CHAPTER III

RESEARCH METHODOLOGY

This chapter presents the Research Design, Population and Sample, Data Collection, Data Analysis, and Hypothesis Testing.

3.1 Research Design

Research design is a plan or program made by a researcher, as the activity target that will be done (Suharsimi, 2002: 45). The purpose of research design are to make easily and efficiently the process of research. There are two types of research, experimental and non-experimental research. The experimental research covers the pre-experimental, the quasi-experimental and the true experimental research. The non-experimental research involves the factorial design, ex-post facto, observation, and survey. This research can be classified into the non-experimental research since there is no treatment towards the sample. It could be ex-post facto research as well for it tries to find the correlation between the independent variable and the dependent variable.

This research also can be defined into correlational research. According to Gay and Airasian (2011), a correlational research describes an existing condition where it is distinctly different from the conditions typically describe in survey or observational studies. It involves data collection in order to determine whether, and to what degree, a relationship exist between two or more quantifiable variables. The correlational study provides a numerical estimate of how two variables are related. It needs correlation analysis to find the relationship of the

variables. Correlation analysis is a statistic technique which aims to find relationship with correlation degree between two variables (Zawawi, 2012: 46). The researcher choose correlational research because in this study there are two variables, vocabulary mastery and reading comprehension that the purpose is to find out the correlation of those variables.

There are several types of studies that may be classified as descriptive design with the type of correlational study. According to Donald Ary (1985:327), "Correlation studies are concerned with determining the extent of relationship between variables. They enable one to measure the extend to which variations in one variable are associated with variations in determined through the use of the coefficient correlation". In this research, the researcher used the descriptive quantitative method, with the analysis of Product Moment. The researcher choose descriptive quantitative method because this study and method is compatible to analyzed and described the data. In this case, the researcher wanted to correlate between students' vocabulary mastery and reading comprehension. It is usually used to correlate two variables based on its correlation coefficient value and useful to describe and find out the significance of the correlation between those variables. There are three possible results of correlational study: a positive correlation, a negative correlation, and no correlation. According to Nunan (1992), the correlational coefficient is a measure of correlation strenght and can range from -1.00 to 1.00. Perfect positive correlation would result in a score of 1. Perfect negative correlation would result in -1.

3.1.1 Purpose of the Study

The purpose of this study is to get empirical data about the significant correlation between students' vocabulary mastery and their reading comprehension, at the second grade students of SMP 4 Muhammadiyah Kebomas Gresik.

3.1.2 Variable

According to Suharsimi, (2002:98) said that " a variable is defined as something that varies from one case to another. The dependent variable is variable which one observes and measures to determine the effect of the independent variable. Independent variable (the major variable) is the variable which selected manipulated and measured by the researcher. In this research there were two variables, they are : Independent variable (X) as Vocabulary Mastery and Dependent variable (Y) as Reading Comprehension.

The relationship of the two variables can be shown as follows :

In which :

X   : Students' Vocabulary Mastery

Y   : Students' Reading Comprehension

⟶ : Correlates

3.2   Population and Sample

3.2.1 Population

There are several definitions about population in literature. According to Hannagan in Selinger (1988:431) population is a group of people (or items) about which information is being collecting. Moreover, Population is people or other things discussed in the research (Suharsimi, 2002:108). The researcher concluded that population is a number of groups interest to the researcher and would like to make the results of the study to be reported in which the sample is taken.

In this case, the population of this research were eight grade students of SMP Muhammadiyah 4 Giri Kebomas Gresik in the academic year 2016/2017 that consist of 3 classes.

3.2.2 Sample

Cooper and Schindler (2008) say that a sample is a part of the target population, carefully selected to represent that population. Thus, Sampling is the process of selecting units from a population so the sample will represent the population and yet, by which the results can be generalized back to the population from which they were choosen (Bungin:2006). It can be concluded that sample is an item or a subject selected from the population to observe and analyze or a limited number of elements from a proportion to represent population.

In this research, the researcher used a sampling technique called cluster random sampling since the researcher only gets permission from the school to take the sample based on the class which has already determined by the school. There were three classes A, B, and C in the second grade of SMP Muhammadiyah 4 Giri Kebomas Gresik. From those classes the researcher took B and C class that

constist 60 students as an experiment and also as sample of this study because the subject is choosen in proportional random sampling and each class have same opportunity to observes. A class that consist 32 students for test validity and reability, and B and C class for real test. That is in a group of individuals, but it is not an individual. Besides, based on the observe before, the population of eight grade students at SMP Muhammadiyah 4 Giri Kebomas Gresik can be classified as homogen population.

3.3 Data Collections

In completing the data, the next step of this research is collecting the data. The function of data collecting is to determine the result of the research. The main components of the technique of collecting the data as follows:

3.3.1 Research Instruments

Based on the several literature, there are two basic kinds of test used to measure the four language skills of the students, the objective test and the essay test (Harris, 1969:71). According to Arikunto (2002) research instrument is a tool used by the researcher to find out or to measure ability with certain us. The research instruments plays an important role to collect data. In conducting this research, the researcher used two instruments, they are vocabulary mastery test and reading comprehension test with multiple choice type.

