CHAPTER III

RESEARCH METHODOLOGY

This chapter explains the methodology which is used in this study. It covers: (1) research design, (2) variables, (3) population and sample, (4) research instrument, (5) data & data collection, and (6) data analysis.

3.1 Research Design

According to Kothari (2004), “research design is the conceptual structure within which research is conducted.” It means, research design is the plan that a researcher arranges in order to find the answer of the question or the statement problem.

In this study, the researcher used correlational research as the design because this study was aimed to investigate the correlation between students’ vocabulary mastery and reading ability. According to Fraenkel and Wallen (2009), correlational research is a research which purpose is to find out the relationship between two or more variables and their cause and effect. In addition, Creswell (2012) states that “a correlation is a statistical test to determine the tendency or pattern for two (or more) variables or two sets of data to vary consistently.” In line with Creswell, Ary, et. al (2010) also describe that correlational research looks for the relationship or correlation between variables in positive correlation or negative correlation, and the level of correlation is determined by the coefficient of correlation. It can be said that the detection of correlation among variables is based on its correlation coefficient.
From the description above, it can be concluded that this study constitutes correlational research which is included into nonexperimental quantitative research, because it consists of numerical data, no variable manipulation, and it purposes to identify the correlation between two variables, namely vocabulary mastery and reading comprehension.

3.2 Variables

Fraenkel and Wallen (2009) state that “a variables is any characteristics or quality that varies among the members of a particular group”. In line with Fraenkel and Wallen, Ary, et. al (2010) also describe variable as the characteristic or construct that can convey different values or scores. It can be said that variable is the important element and basic unit to get the information in conducting research. Because the design of this study is correlational research, there are two variables which are used in this study. They are vocabulary mastery and reading comprehension.

3.3 Population and Sample

Ary et. al (2010) state, “the small group that is observed is called a sample, and the larger group about which the generalization is made is called a population.” In other words, sample is a part of population.

For clearer explanation, according to Fraenkel and Wallen (2009), “population refers to all the members of a particular group. It is the group of interest to the researcher, the group to whom the researcher would like to generalize the result of a study.” It can be said that population is a group that
researcher wants to apply the result of the study which is conducted. In this study, the population was the eighth grade students of SMPN I Kepung, Kediri in academic year of 2015/2016 which consists of 9 classes. Each class consists of 38 students, so the total number of population was 342 students.

Cluster random sampling is chosen for some reasons. One of the reasons is that it is difficult to select random sample of individual, because each student has different schedule because of the difference of the class. Fraenkel and Wallen (2009) explain, cluster random sampling can be used if selecting random sample of individual is difficult to be done. Besides, cluster random sampling is easier to apply in school and less time-consuming. The group or the class is taken randomly because each class has the same ability and characteristic which is proven by the raw score of each class in the report cards and based on the testimony of the english teacher. As Fraenkel and Wallen (2009) also claim that “just as simple random sampling is more effective with larger number of individuals, cluster random sampling is more effective with larger number of clusters.” For those reasons, the researcher decided to choose cluster random sampling in conducting this research study. In this study, the class which is choosen as the sample is Class D which consists of 38 students. It is already fulfil the standard minimum acceptable sample size for correlational study. According to Fraenkel and Wallen (2009), the minimum acceptable sample size for correlational study is no less than 30. They also add that if the data which is obtained from a sample is smaller than 30, it may give inaccurate result of the degree of correlation. Therefore, a sample larger than 30 will give meaningful results.
3.4 Research Instrument

According to Fraenkel and Wallen (2009), instrument is the device that is used by the researcher to gather the data from the sample. Arikunto (2006, in Nurazizah 2011) states that the kinds of instrument are test, questionnaire, interview, observation, rating scale, and document analysis. In this study, the instrument which is used was test. According to Ur (1991) test is the instrument whose purpose is to measure the testee’s knowledge or how well the testee has understood about the material.

