CHAPTER III

RESEARCH METHODOLOGY

This chapter discusses the research methodology. It includes the explanation of the research design, population and sample, data collection, instrument, time allocation, procedure of research, procedure of data analysis.

3.1 Research Design

This study was conducted to find out whether the use of vocabulary notebook in teaching vocabulary was effective to improve students’ vocabulary mastery or not. Quasi-experimental design with nonequivalent control group design is used as research design in this study. Hatch and Farhady (1982) state that nonequivalent control group design means that there are two groups in the study; experimental group and control group, both groups have the same level but they used different methods of teaching in the teaching and learning process.

In this study, both groups were given pre-test which was conducted at the beginning of the study, and post-test was given at the end of the study. The result of those tests was used to investigate whether or not there is any significant difference between the experimental group and control groups. The research design used can be represented in the following chart:

<table>
<thead>
<tr>
<th></th>
<th>EG</th>
<th>T1</th>
<th>X1</th>
<th>T2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CG</td>
<td>T4</td>
<td>T5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Or in the specific form is described as follows:

<table>
<thead>
<tr>
<th></th>
<th>EG</th>
<th>T1</th>
<th>X1</th>
<th>X2</th>
<th>X3</th>
<th>X4</th>
<th>X5</th>
<th>X6</th>
<th>T2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CG</td>
<td>T4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>T5</td>
</tr>
</tbody>
</table>

Description:

EG = Experimental Group.
CG = Control Group.
T1 = Pre-test in which to examine students’ prior knowledge in vocabulary before the treatments.
T2 = Post-test in which to examine students’ vocabulary mastery after the treatments.
T4 = Pre-test in which to examine students’ prior knowledge in vocabulary in control group.
T5 = Post-test in which to examine students’ vocabulary mastery without treatment by vocabulary notebook.
X (1,2,3,4) = The treatments (four times); it is using vocabulary notebook in teaching vocabulary.

3.1.1 Variables

There were two variables in this study, including independent and dependent variables. According to Coolidge (2000: 15), independent variable is the variable which will influence dependent variable. In line with Hatch and Farhady, 1982, p. 12, Variable is an attribute of a person or of an object which varies from person to person or from object to object. Meanwhile, dependent variable is the variable that will be affected by independent variable. In line with Kumar (1999), change
variables are called independent variables. It means because the variable supposed to be responsible for bring about change in a phenomenon or situation. Then, dependent variables are outcome/effect of the change brought about by changes in an independent variable.

Therefore, according to the explanation above, independent variable in this study is the use of vocabulary notebook. On the other hand, dependent variable in this study refers to the students’ vocabulary mastery.

3.2 Data Collection

There were some steps in collecting the data. Firstly, finding some theories related to vocabulary, vocabulary notebook and characteristics of young learners. Secondly, compiling appropriate pilot test and testing it to some students in another group which had the same level with experimental and control group. It was used to determine the validity and reliability of the test, and then it can be used as pre-test and post-test. Thirdly, control and experimental group receive pre-test to assess students’ vocabulary prior knowledge before they got some treatments.

However, the treatment was only given to the experimental group. Meanwhile, control group was taught by using conventional method (wordlist). The treatment was applied for four times.

Fourthly, post-test was administered to the experimental group and the control group to determine students’ development after the treatment. Moreover, the items of pre-test and post-test were the same. Lastly, the results of pre-test and post-test were computed by SPSS 18.0.

3.2.1 Population and Sample

The population of this study is all of the students at seventh grade in junior high school. Population and samples have an important role in conducting the Titeu Ni’matul Istiqomah

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study. According to Arikunto (2006: p. 130), population is all of the individuals who are participated as the subjects in the study.

Meanwhile, Arikunto (2006) states that sample are part of the population. It has the smaller group as the representative of the population. In this study, the sample was class 7A and class 7B. Class 7A was played as experimental group which was given some treatments. On the other hand, class 7B was played as control group which was taught by using conventional method. Those groups had the same level in English ability.

3.2.2 Instruments

In conducting a study, data collection competed an important part in the research. Hence, the instrument as a tool in collecting the data should accommodate the whole information needed in the research study. It is in line with Fraenkel and Wallen (1990: 90) that “An instrument, after all, is a device used to gather data”.

The instruments in this study were written test (pre-test and post-test) and interview. Those instruments were used to measure the effectiveness of using vocabulary notebook to improve students’ vocabulary mastery, and to find out the different between two groups after the post-test. And last to find out students’ perceptions in using vocabulary notebook in improving their vocabulary mastery. There are 33 students in each group answered 25 questions. The questions were about their vocabulary index from the textbook.

