control group
- Dy = deviation score of pretest and post test of control group
- Ny = number of of sample
- $\Sigma y^2$  = square deviation of control group

Therefore, after finding the mean score and square deviation for both groups, the researcher would like to calculate correlation coefficient of the two mean scores to find the final result of this research. Based on the data above, the value of t-test could be operated as follow:

$$\begin{aligned}
t - test &= \frac{M_x - M_y}{\sqrt{\left[ \frac{\Sigma x^2 + \Sigma y^2}{N_x + N_y - 2} \right] \left[ \frac{1}{N_x} + \frac{1}{N_y} \right]}} \\
&= \frac{18.97 - 10.16}{\sqrt{\left[ \frac{4.178,47 + 3.539,69}{31 + 31 - 2} \right] \left[ \frac{1}{31} + \frac{1}{31} \right]}} \\
&= \frac{8.81}{\sqrt{\left[ \frac{7.718,16}{60} \right] [0,03 + 0,03]}} \\
&= \frac{8.81}{\sqrt{[128,64][0,06]}} \\
&= \frac{\sqrt{8,30}}{8.81} \\
&= \frac{2,88}{8.81} \\
&= \mathbf{3,06}
\end{aligned}$$

Finally, the result of t-test is 3,06. After finding the result, the researcher also needs to know to what extent the Word Search Puzzle is effective in teaching vocabulary. Then, formula that must be used is:

$$\begin{aligned}
\text{Degree of Freedom:} \quad Df &= (N_x + N_y) - 2. \\
&= (31 + 31) - 2 \\
&= 62 - 2 \\
&= 60
\end{aligned}$$

$$\begin{aligned}
\text{Eta:} \quad \eta^2 &= \frac{t^2}{t^2 + df} \\
&= \frac{9,36}{9,36 + 60} \\
&= \frac{9,36}{69,36} \\
&= 0,13 \times 100 \% \\
&= \mathbf{13 \%}
\end{aligned}$$

Note:

$N_x$ : number of samples in experimental group

$N_y$ : number of samples in control group

$t^2$ : square of t-test

Then, it is obvious that based on the data, it shows that Word Search Puzzle has given contribution for the teaching learning process about 13%.

## 4.2 Discussion

As mentioned before, the researcher tried to increase students' vocabulary by using an enjoyable method while learning in class to solve boredom using game. According to Harmer (2002), he stated that games give learners a feeling of competition to participate

in the process of learning vocabulary and motivates them to repeat them with enthusiasm. Also, Hadfield (1998) mentioned that some kinds of games could be applied in teaching vocabulary. One game could be used was search game. That theory brought researcher to choose Word Search Puzzle Game as one of search game to teach vocabulary. This game was also chosen because it was found that the goal of this game was to find hidden words, while learning vocabulary goal was also to find words. So, this game could be mixed with the vocabulary teaching especially for seventh grade where students in this grade were still active for learning by playing.

In addition, it was found that this game was proved to be effective while be applying in class. The researcher used this game for one class which was called as experimental group, while another class was taken as a comparison to control the result, and called as control group. The experimental group was taught using Word Search Puzzle Game about vocabulary in terms of number, days, months, and activities based on standard textbook used, while the control group was also taught with the exact material but no game involved. Purpose of doing this was to find whether there was different result between group that was taught using Word Search Puzzle Game and using no game (by explaining & opening dictionary). After finding the result, it shows that the mean score of experimental group is 18, 97 and the control group is 10, 16. Surely, it means that score of Experimental Group is higher than the Control Group. Experimental Group is taught by Word Search Puzzle Game which has been proved to be effective. Also, according to Vossoughi and Zargar (2009), after giving pre test and post test, they found that students' scores were changed. They concluded that the change of scores was because of the game that might make students in experimental group fun and easier in learning than in control group. Then, it indicates that Word Search Puzzle is effective in mastering vocabulary at seventh grade of SMPN 12 Mataram and also for another same or similar grade in other high school levels.

Therefore, the researcher comes to the final conclusion that the change of scores from those groups is because the experimental is taught using Word Search Puzzle while the control group is taught only using the traditional vocabulary teaching method. To compare t-test and t-table, the researcher uses the degree of freedom (df) which can be obtained using the formula  $(N_x+N_y)-2$ . In this case,  $N_x= 31$ ;  $N_y=31$  so the degree of freedom is  $(31+31) - 2= 60$  and according to statistical table (t-table), the degree of freedom (df) 60 is 2,000 for confidence level of .05 (95%) and 2,660 for confidence level of .01 (99%)

*Table 06*  
*The Comparison between the T-Test and T-Table*

<i>T-Test</i>	<i>T-Table</i>		
	<i>Df</i>	<i>.05</i>	<i>.01</i>
<i>3,06</i>	<i>60</i>	<i>2,000</i>	<i>2,660</i>

Therefore, it is clear that the t-test is shown to be higher than the t-table. It shows that the degree of difference of mean score is significant in both confidence level .01(99%) and .05 (95%). Then, the alternate hypothesis “*Word Search Puzzle is effective in mastering students' vocabulary at seventh grade of SMPN 12 Mataram in academic year 2014/2015*” is accepted. Also, it answers the statement of problem in previous chapter

that Word Search Puzzle is effective in mastering students' vocabulary and its contribution for the effectiveness is 13%.

## **5. CONCLUSION**

Through the research, it has been found that students' mean score in experimental group is higher than students' mean score in control group and the result of final statistical analysis of this study is 3, 06. When it is consulted on the t-table, it is also higher than the critical value for significance level 0.01 (2,000) and significance level 0.05 (2,660) with degrees of freedom 60 of confidence level. Also, Word Search Puzzle gives contribution about 13% to the success of this research. Therefore, it can be concluded that that Word Search Puzzle is effective in improving students' vocabulary mastery for seventh grade students of SMPN 12 Mataram in academic year 2014/2015. It indicates that teaching vocabulary using Word Search Puzzle is better than using the traditional method. Word Search Puzzle can increase students' interest in learning vocabulary and can make them easier to remember new vocabularies.

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