In this study, the researcher provided two tests, they were vocabulary test and reading comprehension test. Both tests were in the form of multiple-choice. The vocabulary test consists of 25 items of multiple-choice. The reading comprehension test consists of 5 reading text, each reading text consists of 5 questions in the form of multiple choice, so the total items of multiple choice in reading comprehension test is 25 items. Both the vocabulary and the reading comprehension test were adapted from English in Focus for Grade VIII Junior High School (Published by Pusat Perbukuan Departemen Pendidikan Nasional Tahun 2008) and Pengayaan UN Sekolah Menengah Pertama Bahasa Inggris (Published by Direktorat PSMP KEMENDIKBUD) which have been standardized.

For both vocabulary and reading comprehension test, the researcher used raw score technique to score the tests. According to Fraenkel and Wallen (2009), raw score constitutes the total number of the correct answers that the testee get in doing test. The formula is:
$S = R \times wt$

Where:

- $S$ : raw score
- $R$ : right answer
- $wt$ : weight

### 3.5 Data & Data Collection

Data are the important thing that the researcher should get in conducting research. Fraenkel and Wallen (2009) state that “data refers to the kinds of information researchers obtain on the subjects of their research.” Hence, data are considered as the important thing that should be collected before being analyzed. In accordance with the type of this research, which is quantitative research, the data which are used are numerical data. Thereby, the data in this study are the scores that the students get in doing vocabulary test and reading comprehension test. Furthermore, the procedure to collect the data which is done by researcher are as follows:

1. Checking the attendance of the respondents/sample
2. Explaining the instruction to do the test
3. Giving 30 minutes for the respondents/sample to do vocabulary test which consists of 25 multiple-choices
4. Giving 30 minutes for the respondents/sample to do reading comprehension test which consists of 25 multiple-choices
5. Scoring the vocabulary and reading comprehension test
3.6 Data Analysis

Analyzing data is the process in order to evaluate the hypothesis which have been determined by the researcher. In analyzing the data, the researcher used Pearson’s Product Moment formula to find the correlation coefficient between two variables and how significant the correlation between them. According to Ary et. al. (2011), the Pearson product moment is a very useful statistic showing the correlation between two variables. Therefore, the researcher used this formula because it is one of the most positive measurements of correlation. Here is the formula of Pearson product moment:

\[
\begin{align*}
    r_{xy} &= \frac{\sum XY - \left(\frac{\sum X}{N}\right)\left(\frac{\sum Y}{N}\right)}{\sqrt{\left(\sum X^2 - \frac{\sum X^2}{N}\right) \left(\sum Y^2 - \frac{\sum Y^2}{N}\right)}} \\
    \sum X &= \text{sum of scores in X distribution} \\
    \sum Y &= \text{sum of scores in Y distribution} \\
    \sum X^2 &= \text{sum of the squared score in X distribution} \\
    \sum Y^2 &= \text{sum of the squared score in Y distribution} \\
    \sum XY &= \text{the sum of products of paired X and Y scores} \\
    N &= \text{number of paired X and Y scores (subjects)}
\end{align*}
\]

(Ary, et. al., 2010:130)

The term X refers to the result of vocabulary test and the term Y refers to the result of reading comprehension test.

In addition, Ary et. al. (2010:135), state that if the Pearson r approaches +1.00, it means that there is a strong positive relationship between both variables. Meanwhile, if the Pearson r approaches -1.00, it indicates the strong negative
relationship between both variables. However, if the *Pearson r* approaches 0, it shows a weak relationship between both variables. It can be concluded that:

- $r = +1.00$ indicates the strong positive correlation between X and Y
- $r = -1.00$ indicates the strong negative correlation between X and Y
- $r = 0$ indicates the weak correlation between X and Y

In this study, the procedures that the researcher does in analyzing the data are as follows:

1. Collecting the scores of 38 respondents in vocabulary test (X) and reading comprehension test (Y)
2. Analyzing the score of the test by using Raw Scores Illustrating the Calculation of Pearson $r$, as follows:

<table>
<thead>
<tr>
<th>No.</th>
<th>Initial</th>
<th>X</th>
<th>Y</th>
<th>$X^2$</th>
<th>$Y^2$</th>
<th>XY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Calculating the scores with Pearson’s Product Moment Correlation Coefficient formula
4. Finding out whether $H_A$ (Alternative Hypothesis) or $H_0$ (Null Hypothesis) which is accepted in this research
5. Making conclusion