CHAPTER III
RESEARCH METHODS

This part deals with research design, population and sample, variables, data collecting technique, steps in collecting data, research material, criteria of good test, data analysis, hypothesis testing.

3.1 Research Design

This research is a quantitative study which has one group pretest-posttest design. There was one class in this pre-experimental method. The experimental class was given treatment through Jumbled Letters Technique. This class had pretest, posttest and three times treatments. The pretest was used to find out the students’ preliminary ability and the posttest was used to look how far the increase of the students’ vocabulary achievements after the treatments. The aim of this research is to find out whether Jumbled Letter Technique can increase the students’ vocabulary achievement significantly. The design of this research is represented as follows:

\[ T_1 \times T_2 \]

\[ T_1 = \text{Pretest} \]

\[ X = \text{Treatment} \]

\[ T_2 = \text{Posttest} \]

(Setiyadi, 2006:131)
3.2 Population and Sample

1. Population
Gay (1987:102) defines that population is the group of researcher’s interest, the group to which she or he would like the results of the study to be generalized. The populations of this research were all the first year students at SMP N 1 Kibang Lampung Timur in academic year of 2011/2012 divided into six classes.

2. Sample
Gay (1987: 101) says that sampling is the process of selecting individuals for study. The researcher selected one class as the sample of the research by using random sampling technique which was using lottery. In this research, the researcher chose class VII/C. The selected class consisted of 30 students as the experimental group.

3.3 Variables

The research consists of the following variables:

1. Students’ vocabulary achievement is dependent variable (Y). It means that the achievement of student’s vocabulary partly depends on their ability in memorizing and understanding a number of English words in language.

2. Jumbled Letter Technique is independent variable (X). It means that this technique does not depend on anything, but it is to motivate the subjects in learning English vocabulary.
3.4 Data Collecting Technique

The data of the research was the students’ vocabulary achievement of *Occupations, Activities* and *Describing Conditions* before and after the treatments.

The instrument of the research was objective vocabulary test in the form of multiple choice tests, where the researcher gave pretest and posttest in order to evaluate, to measure the vocabulary achievement of *Occupations, Activities* and *Describing Condition* related to content words (noun, verb, adjective).

In collecting data, the researcher used the following procedures:

1. Pretest
   
   The pretest was conducted before treatments. It was used to know how far the students have mastered the vocabulary before the treatments were given. The pretest used by researcher was an objective test of the multiple choices. The number of item in the test is 40 items and each item has four options of answers. One is the correct answer and the rests are the distracters.

2. Posttest
   
   The posttest was conducted after the researcher conducts the treatments. It was used to know how far the students had mastered the English vocabulary after being taught through jumbled letter technique. Similar to the pretest, the researcher used an objective test in the form of multiple choices. The questions were the same as the pretest. But, the researcher changed the order of the questions and the distracters from those in the pretest in order that the students not only memorize or remember the order of the answer for each question but
they could really understand the questions. The posttest consists of 40 items with four options. One is the correct answer and the rest are the distracter.

3. Observation

The observation was conducted to investigate the students’ activities in teaching learning process using jumbled letters technique. The observation sheet was used to find out the students’ attention to the teacher’s explanation, the students’ response to the teacher instruction and question, the students’ group activity and so on. Rater was used in collecting the data to ensure the reliability of the observation and to avoid the subjective of the research. The rater was the English teacher of SMP N 1 Kibang, who observed the class during teaching learning process.

3.5 Steps in Collecting Data

1. Determining the sample of the research

The sample of the research was selected by using random sampling technique, which was using lottery. The researcher took one of six classes of the first year students at SMP N 1 Kibang Lampung Timur as the research sample. The sample class consists of 30 students. The sample of the research followed pretest, treatments, and posttest.

