CHAPTER III
RESEARCH METHODOLOGY

This chapter presents the research method used by the researcher in conducting this study. The discussion will cover research design, population and sample, data collection, data analysis and statistical hypothesis.

3.1 Research Design

The method of this study is quantitative method. The design of this study is quasi-experimental design. According to Millan (2006) the purpose of quasi experimental design is to determine the cause and effect between independent and dependent variable. So, the researcher uses quasi-experimental design in this study to see the effect of wordless picture on eight-grade students’ writing at SMPN 1 Ngunut Tulungagung. In this study, wordless picture is the independent variable which may influence students’ writing as the dependent variable.

The researcher uses pretest and posttest on the control and experimental group, to see the effect of wordless picture by looking at pretest and posttest measurement and comparing the gain scores between both classes. The effect can be seen from the improvement of students’ score of experimental group in the posttest. The score is taken by the researcher after students have been given some treatments and from the comparison of both classes. The experimental group is given wordless picture as media in the classroom and the controlled class without using wordless picture.
Here is the illustration of the design:

The research matrix design

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest</th>
<th>Treatment</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>$E$</td>
<td>$Y_1$</td>
<td>$X$</td>
<td>$Y_2$</td>
</tr>
<tr>
<td>$C$</td>
<td>$Y_1$</td>
<td></td>
<td>$Y_2$</td>
</tr>
</tbody>
</table>

Where:

- $E$: The experimental group
- $C$: The control group
- $Y_1$: Treatment
- $Y_2$: Pretest
- $X$: Posttest

According to Arikunto (2006: 96) variable is research subject or as to focuses some research. The research has two variables examined in this experimental research, they were;

1. Dependent variable

Dependent variable is a variable that emerge in function relationship influenced by the independent variable. The dependent variable in this research was the students’ writing.
2. Independent variable

Independent variable is the stable variable and unaffected by other variable. Independent variable in this research was wordless picture.

If the result of the test show that wordless picture influence the students’ writing in SMPN 1 Ngunut Tulungagung, it means that $H_0$ (Null Hypothesis) is accepted. So, if the result show that wordless picture influence the students’ writing in SMPN 1 Ngunut Tulungagung, $H_0$ (Null Hypothesis) is rejected and $H_a$ (Alternative Hypothesis) is accepted.

3.2 Population and Sample

This research is conducted in SMPN 1 Ngunut Tulungagung. The school is located in Recobarong Street, Ngunut Tulungagung. Ary (2010 : 148) stated that population is all members of any well defined class of people and events. The population of this research is the eight grade students of SMPN 1 Ngunut Tulungagung.

According to Ary (2010 : 148) a sample as a portion of a population. To begin the experiment research, the researcher needs two groups which have no significant difference in writing skill. Then, the researcher decides that Class 8H to be the experimental group and Class 8I to be the control group. According to the teacher, the choice was selected for the following reasons;

1. There are many students which are not motivated enough in writing in both classes.

2. The score of both classes are not significantly different.
3.3 Data Collection

The researcher was obtained the data from the pretest and posttest in teaching writing especially in using wordless picture as media. These test is conducted to know does wordless picture influence the students writing or not. The pretest and posttest will be given to the experimental group and control group. The treatment will be given only to the experimental group.

3.3.1 Instrument

The instrument in this research is a test. According to Ary (2010 : 201), test is a set of stimuli presented to an individual in order to elicit responses on the basis of which numeral score can be assigned. However, in this study the researcher uses writing test as the instrument. There are two kinds of test used in this experimental research design: posttest and pretest.

1. Pretest

This test can be called as the pretest before the treatment of this research. The pretest is aimed to know the students mastery in writing materials before the treatment was carried out. In the testing process, the students have to write a narrative text themselves. This result of the test became the evaluation before the use of wordless picture as media in writing narrative text in the class.

