

### BAB III

#### RESEARCH METHODOLOGY

##### A. Research Design

Research can be defined as the process of problem solving. To solve the problem, the researcher needs a method. According to Cohen et al, (2007:47) methods refer to technique and procedures used in the process data gathering. This research is intended to investigate whether or not teaching reading comprehension through firing line is effective. In the research, the researcher will a pre-experiemental study, whitch one group pre-test postest design. Ary et al, (2010:303) states that form of pre-experiemental study consist of one group pre-test postest design and static-group comparison. Is use because the researcher wants to investigate of the effect of firing line method in teaching reading comperhension before anda after giving treatment.

**Table 3.1**

**The Design of One Group Pretest Posttest Design**

01	X	02
<i>Pre-test</i>	<i>Treatment</i>	<i>Post-test</i>

Notes :

O<sub>1</sub> = Initial tests before being given treatment.

X<sub>1</sub> = Providing treatment group counseling with the film media.

O<sub>2</sub> = Final test after being given treatment.

##### B. Population and Sample

###### 1. Population

Fraenkel and Wallen (2009:90) stated that “population is the larger group to whitch one hopes to apply the results. Ary, et al., (2010: 34) population members of well defined class of people, event or object. Thus the population is the whole object of research that students of class XA and XB numbered 69 students.

**Tabel 3.2**  
**Population Research**

Grade	Total
X A	35
X B	34
Total	69

**Sumber: MAS Assalam Pontianak**

2. Sample

Sample is part of population, chosen to participate in the study. Bordens and Abbott (2011:163) said that “samples a small sub group chosen from the larger population. Sample is a group in a research study from which information is obtained (Fraenkel and Wallen, 2009:90). The sample in this study using clusterrandom sampling. Cluster random sampling is a sampling technique used when "natural" but relatively heterogeneous groupings are evident in a statistical population. The research will determine one class to be thing sample X A.

**C. Techniques and Tools of Data Collection**

1. Techniques of Data Collection

The technigue of data collecting apply in this research is measurement technigue. Based on Kothari (2004:69), “measurement technigue is a process of mapping aspects of a domain onto other aspects of arranging according to some rule of correspondence”. The purpose of measurement is to investigate the achievment of students in reading comprehension before and after the treatment. Lindeman (Asmawi, 2012:92) measurement technigue “the assignment of one or a set each of a set of persons or objects according to certain established rules”.

2. Tools of Data Collection

The instrument used in this study was carried out in two steps, namely:

a. Pretest

Pretest is conducted before the implementation of the firing line strategy given to students to measure students' understanding in reading test time given for 90 minutes, with 2 x 45 minutes. Researchers provide tests to look at students' previous knowledge in reading comprehension.

b. Posttest

After implementing the firing line strategy, the authors gave the test to an experimental class with a time of 2 x 45 minutes. Post test is given to compare between before being given a firing line strategy and after the implementation of firing line strategy

**D. The of Data Analysis**

The analysis in the study is an important part in the research process because with this analysis, the data would seem beneficial, especially in solving research problems and achieve the ultimate goal of research. Analysing the data in this study, the researcher use to the analysis and quantitative techniques. Data analysis techniques use statistics are quantitative, so that it can be called statistical analysis or statistical analysis inference. Statistics are inference or deductive inference against an event observed by analyzing sample data. The statistical analysis techniques used different test by using different test formula and using different test analysis. Different test is used to test the significance of differences in mean 2 pieces derived from two distributions.

Before the hypothesis test data analysis to test the prerequisite that homogeneity test and test for normality. The analysis in the study is an important part in the research process because with this analysis, the data would seem beneficial, especially in solving research problems and achieve the ultimate goal of research.

Data analysis is quantitative research. Statistical analysis techniques use different tests using different test formulas and use different test analysis.

Different tests are used to test the importance of an average difference of 2 pieces derived from two distributions.

