

## **CHAPTER III**

### **RESEARCH METHOD**

#### **A. The Method of the Research**

This study belongs to an experimental research. Experimental research is a purely quantitative research. It means that all the principles and rules of quantitative research can be applied to this method. This method is validation or testing, which examines the effectiveness of one or more variable to another (Nana S:2005). There are two kinds of variabel in experimental research, such as : variable that influence is classified as independent variable and variable that is affected is classified as an dependent variable. In experimental study, all variables that is tested must be measured using the test.

Experimental researchis different from other research because this research uses two classes, namely the control class and the experimental class. Control class which get treatment without using Fly Swatter Game, but experimental class which get treatment by using Fly Swatter Game

#### **B. The Time and Place of Research**

This research was donein February 2016 until July 2016. This activity was started from first week of February until first week of April, the researcher making proposal, then Join Conseling. Last week of April until last week of May 2016, the researcher began to conducted the research to collect the data. In the middle of the June the researcher analyze the data and wrote the report until the last of June 2016.

The research was done at SMP N 1 Ajibarang Jl. Rata No 2 Ajibarang, in academic year 2015/2016.

### **C. The Subject of the Research**

#### **1. Population**

The unit of specific group is called population. According to Arikunto (2010: 173) population is the object or subject that have a quality and characteristic to be research. In this research, the population was the first graders students of Junior High Schools in Ajibarang in academic year 2015/2016.

#### **2. Sample**

Sample is a part or representative of population. According to Arikunto (2010: 174) sample is a part of population which is investigated.

In this research, the writer used two classes as sample. That was VII A considered of 36 students, this class became the experimental class and VII B as an control class considered of 34 students. The reason for choosing these two classes was based on the consideration that those classes had similarity in English competence and those classes were taught by the same teacher.

#### **3. Sampling Technique**

Sampling technique is a technique to take a sample. According to Sugiyono (2014: 121) sampling technique is a technique to determine a sample that is used in the research. In this study, the writer used random sampling tehniqe. The consideration was taken because the two classes were

chosen by the teacher of the school investigated. The two groups became the experimental group and control group.

#### **D. The Technique of Collecting Data**

Test is question or exercise or other tools that is used to measure skill, intelligence knowledge, and ability which is owned by individuals or group (Arikunto,2010:193). Actually, this research used two kinds of test, namely :

##### **1. Pre-Test**

This test is given before the class got the treatment by using Fly Swatter Game. Pre test is given to two classes, experimental class and control class. That test was used to know the students` ability of each group. The numbers of the test items are 20 items consist of 10 items of multiple choice and 10 items of matching test.

##### **2. Post Test**

Post test is used to measure the effect of certain treatment. In this case, to measure the effect of Fly Swatter Game for teaching vocabulary in SMP N 1 Ajibarang. This test was given after the researcher applies the teaching vocabulary by using Fly Swatter Game. The numbers of the test items are 20 items consist of 10 items of multiple choice and 10 items of matching test.

## E. The Technique of Analyzing Instrument

Before using the instrument, the writer tried it out to find out the validity, reliability, and item difficulty of the items.

### 1. Validity

The writer used the following formula :

$$r_{xy} = \frac{n \sum xy - \sum x (\sum y)}{(n \sum x^2 - \sum x^2) (n \sum y^2 - \sum y^2)}$$

Notes:

$r_{xy}$  = Pearson product moment

$\sum x$  = the sum of the scores in x distribution

$\sum y$  = the sum of the scores in y distribution

$\sum x^2$  = the sum of squared scores in x distribution

$\sum y^2$  = the sum of squared scores in y distribution

$\sum xy$  = the sum of the product of paired in x and y distribution

$n$  = the number of samples

To compute the calculation above, the researcher used some step as follows:

a. Finding  $\sum x$

In this step, we must compute the total number who answers correctly in one question.

b. Finding  $\sum y$

In this step, we must compute the total number of all the students.

c. Finding  $\sum xy$

In this step, we calculate the multiplication between the score of students and the total score of the students.

d. Finding  $\sum y^2$

In this step, we must square the score of the students one by one then we total them. If r-counted is higher than r-table it means that the question of the test is valid.