2. Posttest

Posttest is a test which is done after teaching process or treatment. Posttest is done after the students get different treatments (Class 8H was taught by using wordless picture as media and Class 8I was taught without wordless picture as media). From the score of this test, the researcher intend to find out the effect of
wordless picture on eighth-grade students’ writing at SMPN 1 Ngunut Tulungagung. The result of the scoring then is compared with pre-test. So, the researcher knows how far is the effect of wordless picture on eighth-grade students’ writing at SMPN 1 Ngunut Tulungagung.

3.3.2 Treatment

Experimental and control group is taught with different treatment. The experimental group is given the treatment on teaching writing using wordless picture as media. The control group was taught without giving wordless picture as media. It means that the researcher gave the same pretest to experimental and control group and also give the same posttest in both groups. The difference is only about the treatment after pretest and before posttest.

3.3.3 The Procedure of the Data Collection

To get the real data, the researcher uses some steps in collecting the data as follows:

1. The researcher conducts the pretest to both experimental and control group.

2. The researcher conducts the treatment to experimental group by using wordless picture as media.

3. The researcher conducts the posttest to both experimental and control group.

4. Finally, the researcher analyzes the data of both group from the pretest and posttest.
3.4 Data Analysis

In analyzing the data, the researcher uses T-test formula. The two classes are compared to the independent variable, the experiment class is X variable and the control class is Y variable. Sudijono (2008 : 324) defined the formula of T-test is expressed as follows:

\[ t_o = \frac{M_1 - M_2}{SE \frac{M_1 - M_2}{M_1}} \]

Where:

\( M_x \) = Mean of Variable X

\( M_y \) = Mean of Variable Y

\( SE \) = Standard Error

Afterwards, According Sudijono (2008 : 325,326) the calculation goes to several processes as follows:

1. Determining Mean of Variable X

\[ M_1 = \frac{\sum fX}{N_1} \]

2. Determining Mean of Variable Y

\[ M_2 = \frac{\sum fY}{N_2} \]

3. Determining Standard of Deviation Score of Variable X
4. Determining Standard of Deviation Score of Variable Y

\[ SD_1 = \sqrt{\frac{\sum f X^2}{N_1}} \]

5. Determining Standard Error of Mean of Variable X

\[ SE_{m1} = \frac{SD_x}{\sqrt{N_2 - 1}} \]

6. Determining Standard Error of Mean of Variable Y

\[ SE_{m2} = \frac{SD_y}{\sqrt{N_2 - 1}} \]

7. Determining coefficient correlation “r_{xy}” Product Moment

\[ r_{12} = \frac{\sum x'y'}{N} - (C_{x'}) (C_{y'}) \]

\[ \frac{(SD_{x'}) (SD_{y'})}{(SD_{x'}) (SD_{y'})} \]

8. Determining Standard Error of Difference of Mean of Variable X and Y

\[ SE_{M_1 - M_2} = \sqrt{SE_{M_1}^2 + SE_{M_2}^2 - (2 \cdot r_{xy})(SE_{M_1})(SE_{M_2})} \]

9. Determining t_o

\[ t_c = \frac{M_1 - M_2}{SE_{M_1 - M_2}} \]

10. Determining t_{table} in significance level 5%, with df (degrees of freedom)

\[ d_f = (N_1 + N_2) - 2 \]
3.5 Statistical Hypothesis

The statistical hypothesis of this study can be seen as:

\( H_0 \) : There is no significant progress in using wordless picture towards students’ writing in narrative text.

\( H_a \) : There is a significant progress in using wordless picture towards students’ writing in narrative text.

\[ H_0 : \mu_1 = \mu_2 \]

\[ H_a : \mu_1 \neq \mu_2 \]

Then, the criteria used is in the following:

1. If t-test \( (t_o) > t\text{-table} (t_t) \) in significant degree of 0.05, \( H_0 \) (null hypothesis) is rejected. It means that the rates of mean score of the experimental group are higher than the control group. The use of wordless picture improve students’ writing in narrative text.

2. If t-test \( (t_o) < t\text{-table} (t_t) \) in significant degree of 0.05, \( H_0 \) (the null hypothesis) is accepted. It means that the rates of the mean score of the experimental group are the same or lower than the control group. The use of wordless picture does not improve students’ writing in narrative text.