

## **CHAPTER III**

### **METHODOLOGY OF THE RESEARCH**

This chapter consist of several parts, such as setting of the research, population and sample, research design, technique for collecting data, technique for analyzing data, and statistical hypothesis.

#### **3.1 Setting of the Research**

The research was conducted at MTs. Sunan Muria Kelet. The school located at Kelet – Keling – Jepara. The student is on the eighth grade students of MTs. Sunan Muria Kelet. This research was conducted on odd semester.

#### **3.2 Population and Sample**

According to Mubarok (2015:38) states that population is a unit of the subject that has certain qualities and characteristics which are studied by the researchers then be deduced. The population of this research was the whole of students at eighth grade of MTs. Sunan Muria which consists of three classes. They were class VIII A has 20 and VIII B has 20 students, and VIII C has 25 students.

Sample is part of the quality and characteristics of the population. Sample taken must be truly representative because the conclusion drawn from these samples will be generalized to the population (Mubarok, 2015:39). The

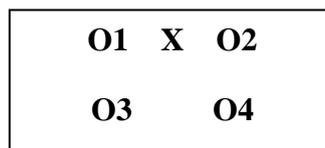
specific definition of sample is parts of the population that will be the object of the research.

The researcher took the class VIII A and VIII B as the sample. The students of VIII A class as control group and VIII B class as experimental group. So the total of sample was 40 students.

### 3.3 Research Design

In this research, the researcher conducted a quantitative research. Fraenkel (2012) in Mubarok (2015:88) argues that experimental research is one of the most powerful research methodologies that researcher can use. Its the best way to know the comparation between using media and do not using media in the research.

The design of this experimental research is quasi experimental design. In this design, both the experimental and control group are compared, although the group is selected and places without randomly. The schema of this model is follows:



In which:

X : Treatment given experiment group

O1: Pretest for the experiment group

O2: Posttest for the experiment group

O3: Pretest for the control group

O4: Posttest for the control group

(Mubarok, 2015:102).

Quasi experimental design focuses on treatment and outcome, hence the data will be taken from pre-test and post-test in order to know whether or not DK Readers media is effective in improving reading comprehension. Pre-test was given before teaching learning process. Its to know that two classes had the same knowledge. Then post-test was taken by students in two classes and the achievement of the students was compared.

This experimental research was conducted in two classes and it was taught by different media. DK Readers as a media was used in experimental group while conventional media was used in control group. The experimental class was the group who received the treatment that was using the media, while the control group was a group who not be exposed to the experimental treatment.

### **3.4 Technique for Collecting Data**

Data is a piece of information that can be something known in organized form that refers to condition, ideas, or objects. In this research, the researcher using test as the instrument to gain the data through multiple choice questions. The number of pre-test and post-test was arranged into 20 items. Arikunto (2010:266) argues that test as an instrument to measure ability and achievement. There are two kinds of test that writer used: pre-test and post-test described as follows:

## **1. Pre-test**

Pre-test was given to students before treatment (teaching learning process) in both experimental and controlled class. The purpose of pre-test was to know the ability of students in reading comprehension.

Pre-test was held on February 12<sup>th</sup>, 2018 for both experimental and controlled class. The test was multiple choices. The students must answer the question by themselves without discuss with their friends.

## **2. Post-test**

Post-test was delivered to the students in the end of teaching learning process as the final test after the writer implement the treatment. Post-test was used to know the students' progress in learning reading comprehension after the implementation of the media and also whether or not DK Readers effective to teach students' reading comprehension. The post-test was held on February 20<sup>th</sup>, 2018 for both experimental and controlled class.

Before giving both of the test to the sample of the research, the researcher had tested the tests to VIII C students of MTs. Sunan Muria Kelet. It was held to know the validity and realibility the instrument. Furthermore, it was analyzed by using manual and SPSS calculation.

### 3.5 Technique for Analyzing Data

Analyzing the data is a long process of experimental research. The writer uses score analysis of pre-test and also post-test in analyzing the data of the research. It is used to find out the difference of students' reading comprehension achievement in both the experimental and controlled class.

#### 1. T-test

In this research, the researcher uses statistical calculation through *t-test* formula in manual calculation and SPSS. It will be used in examining the significant difference of students' reading comprehension achievement between experimental and control group. The formula of *t-test* as follow:

$$t_0 = \frac{M_1 - M_2}{SE_{M_1 - M_2}}$$

In which:

$M_1$  : Mean of variable X (experimental class)

$M_2$  : Mean of variable Y (controlled class)

SE : Standard error

(Sudijono, 2011:314).

