# CHAPTER III

# RESEARCH METHODOLOGY

This chapter presents the research design, population and samples, setting, research procedure, instruments, hypothesis and procedures of data collection with presents the statistic formulas such as; the normality test, the homogeneity test and the differences between means with t-test. Each of them will be discussed separately in the following section.

## A. Research Design

The research is all of searching, observing and experimental activity naturally in the current object, to get the facts. This study is classified into experimental research. It can be interpreted as the way to find the relation of cause-effect (causal relation) between two factors or to find the effects of a treatment.[1] The aim is to investigate causality (relationship effect and cause). Experiment has two criteria: first, there are at least two groups included in the study, a control and experiment group, and second, the subjects are randomly assigned to one of those groups.[2] Here, the writer used quantitative or statistic value to processing all of

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[1] Suharsimi Arikunto, *Prosedur Penelitian*, (PT. Rieneka Cipta: Jakarta, 1998), p.03.
[2]Ibid, Diane L Freeman and Michael, p.20-21.

the data, includes; collecting the data, identifying the data until analyzing the data.

That means, in the processing the data, the writer used numbers, tables, and etc.[3]

**B. Research Procedure**

The writer arranged the procedure of research as follows:

1. Preparation

    a. Choosing the material

    b. Choosing the topic about "Love"

    c. Preparing lesson plan

    d. Preparing research instrument: for final test

    e. Consulting with the English teacher

2. Activity

    a. The writer gives the treatment to the experiment class while giving lesson as usual to the control class

    b. The writer gives the final test for both class

    c. The student do the test

    d. The writer collects the data

    e. The writer analyzes the data

    f. The writer compare the result of both class

    g. The writer makes conclusion the research' result.

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[3] Ibid, Suharsimi Arikunto. p. 11

This study tried to determine whether or not the students' speaking ability increased after being taught by using song. There were independent and dependent variable. The independent variable was the teaching technique by using song and the dependent variable was the students' speaking achievement. The writer can draw as follow:[4]

| Class | Dependent Variable | Independent Variable |
|---|---|---|
| Experiment Class | X | T |
| Control Class | Y | T |

*Note:*

X        : Using English songs

Y        : Without using English songs

T        : Treatment

## C. Population and Sample of the Research

Population is a set (or series) of all elements processing one or more attribute of interested.[5] Population of the research is the students of MAN Lamongan. Actually there are three classes of IPA program and the writer used

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[4] Ibid, Suharsimi Arikunto, p. 80
[5] Ibid, p. 339

cluster random sampling,[6] with taking two classes. They are class of XI IPA 3 as control class, which has 28 students and XI IPA 4 as experiment class which has 27 students.

## D. Setting

The writer observed in MAN Lamongan, which located in Jl. Veteran No. 43 Lamongan, especially in second grade of IPA class. The teaching and learning process hold in the class and language laboratory.

## E. Instrument

Instrument is one of the most important parts of the research. Instrument of this research is test, its aim is to measure the student' speaking skill. The writer used the test in final meeting. That means that the test done after the teaching and learning have finished. The writer used discussion and presentation for test design. The activity as follows:

1. The writer divided the students into five groups; each has five-six students.
2. The writer gave the topic for each group. (see on appendix)
3. The writer gave 30 minutes for discussion
4. The writer asked each group to presence their result, ten minutes for each presentation.

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[6] Ibid, p.340

5. The writer gave the score for each student according to the scoring criteria (see on appendix)

## F. Hypothesis

1. The score of student who use song is higher than the student who does not use song

2. The score of student who use song is same with student who does not use song

## G. The Procedure of Data Collection

In this study, the data is from quantitative data named test score. This analysis used some statistic tests such as; *the normality test, the homogeneity test, the differences between means and t-test*. The explanation as follows:

1. *The Normality Test*

It is a test to measure whether or not the data (sample) from the population distributes normal.[7] The procedures of this test as follows:[8]

a. Making distribution frequency list of each group

b. Determining alpha of each class

c. Calculating mean

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[7] Subana dkk, *Statistik Pendidikan,* (CV. Pustaka Setia: Bandung, 2000), p. 123-126.
[8] This information was given by miss Ma'unah in her course called Statistic Method, taught in sixth semester