1. The students individual score from the pre-test and post-test calculate by the formula below:

$$X = \frac{C}{N} \times 100$$

Where:

- X : The students' individual score
- C : Correct answer
- N : Total number of question on the test
- 100 : Maximum score (Arikunto, 2010:175)

2. Analyzing the students' mean score of pret-test and post-test

- a. The students' mean score of pret-test

$$M_1 = \frac{\sum x_1}{N} \times 100$$

Where:

- $M_1$  : The students' mean score of the pret-test.
- $\sum x_1$  : The sum of individual score of pret-test.
- N : Total number students' (Subana, 2010:75)

- b. The students' mean score of post-test

$$M_2 = \frac{\sum x_2}{N} \times 100$$

Where:

- $M_2$  : The students' mean score of the post-test.
- $\sum x_2$  : The sum of individual score of post-test.
- N : Total number students' (Subana, 2010:75)

3. The analysis of the students interval score among of pret-test and post-test

$$\bar{D} = M_2 - M_1$$

Where:

- D : The students' interval score of the students' mean score from pret-test and post-test.
- $M_1$  : The students' mean score the pret-test.
- $M_2$  : The students' mean score the post-test (Subana, 2010:77).

#### 4. Standard Deviation

Standard deviation is the square of the variance. The formula of standard deviation is as follows:

$$SD = \frac{\sqrt{\sum x^2 - \left[\frac{\sum x^2}{N}\right]}}{N(N-1)}$$

Where:

SD : Standard deviation

$\sum x$  : The sum of students' correct answer

$\sum x^2$ : The sum of students' square correct answer

N : The total number of students (Aryet *al*, 2010:177)

#### 5. *t*-Test

The next data analysis is the value of post test data analysis used to determine the creativity of learner between the experimental and control class. Data Analysis used to determine differences in students' ability to think creatively is by statistical parametric *t-test* analysis for samples that are not correlated. It is selected because of the score or the value of the second sample was obtained from a different subject. The data analysis is presented in the calculation using the formula *t-test* manually and in SPSS 16.0 as attached. The *t-test* formula used is as follows:

$$t - test = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\left[\frac{SD_1^2}{N_1 - 1}\right] + \left[\frac{SD_2^2}{N_2 - 1}\right]}}$$

With

$$SD_1^2 = \frac{\sum x^2}{N_1} - (\bar{x}_1)^2$$

Notes :

$\bar{x}$  = Mean on the distribution of sample 1

$\bar{x}$  = Mean on the distribution of sample 2

$SD_1^2$  = Value of The variance in the distribution of sample 1

$SD_2^2$  = Value of The variance in the distribution of sample

$N_1$  = Number of individual in the sample 1

$N_2$  = Number of individual in the sample 2

The results of t-test calculation here in after referred to as  $t_{count}$  which will be compared with  $t_{table}$  at significance level of 5% or 1%. If obtained  $t_{count} > t_{table}$  it can be concluded that there is the firing line strategy effective to enhance about students understanding in the x grade of MAS Assalam Pontianak. Conversely, if obtained  $t_{count} > t_{table}$  it can be concluded that the firing line strategy is not effective to enhance about students' understanding in the X grade of MAS Assalam Pontianak

#### 6. Effect Size

To determine how much influence the firing line strategy to the student reading comprehension, use Effect Size. Formulas and magnitude of Effect Size criteria using Equation 4 as follows:

$$ES = \frac{\bar{X}_e - \bar{X}_c}{S_c}$$

Information :

ES : Effect Size

$\bar{X}_e$  : average count posttest experimental class

$\bar{X}_c$  : average arithmetic test posttest control group

$S_c$  : Standard deviation posttest control group

**Table 3.3**  
**Effect Size Criteria Value**

Interval	Criteria
$ES \leq 0,2$	Low
$0,2 < ES < 0,8$	Medium
$ES \geq 0,8$	High

Source: Ary et al, 2010:177.

The criteria assessment of student learning outcomes by Arikunto and Jabar (2009: 35) as follows:

**Table 3.4**  
**Results Criteria**

No	Number	Predicate
1	81-100	Very Well
2	61-80	Well
3	41-60	enough

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4	21-40	Less
5	<21	Less once

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