There are several stages used to get the calculation of t-test, it can be seen as follows:

1. Determining Mean of variable X, with formula:

$$M_1 = \frac{\Sigma X}{N_1}$$

2. Determining Mean of variable Y, with formula:

$$M_2 = \frac{\Sigma Y}{N_2}$$

3. Determining of Standard Deviation Score of variable X, with formula:

$$SD_1 = \sqrt{\frac{\Sigma X^2}{N_1}}$$

4. Determining of Standard Deviation Score of variable Y, with formula:

$$SD_2 = \sqrt{\frac{\Sigma Y^2}{N_2}}$$

5. Determining Standard Error Mean of variable X, with formula:

$$SE_{M_1} = \frac{SD_1}{\sqrt{N_1 - 1}}$$

6. Determining Standard Error Mean of variable Y, with formula:

$$SE_{M_2} = \frac{SD_2}{\sqrt{N_2 - 1}}$$

7. Determining Standard Error of different Mean of variable X and Mean of Variable Y, with formula:

$$SE_{M_1 - M_2} = \sqrt{SE_{M_1}^2 + SE_{M_2}^2}$$

8. Determining  $t_o$  with formula:

$$t_o = \frac{M_1 - M_2}{SE_{M_1 - M_2}}$$

9. Determining Degrees of Freedom (df), with formula:

$$df = (N_1 + N_2) - 2$$

## 2. Try-out of the Instrument

### a. Validity

Arikunto (2010:211) states that validity is a measurement to shows the level of validity instrument. The valid instrument have high validity. Then, unvalid instrument have low validity. In the otherhand, Santosa & Ashari (2005:247) argues that a test is valid when its measures what it is supposed to measure.

According to Ary, et.al (2010:225) validity was defined as the extent to which an instrument measured what it claimed to measure. The researcher was used the formula of product moment that was technique to find out the correlation of two variables and to examine item of tests. The instrument was calculated by using the formula as follows:

$$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\} \{N\Sigma Y^2 - (\Sigma Y)^2\}}}$$

In which:

$r_{xy}$ : Correlation coefficient between x and y variable

N : Number of test takers

$\Sigma X$ : Number of test items

$\Sigma X^2$ : Quadrate of number of test items

$\Sigma Y$  : Total score of test items

$\Sigma Y^2$  : Quadrate of total score of test items

$\Sigma XY$  : Multiplication of items score and total score

(Arikunto, 2010:213).

#### **b. Reliability**

Reliability show that the instrument reliable to use as the data collection because of the instrument are good to use. Then, a test can be reliable when it gives consistent result.

According to Ary, et.al (2010:236) argues that realibility of a measuring instrument is the degree of consistency with which it measures whatever it is measureing. In this research, to calculate the realibility of the instrument use the formula of KR-20 as follows:

$$r_{11} = \left( \frac{n}{n-1} \right) \left( \frac{(S^2 - \Sigma pq)}{S^2} \right)$$

In which:

$r_{11}$  : Instrument realibility

$n$  : The items

$S$  : Standard deviation of test

$p$  : Students proportion who right answer

$q$  : Students proportion who wrong answer

(Arikunto, 2005:100).

### 3.6 The Statistical Hypothesis

There are statistical hypothesis used before deciding the result of hypothesis as follows:

$$H_0 : \{\mu_1 = \mu_2\}$$

$$H_a : \{\mu_1 \neq \mu_2\}$$

In which:

$H_0$  : Null hypothesis

$H_a$  : Alternative hypothesis

$\mu_1$  : students' reading comprehension achievement, who are taught by using DK Readers.

$\mu_2$  : students' reading comprehension achievement, who are taught without DK Readers.

The writer's assumption of these hypothesis are as follows:

1. If  $t_0 > t_{table}$ , the Null Hypothesis ( $H_0$ ) is rejected and the Alternative Hypothesis ( $H_a$ ) is accepted. It means there is significance difference of the students' achievement in reading comprehension between students who are teach through DK Readers and students who are not teach through DK Readers.
2. If  $t_0 < t_{table}$ , the Null Hypothesis ( $H_0$ ) is accepted and the Alternative Hypothesis ( $H_a$ ) is rejected. It means there is no significance difference of the students' achievement in reading comprehension between students who are teach through DK Readers and students who are not teach through DK Readers.