(Arikunto, 2010: 213)

## 2. Reliability

To find the reliability at the test items the formula is as follow:

$$r_{11} = \frac{k}{k-1} \left( 1 - \frac{vt - \sum pq}{vt} \right)$$

where

$r_{11}$  = the instrument reliability

$k$  = the number of the test items

$v_t$  = the total variants

$p$  = the proportion of subjects that get score 1

$q$  = the proportion of subjects that get score 0

(Arikunto, 2010: 231)

The criteria 0 reliability values are as follows :

0.00 – 0.20 = there is no reliability

0.21 – 0.40 = very low reliability

0.41 – 0.60 = enough reliability

0.61 – 0.80 = high reliability

0.81 – 1.00 = very high reliability

Before using the formula, the researcher used some steps as follows:

a. Determining the total variant ( $V_t$ )

To determine the total variants of the students score, the formula was as follow:

$$V_t = \frac{\sum Y^2 - \frac{Y^2}{N}}{N}$$

Where :

$V_t$  : the total variants

$\sum Y$  : the total score Y

$\sum Y^2$  : the total of quadrate Y

N : the number of respondents

(Arikunto, 2010:231)

b. Calculating  $\sum pq$

In calculating  $\sum pq$ , here are some steps:

1) Determining p

$$p = \frac{\sum \text{correct answer}}{\text{the number of respondents}}$$

2) Determining q

$$q = 1 - p$$

3) Multiplying between p and q

$$p \cdot q$$

4) Entering the result of  $\sum pq$ ,  $V_t$ , k to the formula of reliability of post-test :

$$r_{11} = \frac{k}{k-1} \left( 1 - \frac{\sum pq}{vt} \right)$$

c. Item difficulty

Finding item difficulty is aimed to know whether the items are difficult or not for the respondents. The formula of item difficulty is as follows :

$$F.V = \frac{R}{N}$$

Where :

F.V= the index of difficulty

R = the number of correct answer

N = the number of testee taking the test

(Arikunto, 2010 : 239)

The criteria of the item difficulty were as follows :

Criteria	Category
$1.00 \leq 0.30$	Difficult
$0.31 \leq 0.70$	Medium
$0.70 \leq 1$	Easy

(Arikunto, 2010:210)

## F. Technique of Analyzing Data

After the data had been collected, it was analyzed. The steps of data analysis were:

## 1. Individual students competence

To determine the percentage of the students' vocabulary mastery, the writer used formula as follows:

$$P = \frac{F}{N} \times 100$$

Where :

P : percentage of correct answer

F : the number of the correct answer

N : total number of items

( Sudjiono, 2009: 43)

There are five categories of the individual students' mastery

- a. 81 – 100% of the answers are correct : Very good
- b. 61 – 80% of the answers are correct : Good
- c. 41 – 60% of the answers are correct : Fair
- d. 21 – 40% of the answers are correct : Bad
- e. 0 – 20% of the answer are correct : Very bad

## 2. T-test

The use of T-test in analyzing the data was aimed to know the effect of using Fly Swatter Game in teaching vocabulary. The formula was as follow :

$$T\text{-test} = \frac{Mx - My}{\sqrt{\frac{\sum x^2 + \sum y^2}{Nx + Ny - 2} \left( \frac{1}{Nx} + \frac{1}{Ny} \right)}}$$

Where :

Mx : mean of the score in experimental class

$M_y$  : mean of the score in control class

$\sum x^2$  : deviation of each value of X2 and X1 of experimental class

$\sum y^2$  : deviation of each value of Y2 and Y1 of control class

$N_x$  : the number of the students in experimental class

$N_y$  : the number of the students in control class

(Arikunto, 2010:354)

Before using T-test formula, the writer did some steps. They were:

a. Finding the mean

The post test score of each student was decided by pre test score.

The next step was counting the total deviation.

The formula, which was used as follows:

$$M_x = \frac{\sum fx}{f}$$

Where :

$M_x$  : mean of experimental class

$\sum fx$  : the sum of class frequency by mid point of experimental class

$\sum f$ : the total of frequency

b. Finding out  $\sum x^2$

The deviation was squared of post test score of each student of experimental class. Then the result was counted up the total square deviation above was decreased by the division of the square of total deviation of experimental class.

The formula is :

$$\sum x^2 = \sum x^2 - \frac{\sum x^2}{N}$$

c. Finding out  $\sum y^2$

In this step the deviation was squared of each student and calculate up the total. The total is decrease by the division of the square of the total deviation and calculation.

The formula is :

$$\sum y^2 = \sum y^2 - \frac{\sum y^2}{N}$$

And after that, calculating degree of freedom (d.f) by using the following formula:

$$\mathbf{d.f = ( N_x N_y - 2 )}$$

where:

$N_x$  = number of experimental group students

$N_y$  = number of control group students

After getting the T-test, it will be consulted into t-table of a certain significant level. If the T-test is higher than T-table, it means that there is a positive effect of Fly Swatter Game as a media for teaching vocabulary, so hypothesis is accepted. On the other hand, if it is found that T-test is lower than t-table, the hypothesis is not accepted.