Pre-test was given to assess students’ vocabulary prior knowledge before the students in the experimental group were taught the material by using vocabulary notebook. Meanwhile, control group was taught through conventional method (wordlist). In addition, both group used different lesson plan. Experimental group used the lesson plan modified to apply teaching method by using vocabulary notebook. Moreover, control group used the lesson plan modified to
apply teaching method by using wordlist. In addition, test instrument must be appropriated to the syllabus of the school to accomplish the purpose of subject.

On the other hand, interview was conducted in this study to get more information about students’ perceptions in using vocabulary notebook in improving students’ vocabulary mastery. According to Fraenkel and Wallen (1990), basically interview and questionnaire were the same; they consist of questions that should be answered by the sample of the study, however interview was taken orally.

3.3 Time allocation

The study was conducted in two weeks. Both the experimental and control groups were taught twice a week. However, treatments were only given to the experimental group. Meanwhile, the control group learns as usual by using lesson plan from the school. Moreover, treatments were done in second to fourth meeting. The last meeting, post-test was conducted in both the experimental and control groups. The schedule of the research can be seen in the following table 3.2:

<table>
<thead>
<tr>
<th>No</th>
<th>Date</th>
<th>Material</th>
<th>Treatment</th>
<th>Date</th>
<th>Material</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>13 May 2015</td>
<td>Pre-test</td>
<td>-</td>
<td>29 April 2015</td>
<td>Pre-test</td>
<td>-</td>
</tr>
<tr>
<td>3.</td>
<td>20 May</td>
<td>Procedural</td>
<td>Keeping</td>
<td>13 May</td>
<td>Procedural</td>
<td>Wordlist</td>
</tr>
</tbody>
</table>

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3.4 Procedure of the research

Procedure of the study consists of some steps, such as pre-test, post-test, and interviews were conducted to answer research questions. In addition, some treatments were done after doing pre-test.

3.4.1 Pre-test

Pre-test was conducted in the beginning of the research before the treatments. In addition, pre-test was given to analyze students’ vocabulary prior knowledge. It was given to the experimental group and the control group to collect the data whether those groups had the same ability or not. Pre-test was done by giving 25-item of matching. Pre-test was implemented to 33 students as the sample.

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3.4.2 Treatments

The treatments were given to the experimental group. It was done for four times in the class. Moreover, it was performed based on the syllabus of the junior high school which has been explained earlier. In other words, the control group was taught by using conventional method (wordlist).

In conducting the treatment, experimental group got some vocabulary notebook as the media/strategy in teaching vocabulary to improve students’ vocabulary mastery. The treatments explored students’ vocabulary mastery. Furthermore, the treatments were required in omitting students’ anxiety in their prior knowledge.

3.4.3 Post-test

The procedure of pre-test and post-test was the same. Pre-test was done in the beginning of the study. In contrast, post-test was given after the whole treatments had been done. In addition, post-test was aimed to analyze whether or not the treatments influences the sample in the experimental group.

3.4.4 Interview

Interview was one of the instruments to gather the data. Moreover, interview consists of some questions that should be answered by the students orally. It is in line with Arikunto (2006) that the interview can be defined as a dialogue between the interviewer and the sample in order to collect the information related to the study. The aim of the interview in this study was to get the
students’ perceptions toward using vocabulary notebook in improving their vocabulary mastery.

3.5 Procedures of Data Analysis

Analyzing the data was performed after collecting the data from the instrument. It had been explained previously. Firstly, pilot test was analyzed to find out its validity and reliability. Secondly, students’ score in pre-test and post-test were calculated by independent t-test to know significant difference between control and experimental. Thirdly, independent t-test was performed in calculating two mean scores of pre-test and post-test to see whether or not there is significant difference. Then, score of pre-test and post-test in experimental group were calculated by dependent t-test to know significance improvement in their vocabulary mastery. Lastly, the transcription of interview was interpreted to get additional information in order to answer the research questions.

3.5.1 Test Instrument Analysis

The instrument in this study was a tool used to collect the data. In making conclusion accurately, the data should be factual and complete. Hence, the instrument used has to be tested. It is in line with Arikunto (2006) who states that good conclusion will get from good data. While, accurate data can be found by using good instrument. It can be called as good instrument when it is tried out to some subjects and the result shows that it is valid and reliable.