2. Selecting instrument materials

In this research, there was one pretest that is proper to the grade VII students of SMP. It focuses on vocabulary, which was classified into content words (noun, verb and adjective). The materials were taken based on the educational unit level curriculum of English for Junior High School.
3. Conducting try out

The try out was conducted in the different class of the experiment class in first class of SMP N 1 Kibang Lampung Timur. Try out was conducted to measure the reliability of the tests. It was administered for 50 items in 90 minutes. The aim of try out was to know the quality of the test which would be used as the instrument of the research, and determined which item should be revised for the pretest and posttest.

4. Conducting the pre test

Pretest was conducted for 40 items in 60 minutes. It was held to measure student’s basic ability in experimental class.

5. Conducting the treatment

After giving pretest, the students were given three times treatments by using Jumbled Letters Technique based on the lesson plan which had been prepared. Each treatment was held for 90 minutes.

6. Administering post test

The post test was administered after the application of Jumbled Letters Technique. It was conducted for 40 items in 60 minutes and the aim was to find out the students’ vocabulary achievement after the implementation of Jumbled Letters Technique.

7. Analyzing the Test Result

After conducting pretest and posttest, the researcher analyzed the data. The data was analyzed by using T-test. It was used to know whether jumbled letter technique could be used to increase the students` vocabulary achievement
significantly. The data was computed through the Statistical Package for Social Sciences (SPSS).

8. Reporting the Result

In reporting the data, the data was arranged systematically based on the pretest and posttest to see whether there was an increase on the students` vocabulary achievement.

3.6 Research Material

The material was taken from the students’ book that suitable for junior high school students. The materials were based on curriculum of junior high School. There were several topics that will be taught for junior high School students based on English curriculum for first year students at junior high school.

3.7 Criteria of Good Test

In this research, to prove whether the test has good quality, it had to be tried out first. The test could be said had good quality if it had a good validity, reliability, level of difficulty, and discrimination power.

1. Validity

The test can be said valid if the test measures the object to be measured and it is suitable with the criteria (Hatch and Farhady, 1982:250). To measure whether the test has a good validity, this research used content and construct validity.
a. Content Validity

Content validity is concerned with whether the test is sufficiently representative and comprehensive for the test. In the content validity, the material was given suitable with the curriculum. Researcher used the vocabulary that was supposed to be comprehended by grade VII students. In this research, the researcher arranged the instrument based on the material that will be given, which is vocabulary, and the researcher made instrument related to vocabulary which was content words (noun, verb and adjective). If the instrument had represented all the ideas that connected with the material that will be measured, that measuring instrument has fulfilled the aspects of content validity. In this case, that measuring instrument had fulfilled the aspect of content validity. Content validity also can be examined from the table of specification. If the table represents the material that the tester wants to test, it means that it is a valid test from the point of view (Shohamy, 1985:74). The content validity is constructed by including vocabulary material presented in the training; they were noun, verb and adjective. The researcher took those three aspects since it was appropriate with jumbled letter technique. The content of try out test is presented in the table of specification below:

Table 3.1 Table of specification of try out test

<table>
<thead>
<tr>
<th>No</th>
<th>Word Classes</th>
<th>Percent</th>
<th>Number</th>
<th>Item Numbers</th>
</tr>
</thead>
</table>
b. Construct Validity

Construct validity is concerned with whether the test is true reflection of the theory of the trait – in our case language which is being measured. It means that the items should really measure the students’ vocabulary achievement. In this research, the researcher used the vocabulary that is supposed to be comprehended by the grade VII students of Junior High School. The material was under topic of knowing new vocabularies which is representative of vocabulary material based on the curriculum used in Junior High School; KTSP (Kurikulum Tingkat Satuan Pendidikan) 2006.

2. Reliability

Reliability of test can be defined as the extent to which a test produces consistent result when administrated under similar conditions (Hatch and Farhady, 1982:243). To compute the reliability of test, split half method was used. It was done through dividing the test into two parts, odd and even number.