The choice of the mulptiple choice test type was based on the following considerations:

a. Multiple choice test type is economical in term of the number of items that can be answered in a short period of testing time

b. Students' test papers can be easily and quickly scored.

1. **Vocabulary Mastery Test**

   The test of vocabulary mastery is intended to collect the data about students' vocabulary mastery. The test for examining the students' vocabulary mastery were consisted of the following indicators :

   Table 3.1 The Indicators of Vocabulary Mastery Test

Standart Competence	Indicators	Number of item	Total Item
Measuring or Understanding the level of students' vocabulary mastery	- The ability to identify the Synonym - The ability to identify the Antonym - The ability to identify the Word Grammar - The ability to identify the Meaning in context	(1,5,10,17,12) (3,9,14,16,19) (2,4,11,15,20) (6,7,8,13,18)	5 5 5 5
Total	4	20	20

   (The Indicator of vocabulary mastery test can be seen at Appendix 1)

2. **Reading Comprehension Test**

   The test of reading comprehension is intended to collect the data about the students' reading comprehension. The test for examining the students' reading comprehension were consisted of the following indicators :

   Table 3.2 The Indicators of Reading Comprehension Test

Standart Competence	Indicators	Number of item	Total Item
Measuring or Understanding the level of students' reading comprehension	- The ability to identify the information of written text	(1, 4, 6, 8, 9, 10,)	12
	- The ability to give the meaning of word in the text	(11,12, 17, 18, 19, 20) 15, 16)	2
	- The ability to identify the topic and main idea	(2,7)	2
	- The ability to identify the reference	(3, 5, 13, 14,)	4
Total	4	20	20

   (The Indicator of reading comprehension test can be seen at Appendix 2)

3.3.2 The Construction of the test

In this research, the researcher applied an objective test as an instrument for collecting the data. The test was used to obtain the score of the vocabulary mastery and reading comprehension.

The construction of the test is described below :

a. Vocabulary test

The vocabulary test is taken from the book and other sources, which is made by the researcher. The number of itmes of the test are 20 items of a multiple choice type test with four options : a, b, c, and d. (The Instrument of vocabulary mastery test can be seen at Appendix 8)

b. Reading Comprehension test

The reading comprehension test is a standardized test taken from the book and other sources to reading comprehension. The number items of test was 20 items with four options : a, b, c, and d. (The Instrument of reading comprehension test can be seen at Appendix 9)

3.3.3 Scoring Technique

The Test was used to measure the students' vocabulary mastery test and reading comprehension. It consisted of 20 items of vocabulary test and 20 items for reading comprehension test. (The result of vocabulary and reading can be seen at Appendix 7 and 8).

In scoring test, the correct answer was marked one (1) point and the wrong answer was marked zero (0) point, so the overall raw score from the correct

answer in this achievement test is 20 points. After marking test, the present study tried to gain the final scores by using **S** formula as below:

The final score is calculated : $\dfrac{\textit{students' correct answer}}{\textit{the number of item}}\ \textit{x 100}$

Where :

S   : final score

CA   : number of correct answer

N   : number of questions

(Arikunto, 2002)

Table 3.3 Classification of students' achievement

Score Range	Classifications
80-100	Excellent
66-79	Good
56-65	Average
30-55	Poor
0-29	Fail

Source : Arikunto, 2002

3.3.4 Data Validity and Reability

1. Validity

Validity is a measurement which shows the grades of number of an instrument. An instrument can be valid if it can reflect what is being measured (Arikunto, 2002:145). Thus, Cooper and Schindler (2003:231) say that validity refers to the extend to which a test measures what we actually wish to measure.

In this study, to verify the item validity of instrument, the researcher measure the validity of the test by using Pearson Product Moment formula. The

researcher made pre-test model A and calculated with SPSS for every single item justification. The item of the test is considered valid if the result of the correlation coefficients (r_{xy}) is as many or bigger as the r table of product moment. The number of students joining the test is 32 in A Class, and 30 in B class, with the significance level α = 0.05 and the r table is 0.444. The item of the test is considered not valid if the correlation coefficient is lower than r table. (The result of Vailidity can be seen at Appendix 5)

The criteria is as follows :

$r_o \geq$ r table = valid

$r_o <$ r table = invalid   (Budiyono, 2000:69)

2. Reliability

Reability refers to the consistency and of the results obtained from a piece of research (Nunan 1992:14). It was supported by Sugiyono (2006), states that reliability refers to the level of internal consistency or stability of the test over time. To verify the reliability of the test, the researcher uses the Alpha Cronbach formula. (The result of Reliability can be seen at Appendix 10)

The formula of Alpha Cronbach is :

$$\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N-1) \cdot \bar{c}}$$

Where :

N = the number of items

$\overline{C}$ = average covariance between item-pairs

$\overline{V}$ = average variance

The criteria is as follows :

$r_o \geq$ r table = reliable

$r_o <$ r table = unreliable

Table 3.4 Classification of Students' Consistency

Cronbach's alpha	Internal Consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

3.4 Procedure of Collecting Data

There are some procedures for collecting data in this study. The first steps, researcher prepares the instruments of the research. The instruments are vocabulary mastery test and reading comprehension test. Before instruments are going to be tested to the subject of the research, researcher will check the content of the instruments by consulting with English teacher who teaches the sample class.