3.5.2 Pre-Test and Post-Test Data Analysis
The form of pre-test and post-test was the same. However, those tests had different purposes. Pre-test was done to measure students’ vocabulary prior knowledge before giving the treatments. Meanwhile, post test was conducted to know the improvement of students’ vocabulary mastery both in the experimental and control groups after comparing it to the pre-test. In calculating the data, t-test was used in this research. It is usually used statistical test to compare two means because t-test can accommodate very small sample sizes (Hatch and Farhady, 1982).

In addition, Hatch and Farhady (1982) also state there should be certain assumptions in doing statistical test, they are: only one group is the subject in the experiment, the scores on independent variable are continuous, and the scores are normally distributed, while variances of score are equal. Consequently, normality test and variance homogeneity test were used in this research study before conducting t-test.

In conducting normality test, Kolmogorov-Smirnov was used to analyze normality distribution. Then, Levene formula in SPSS 18.0 for windows was applied to analyze the variance homogeneity in this study. In other words, independent t-test can be used if the data is normal and homogeneous. It was required to find out initial ability of students’ vocabulary mastery in the experimental group and the control group.

Furthermore, the students’ scores on pre-test and post-test of the experimental group will be calculated to know the correlation coefficient of effect size in the t-test calculation. It is aimed to interpret whether the treatments have an effect in improving students’ vocabulary mastery or not. The effectiveness of the treatments can be indicated from the difference between the two groups’ mean. If the difference between the two groups’ mean
is small, it indicates that it has small effect size. Meanwhile, if the difference between the two groups’ mean is large, it indicates that it has large effect size.

According to Coolidge (2000), the interpretation of the effect size consists of three scales, such as small, medium, and large. The detail explanation can be seen in the following table.

<table>
<thead>
<tr>
<th>Effect size</th>
<th>r value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>0.100</td>
</tr>
<tr>
<td>Medium</td>
<td>0.243</td>
</tr>
<tr>
<td>Large</td>
<td>0.371</td>
</tr>
</tbody>
</table>

Moreover, the formula in order to determine the effect size in t-test calculation as follows:

\[ r = \sqrt{\frac{t^2}{t^2 + df}} \]

Notes:
- \( r \) = the correlation coefficient of effect size
- \( t \) = \( t_{obt} \) in the independent t-test
- \( df = N_1 + N_2 - 2 \)

(Coolidge, 2000: 151)

3.5.3 The Independent T-Test

Before conducting the independent t-test, there are some assumptions that have to be considered. According to Coolidge

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(2000), there are three assumptions to fulfill the use of independent t-test appropriately. The assumptions are; independent groups, normality of dependent variable and homogeneity of variance.

Furthermore, the normality of distribution test and homogeneity of variance test should be administrating independent t-test as the analysis of pre-test output and or post-test output.

The independent t-test is usually employed to discover causative relationship between independent variable and dependent variable (Coolidge, 2000).

The formula for independent t-test

\[ t_{obt} = \frac{M_1 - M_2}{S_{M_1 - M_2}} \]

Note:

M1 : mean of group 1
M2 : mean of group 2
S : variance

The hypothesis index is interpreted by comparing the result with the degree of significant at level 0.05. If the result > table at level 0.05, the null hypothesis is rejected (Coolidge, 2000).

3.5.4 The Dependent T-Test

According to Coolidge (2000,156), “dependent t-test is used to analyze the difference between groups’ and means in experimental design where the participants in both groups are related to each other in some way.” Thus, by using this t-test, the output of pre-test and post-test of the control group and the
experimental group can be compared. Furthermore, from the calculation, the difference between the control group and the experimental group can be found. When the result of calculation shows a significant difference, the null hypothesis will be rejected.

After the calculation done, the $t_{obt}$ must be compared with $t_{critical}$. As it is dependent test, the degree of freedom must be found before comparing to the table.

$$Df = n - 1$$

If the $t_{obt}$ is greater than $t_{critical}$ the null hypothesis will be rejected and conclude that the result is significant in the chosen level of $\alpha$ (0.05)

### 3.6 Interview Data Analysis

The data of interview was transcribed in collecting the information from the sample in the study. There were some questions of interview that should be answered by the students orally. It was used to get more information related to the use of vocabulary notebook in improving students’ vocabulary mastery. Specifically, interview was conducted to answer the second question in research question that was in order to find out the students perceptions towards using vocabulary notebook.

In short, the instrument in this study consists of pre-test, post-test and interview to answer the research questions. Moreover, four meetings will be used to conduct the treatments by using vocabulary notebook.

Research findings and discussions were explained in the next chapter. In chapter four, SPSS 18.0 for windows was used to compute the data.