To measure the coefficient of the reliability, the researcher used the Person Product Moment Formula below:

<table>
<thead>
<tr>
<th>No</th>
<th>Word Classes</th>
<th>Percent</th>
<th>Number</th>
<th>Item Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>100%</td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>
\[ r_{11} = \frac{\sum xy}{\sqrt{\left( \sum x^2 \right) \left( \sum y^2 \right)}} \]

Where:

- \( r_{11} \): coefficient of reliability between odd numbers and even numbers items
- \( x \): total numbers of odd numbers items
- \( y \): total numbers of even numbers items
- \( n \): numbers of students who take part in the test
- \( x^2 \): square of \( x \)
- \( y^2 \): square of \( y \)
- \( \sum x \): Total score of odd number items
- \( \sum y \): Total score of even number items

(Arikunto, 1997:69)

The criteria of reliability are:

- 0.80 - 1.00: very high
- 0.60 – 0.79: high
- 0.40 – 0.59: average
- 0.20 – 0.39: low
- 0.00 – 0.19: very low

Then, to compute the coefficient correlation of the whole items, the researcher used Spearman Brown Prophecy Formula.

\[ rk = \frac{2rl}{1 + rl} \]
Where:

\( r_k \) : reliability of a full test

\( rl \) : reliability of half test

The criteria of reliability are:

- 0.90 - 1.00 : high
- 0.50 – 0.89 : moderate
- 0.00 – 0.49 : low

(Hatch and Farhady, 1982:246)

3. Level of Difficulty

Difficulty level related to how easy or difficult the item is from point of view of the students who take the test. This is important since test items, which are too easy, tell us nothing about differences is discarded. To see the level of difficulty, this research used the following formula:

\[
LD = \frac{R}{N}
\]

Where:

\( LD \) : level of difficulty

\( R \) : the number of students who answer correctly

\( N \) : the total number of students following the test
The criteria were:

- $<0.30$ : difficult
- $0.30-0.70$ : average
- $>0.70$ : easy

(Shohamy, 1985:79)

4. Discrimination Power

The discrimination power (DP) refers to the extent to which the item differentiates between high and low level students on the test. A good item according to this criterion is one which good students do well on and bad students fail.

To know the discrimination power of the test, the writer used the following formula:

$$DP = \frac{U - L}{\frac{1}{2}N}$$

Where:

- DP : discrimination power
- U : the proportion of upper group students
- L : the proportion of lower group students
- N : total number of students
The criteria were:

Dp: 0.00-0.19 = Poor
Dp: 0.20-0.39 = Satisfactory
Dp: 0.40-0.69 = Good
Dp: 0.70-1.00 = Excellent
Dp: - (Negative) = Bad items, should be omitted

(Heaton, 1975:182)

5. Scoring System

In scoring the students result of the test, this research used Arikunto’s formula. The ideal higher scores of pre tests and post tests were calculated by using formula as follows:

\[ S = \frac{R}{N} \times 100 \]

Where:

S : the score of the test
R : the total of the right answers
N : the total items

(Arikunto, 1997:212)

3.8 Data Analysis

After conducting pretest and posttest, the researcher analyzed the data. It was used to know whether there was any significant increase of the student’s vocabulary achievement.
The researcher examined the students score using the following steps;

1. Scoring the pretest and posttest
2. Tabulating the score of student’s vocabulary test results using Repeated measures T-test
3. Drawing conclusion from the tabulated result of the pretest administering, that was statistically analyzed using SPSS (Statistical Program for Social Sciences) in order to test whether the increase of the students gain was significant or not.

3.9 Hypothesis Testing

The hypothesis testing was used to prove whether the hypothesis proposed in this research was accepted or rejected. The hypotheses of this research were:

1. There is significant increase of student’s vocabulary achievement of the first grade of SMP N 1 Kibang after being taught through Jumbled Letters Technique.
2. There is no significant increase of student’s vocabulary achievement of the first grade of SMP N 1 Kibang after being taught through Jumbled Letters Technique.

The hypothesis was statistically analyzed using Repeated Measures T-Test that was used to draw the conclusion in significant level of 0.05 in which the hypothesis is approved if Sig < $\alpha$. It means that the probability of error in the hypothesis is only about 5%.