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$$\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n}$$

d. Calculating standard deviation

$$s^2 = \frac{\sum (x_i - \bar{x})^2}{n-1}$$

*Note:*

$\bar{x}$ : Final score of mean

$x_i$ : Mean score

n : Many data

e. Calculating list of expectation frequency

The procedures are as follows:

- Determining under limits ( $X_i$ ) of each interval

Class limit = x – 0,5 = (BK1,2…)

- Calculating standard number ( $Z_i$ ) of each interval

$$z_i = \frac{x_i - \bar{x}}{s} \; ; \text{For } i = 1, 2, 3, \ldots n$$

*Note:*

$Z_i$ : Standard number

$X_i$ : Under limits I class

$\bar{x}$ : Mean of score (from frequency distribution)

$s$ : Standard deviation (from frequency distribution)

- Calculating wide of each class interval ( $L$ )

- Calculating expectation frequency ( $E_i$ )

$E_i = L \cdot n$

*Note:*

$E_i$ : Expectation frequency

$L$ : Area of each interval class

n : Many data

f.  Determining Hypothesis

*Ho* : Sample is from population distributes normal

*Hi* : Sample is from population does not distribute normal

g.  Determining alpha $(\alpha)$

h.  Calculating the value of $X^2$ by chi square, the formula is as follow:

$$x^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

*Note:*

K    : Many interval classes

Oi    : Research frequency

Ei    : Expectation frequency

i.  Looking for the value from $x^2(1-\alpha)(k-3)$

j.  Determining experiment criteria:

*Ho* is received if $x^2_{hit} \triangleleft x^2(1-\alpha)(k-3)$ , therefore sample distributes normal

*Ho* is refused if $x^2_{hit} \geq x^2(1-\alpha)(k-3)$, therefore sample does not distribute normal

k. Concluding

2. *The Homogeneity Test*

Homogeneity test is comparison of the biggest and the smallest variants. The writer uses variants homogeny test by Hartley test, the formula is:[9]

$$F = \frac{S^2{}_{big}}{S^2{}_{small}}$$

The procedure is as follow:

a. Arranging Hypothesis

*Ho* : Sample is from population that has variants homogeneity

*Hi* : Sample is from population that has not variants homogeneity

b. Determining alpha

c. Calculating test statistic

$$F_{hit} = \frac{S^2{}_{big}}{S^2{}_{small}}$$

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[9] Ibid, Ma'unah

$F_{tabel}$ ; F; s big, n small

$F_{hit} F_{tabel} = Ho$ is refused

d. Concluding

3. *The Differences between Means*[10]

This study is used one side namely right side:

If the classes distribute normal by variant homogeneities, therefore test procedures are as follow:

a. Determining hypothesis

*Ho* : The final score of students who are using English songs are worse than students who are not using English song.

*Hi* : The final score of students who are using English songs are better than students who are not using English songs.

b. Determining alpha

c. Determining receiving criteria Ho

*Ho* is received if $t_{hit}$ $(\alpha, v)$

In contrast *Ho* is refused

d. Calculating test statistic, the formula is

$$t_{hit} = \frac{\overline{x}_1 - \overline{x}_2}{\sqrt{\dfrac{s_1^2}{n_1} + \dfrac{s_2^2}{n_2}}}$$

[10] Ibid, Maunah

With $v = \dfrac{\left(\dfrac{S_1{}^2}{n_1} + \dfrac{S_2{}^2}{n_2}\right)^2}{\dfrac{\left(S_1{}^2/n_1\right)^2}{n_{1-1}} + \dfrac{\left(S_2^2/n_2\right)^2}{n_2 - 1}}$

*Note:*

$\overline{x}_1$   : Mean score sample 1

$\overline{x}_2$   : Mean score sample 2

$n_1$   : Many of sample data 1

$n_2$   : Many of sample data 2

$S_1{}^2$   : Sample variants 1

$S_2{}^2$   : Sample variants 2

e.  Concluding