III. RESEARCH METHODS

This chapter discusses about research design, population and sample, research procedures, data collecting technique, instrument, data collecting instrument, level of difficulty, discrimination power, scoring system, data analysis, hypothesis testing.

3.1 Research Design

The research was intended to investigate the students’ motivation in learning vocabulary and whether word cluster can be used to motivate them. The researcher distributed motivation questionnaire to the students, before and after the treatment in order to know whether there is a change of students’ motivation after the treatment.

The scores of questionnaire was based on teh Likert scale and range of 1 to 3. The scores that given for each answer for each item function as the symbol in showing that one of activity was higher or lower than the others. By using scale in the questionnaire, the researcher collected the ordinal data in form of numbers, so that the data was collected were easier to be analyzed by using the statistical formula, therefor this research was included into quantitative research.
In this research, the researcher used one of the pre experiment design that is *The One Group Pre Test-Post Test design*. This design was used because it was most suitable to measure a change of personality aspects, including motivation or attitude, so that through this design, the researcher is able to see whether there is a negative or positive change of all personality aspects after treatment was given.

The research design was formulated as follows:

\[ T_1 \times T_2 \]

In which

- \( T_1 \) = Pre Test
- \( X \) = Treatment
- \( T_2 \) = Post Test

(Setiyadi, 2006: 131-133)

In this research, the students were given the pre test before treatment and post test after treatment. The treatment was given three times by learning vocabulary using word cluster in the form of pictures. Each media was used once based on the topic and theme discussion in each meeting. The researcher used media to find out and measured the students’ motivation in learning vocabulary by using questionnaire.
3.2 Subject

The researcher was focused on finding out the use of word cluster in motivating the students. The researcher chose the second year students in elementary school in the second semester of 2010/2011. There were five classes of the second grade of SMP N19 Bandar Lampung, this class was chosen by lottery. Through lottery drawing, the researcher took one class as a treatment class, it was class VIII B and class VIII A as a try out class. Class VIII B consisted of 32 students. Word Cluster technique was applied three times to the treatment class.

3.3 Research Procedure

The procedures of this research were as follow:

1. Determining the subject
   
   There were five classes of the second grade of SMP N19 Bandar Lampung and the researcher chosen one of the classes as a subject by lottery. This was done by the researcher prepared a piece of pepper in a glass which contain the names of each class.

2. Determining the questionnaire
   
   There were two kinds of questionnaire used in this research. A set of the questionnaire consisted of 15 items of close-ended questions that used to measure
students’ motivation in vocabulary class. It was adopted and modified from Setiyadi’s.

3. Distributing the first questionnaire to the subject

The questionnaire was distributed to the subject before treatment. The subject were asked to answer the questionnaire based on their experience in learning English vocabulary.

4. Conducting the treatment

Conducting the treatment in which the researcher applied visual media in the class. Treatment was conducted by using single word in the forms of three lesson plans and two meetings for each lesson plan. The topic was Recreational Places. The first meeting was deal with analysis of Domestic Tourism in first lesson plan and the second meeting was continued from the first meeting. The third meeting was deal with analysis of International Tourism Place and the fourth meeting was continued from the third meeting. The fifth meeting was deal with analysis of Comparison of Domestic International and was continued from the six meeting (last meeting).

5. Distributing the second questionnaire to the subject

The questionnaire was distributed to the subject after the treatment. The subjects were asked to answer the questionnaire based on their experience in learning vocabulary. In that time, the researcher also distributed the questionnaire that used to know students’ opinion toward the word cluster.
6. Analyzing the data

In analyzing the score of students’ motivation, the researcher used *Percentage Descriptive Analysis Method* to describe each of motivation variable. The percentage was formulated as follow:

\[
\text{Score Percentage (\%) = } \frac{n}{N} \times 100\% 
\]

In which  
\( n \) = Score number of students’ answer  
\( N \) = Score number ideal answer  
\( \% \) = The degree of achievement achieved

The descriptive conclusion of questionnaire score for each item was as follow:

- Positive score = 3  
- Medium score = 2  
- Negative score = 3

<table>
<thead>
<tr>
<th>Percentage Interval</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>79% - 100%</td>
<td>High</td>
</tr>
<tr>
<td>57% - 78%</td>
<td>Medium</td>
</tr>
<tr>
<td>35% - 56%</td>
<td>Low</td>
</tr>
</tbody>
</table>
In analyzing mean score and significance of the score improvement before and after treatment, the researcher and Repeated Measure T-Test computed by using SPSS 12 for Windows.

3.4 Data Collecting Technique

In collecting the data, the researcher used motivation questionnaire as the instrument. The questionnaire used in this research because this instrument was an effective instrument in measuring personality aspects or psychology aspects like motivation. It was applied in many kinds of data gained from different variable and it did not need much fund and energy to collect the data from more subjects. Besides that, it was effective to measure aspects or variables related to personality or psychology and sociology aspects (Setiyadi, 2006: 54). By using questionnaire, the students were able to report their motivation toward the language they learnt. The researcher was distributed the questionnaire to get the data from the subjects. There was no vocabulary instrument test because the research is designed to see the students’ attitude change in speaking class including their motivation to speak.

After the researcher used motivation questionnaire as the instrument, the researcher used try out, pretest, treatment and posttest as data collecting technique.

