CHAPTER III

METHODOLOGY OF RESEARCH

In this research, I used quantitative method. Quantitative method focuses on population and sample, design of research, variable of research, technique of collecting the data, technique of analyzing the data and statistic hypothesis. It was done by using the quasy experimental method. Arikunto (2002: 83), states that quasy experiment consists of three design, there are: 1) One shot case study, 2) Pre test and pos test, 3) Static group comparison. In this research, I used one group pre-test and post-test design to know whether the Frayer Model can enrich the students’ vocabulary.

3.1 Population and Sample

3.1.1 Population

Population is a set (or collection) of all elements possessing one or more attributes of interest. According to Sugiyono (2009: 80) population is generalization area which consists of object and subject with particular characteristic determined by writer to be studied for taking conclusion. In this research, the population is all the eighth grade students of SMP N 6 Gorontalo which consists 392 in 2010/2011 year academic.

3.1.2 Sample

Sample is a part of total or characteristic that has population (Sugiyono, 2009: 81). Technique of taking sample in this research is purposive sampling. It is taken because some reasons, they are limited with time, does not much need energy and financial, so can not take the big sample. This research
focused take class VIII\(^2\) that consists of 30 students as the sample of this research. In eighth grade students of SMP Negeri 6 Gorontalo, there are 11 classes, but only class VIII\(^2\) as the sample because the students in this class have varied ability, there are some students who have high, middle, and low ability.

### 3.2 Design of Research

The design used one class pre-test and one class post-test design as follows:

\[
\begin{array}{c}
O_1 \quad x \quad O_2 \\
\end{array}
\]

Sugiyono (2009: 79)

Note:

- \(O_1\) : Pre-test
- \(X\) : Treatment
- \(O_2\) : Post-test

There are three steps conducted in this design, they are as follows:

1) **Pre-test**

The first meeting, I gave the pre-test to the students, related to their vocabulary by using standard test, test item consist of the noun and adjective. I gave multiple choice and matching test that consist of 30 items. Then, I gave 1 score for the correct answer and 0 for the false. Therefore, the total of the correct answer is the result of students’ answer is analyzed. The aim of pre-test giving was to know the students’ basic ability in mastering about English vocabulary before giving the treatment.
2) Treatment

After giving the pre-test, I applied the treatment. It was aimed to give instruction about using Frayer Model technique to the students in teaching English vocabulary. In implementation this technique, the students were taught for six meetings in three weeks based on the material. I gave students the Frayer Model’s graphic where in the middle of the graphic will be written a word as the key word, and asked them to complete the graphic. Then, they presented their graphic and discussed.

3) Post-test

The last after the treatment, I gave them post test. This test supposed to know whether or not applying Frayer Model in teaching vocabulary could enriched the students’ vocabulary.

3.3 Variable of Research

In this research, I used two variables namely: variable X as independent variable and variable Y as dependent variable. “The Application of Frayer Model” is as independent or X variable and “Enriching the Students’ vocabulary” as dependent variable or Y variable which independent (X) variable to influence dependent (Y) variable.

3.4 Technique of Collecting the Data

In collecting the data I used test as instrument. The test forms are multiple choices and matching. The test consists of 30 items and indicator of the test focused on find out the noun and adjective.
1. Conceptual Definition

Vocabulary is all the words that learned in foreign language that have the meaning. The words are important in expressing ideas and to communicate.

2. Operational Definition

Operational definition is the result of study of the students in mastering vocabulary in the class, before and after treatment.

3. Blue Print

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Kinds of Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Multiple Choice</td>
</tr>
<tr>
<td>1.</td>
<td>Noun</td>
<td>13</td>
</tr>
<tr>
<td>2.</td>
<td>Adjective</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

1) Validity Testing

The aim of validity testing is to verify the correlation between scores of instrument and the total score of instrument that would be have by respondent (samples). To get the validity of the test, I used product moment formula as follow:

\[ r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{(N\Sigma X^2 - (\Sigma X^2))(N\Sigma Y^2 - (\Sigma Y^2))}} \]

Where:

- \( r \) = coefficient of correlation
- \( N \) = number of sample
2) Reliability Testing

For testing reliability of the test, I used the formula as follows:

$$r_{11} = \left[ \frac{k}{k - 1} \right] \left[ 1 - \frac{M (k - M)}{k V_t} \right]$$

Notes:

- \(r_{11}\) = reliability of instrument
- \(V_t\) = total variants
- \(k\) = number of items/ test
- \(M\) = the average of the score

To determine whether the test was reliable or not, I used criteriation, as follows:

- 0.80-1.00 = very high
- 0.60-0.79 = high
- 0.40-0.59 = medium
- 0.20-0.39 = low

4.6 Technique of Analyzing the Data

1) Normality Testing

The aim of normality testing is to know whether the data is normal or not. In analyzing the data, I used Lilliefors by following procedures:

a. Observation \(X_1, X_2, X_3, \ldots, X_n\) is become deviation \(Z_1, Z_2, Z_3, \ldots,\)

\(Z_n\) by using the formula as follow: 
$$Z_i = \frac{X_i - \bar{X}}{S}$$
where:

- \(Z_i\) : Standard of value
- \(\bar{X}\) : The average of total score
- \(S\) : Total of score deviation
b. For each number uses distribution of normal then count the deviation by using the formula as follow: \( F(Z_i) = P(Z \leq Z_i) \)

c. The next procedure is counting proportion \( Z_1, Z_2, Z_3 \ldots Z_n \) which is smaller or similar with \( Z_i \). if this proportion is \( S(Z_i) \),

\[
S(Z_i) = \frac{\text{amount } Z_1Z_2Z_3\ldots Z_n \leq Z_i}{N}
\]

d. Count the deviation of \( F(Z_i) - S(Z_i) \) and then determine the value.

e. Take the biggest value among the absolute values deviation, which is called \( L_o \)

f. The criterion of analysis, the data is normal distribution if \( L_o \leq L_{dist} \).

Sudjana, (2002: 466-467)

2) Testing Hypothesis

In testing hypothesis, I used t-test formula. This formula is used to find whether the application of Frayer Model technique can enrich the students’ mastering of vocabulary. The formula is follows:

\[
t = \frac{X_1 - X_2}{s \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}
\]

\[
S^2 = \frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}
\]

Where:

\( X_1 \) = the average value of pre-test
\( X_2 \) = the average value of post-test
\( N_1 \) = the number of sample of pre-test
\( N_2 \) = the number of sample of post-test
$S_1$ = standard of deviation of pre-test
$S_2$ = standard of deviation of post-test
$S$ = standard of deviation of both pre-test and post-test

Sudjana, (2002: 239)

3) **Hypothesis of Verification**

In this research I used hypothesis as follow:

$H_0$ : $\pi_1 = \pi_2$
$H_0$ : $\pi_1 \neq \pi_2$
$\mu_1$ : Pre-test
$\mu_2$ : Post-test

Note:

- The hypothesis ($H_0$) will be tenable if $t_{\text{count}} \leq t_{\text{list}}$
- The hypothesis ($H_0$) will be untenable if $t_{\text{count}} \geq t_{\text{list}}$

Sudjana, (2002: 467)