Secondly, the researcher will make try out to measure the validity by using Pearson product moment such the idea of Widiyanto (2010:34-37) who stated bivariate correlation is one of formulas to check instruments' validity. For reability, the researcher uses the Alpha Cronbach formula by using SPSS 15. The instrument for try out will distribute to another class which has the same characteristic with the sample. The researcher will choose B class based on the suggestion from English teacher.

After the preparation finished, researcher will do the third steps for testing the instruments to 60 students in B and C class as the subject of this study. The

next steps, researcher will collect all the data both vocabulary mastery test and reading comprehension test. The last, scores will be imported to SPSS for stastistical analysis and conduct a correlation between two variables, then correlation between variables will be estimated.

3.5 Data Analysis

In order to to know the contribution of the independent variable to the dependent variable, it must be known from the relationship of the variables. In this study, the researcher tends to use computerized calculation by using SPSS in order to find out the correlation between students vocabulary mastery and their reading comprehension by using Product Moment formula. According to Borg and Gall (in Arikunto, 2002:251), Product Moment is used to describe the strenght of relationship between two variables. One independent variable and one dependent variable.

3.5.1 Procedure of Data Analysis

The procedure of data analysis has been arranged as the following steps :

a. Preparing

   (i)   Checking the students' name and identity

   (ii) Checking the data completeness

   (iii) Checking the data content

b. Tabulating

   (i)   Scoring the students' work

   (ii) Giving codes on the students' errors

   (iii) Coding with the correlation of data process on computer screen

In this research, there are two steps to analyze the data as follows :

a. Normality Test

Normality test is used to know whether the dependent variables are normally distributed or not before entering linear regression analysis. To check the normality test of the dependent variable, it can be done by using SPSS 15. The normality can be seen from ρ (significance) on Liliefors test; with the interpretation if ρ value is greater than 0.05 (ρ > 0.05,) it tells that distribution of the data is normal. (The result of normality can be seen at Appendix 11)

Hypothesis states :

Ho   : The data are in normal distribution

Ha   : The data are not in normal distribution

b. Coefficient of Correlation

After getting the result of the normality test, researcher is going to analyze whether there is correlation between two variables or not by determining the coefficient of correlation. The variable of vocabulary mastery refers to independent variable (X) and reading comprehension refers to dependent variable (Y). For the correlation analysis those variables, researcher uses Pearson Product Moment Coefficient. Pearson Product Moment Coefficient can be used to measure correlation between vocabulary mastery and reading comprehension. Pearson correlation coefficient is appropiate to variables of the ratio or interval type and it is also assumes that each set of scores is normally distribute. The

coefficient correlation or "r" which indicates the stenght or weakness the relationship of those variables.

The interpretation for calculating correlation coefficients are the value of +1 is obtained for perfect positive correlation, a value of -1 for perfect negative correlation, and a value of zero for no correlation at all (Butler, 1985:141). The formula used as follow :

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

(Suharsimi, 2002:146)

Where :

r   = Person r correlation coefficient

N   = Number of respondent

X   = students' score in vocabulary mastery

Y   = students' score in reading comprehension

$\sum x$ = sum of x scores

$\sum y$ = sum of y scores

$\sum x^2$ = sum of squared x scores

$\sum y^2$ = sum of squared y scores

$\sum xy$ = sum of the product paired source

Significant critical value:0.05 and 0.01

Criteria :

If ro > rt means there is correlation

If ro < rt means there is no correlation

3.6 Hypothesis Testing

The criteria of hypothesis will be explained as follows :

Ho   : there is no positive correlation between vocabulary mastery (X) and reading comprehension (Y)

Ha   : there is positive correlation between vocabulary mastery (X) and reading comprehension (Y)

To test the hypothesis, the researcher used the simple correlation technique using the product moment formula, computerize by utiliting SPSS 16. The value of rxy, then is compared with product-moment table (r_t) at the level of significance 5% and N= the number of respondent. If r_{xy} is greater than rt ($r_{xy} > r_t$), it means that Ho is rejected and therefore Ha is accepted. (The result of correlation coefficient can be seen at Appendix 14)

Table 3.5. The Interpretation of r Value

R Value	Interpretation
0.800 – 1.00	Very strong
0.600 – 0.799	Strong
0.400 – 0.599	Medium
0.200 – 0.399	Low
0.000 – 0.199	Very low (no correlation)

Source : Sugiyono, 2010:184