1. Try out

To prove whether the tests have a good quality in this research, they were tried out. The researcher was given a try out test to the try out class. The researcher had chosen one class that was VIII A. The researcher had chosen that class because the
class is in good level among other classes. The number of the item was 40 items, the
type of the test was multiple choice and the option provided are a, b, c, and d. The
test was said have a good quality if it has good validity and reliability.

2. Pretest

The purpose of the pretest was to know the students’ mastery of vocabulary before
they were given the treatment. It was based on try out in other class (VIII A). The
researcher decides 30 items from 40 items are reached by classifying the item into
middle level.

3. Treatment

The class was given the treatments with three lesson plans in different topics. The
topics were about Recreational Places. Each lesson plan took two meetings.

4. Posttest

This test was given to know the students’ improvement after they got the treatment.

3.5 Data Collecting Instrument

1. Reliability of the Instrument

To know the reliability of the questionnaire, the researcher used the Cronbach’s
alpha reliability, which was counted based on the correlation between each items of
motivation scale and the range of 0 to 1. It was used to analyze the instrument from the
ordinal data. According to Setiyadi (2006:190-191), the higher alpha is, the more
reliable the questionnaire will be. The researcher considered the reliability of the
questionnaire with the alpha ≥ 0.71.
2. Validity of the Instrument

An instrument can be said valid if the instrument measures the object that should be measured, and suitable with the criteria. To measure whether the instrument has good validity or not, the researcher used construct validity. Construct validity was the extent to which an instrument becomes representative sample of subject matter contents. It was used to measure the instrument that has some indicators to measure one aspect or construct. The indicators that latticework of the questionnaire were frequency of students’ activities, students’ reason, students’ strategy and students’ involvement (Sepliana, 2006). Construct validity is often correlated with instrument of measurement that is related with psycholinguistic such as perception, linguistic attitude, and motivation in learning foreign language (Setiyadi, 2006:25-26). The researcher used *Pearson product moment Correlation* to measure all items used in the questionnaire. It was used to measure correlation between two variables of continuous (Setiyadi, 2006:166). It involved 30 students as object of research.

3.6 Data treatment

In order to know the students’ motivation in learning vocabulary, the researcher calculated the students’ score that was devised from Harris (1974:84) cited in Sepliana (2006) as follow:
1. Table of specification

<table>
<thead>
<tr>
<th>NO</th>
<th>Word Classes</th>
<th>Number of Items</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Verbs</td>
<td>10., 15., 17., 23., 30., 31., 32., 35., 37.</td>
<td>35%</td>
</tr>
<tr>
<td>3</td>
<td>Adjectives</td>
<td>2., 26., 28., 29., 36., 40.</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

2. Tabulating the result of the scores of questionnaire and finding the mean score of the students’ motivation before and after the treatment.

   The mean was calculated by applying:

   \[
   \text{M} = \frac{\sum X}{N}
   \]

   Where : \( \sum X \) : Total scores of the students  
   \( M \) : Mean  
   \( N \) : Numbers of the students

   (Setiyadi, 2006: 111)

3. Drawing concluding from the tabulated result of questionnaire was given, whether posttest is higher than pretest or posttest is lower than pretest by comparing the means score of students’ motivation before and after treatment. To prove whether the data of result improved significantly or not, the researcher used analysis of Repeated Measures T-Test. It was used to compare the data of \( t \)-test which is called \( t \)-ratio and \( t \)-table used is more than 2.750 based on total students involved in the
treatment. If the data of result was more than 2.750, it can be said that students’ motivation increased and improved significantly.

3.7 Level of Difficulty

The researcher used the following formula to see the difficulty level of the test:

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

LD = Level of difficulty  
R = The number of the students who answer correctly  
N = Number of students

The criteria were:

- LD < 0.30 = Difficult
- LD = 0.30 – 0.70 = Satisfactory
- LD > 0.70 – 1.00 = Easy
(Shohamy, 1985:79)

3.8 Discrimination Power

To know the discrimination power of the test, the researcher used the formula below:

\[ DP = \frac{U - L}{\sqrt{\frac{1}{2} \cdot N}} \]

DP = Discrimination Power  
U = The number of upper class who answer correctly  
L = The number of lower class who answer correctly  
N = Total number of the student

The criteria were:
D : 0.00 – 0.20 = poor items
D : 0.21 – 0.40 = satisfactory items
D : 0.41 – 0.70 = good items
D : 0.71 – 1.00 = excellent items
D : - (negative) = bad items, should be omitted  (Heaton,1975:180)

3.9 Scoring System

In scoring the students’ test result, the researcher used Arikunto’s formula. The ideal highest score is 100. The scores of pretest and post test were calculated by using formula as follow:

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

Where:
S : the score of the test
R : the total of the right answers
N : the total items
(Arikunto, 1997:212)

3.10 Data Analysis

After conducting pretest and posttest, the researcher took the average score of the pretest and posttest.
The researcher examines the students’ score using the following steps:
1. Scoring the pre-test and post-test
2. Tabulating the result of the test and finding the mean of the pre-test and the post-test.
3. Drawing conclusion from the tabulated result of the pre-test and post-test administering, that is statistically analyzed using SPSS (Statistical Program for Social Sciences) in order to test whether increase of the students’ gain.

3.11 Hypothesis Testing

The hypothesis testing was used to prove whether the hypothesis proposed in this research was accepted or no. The hypothesis of this research is “There is a significant improvement of students’ motivation in learning vocabulary achievement after being taught through word clustering technique especially in terms of single word.”

The hypothesis was statistically analyzed using Repeated measures T-test that was used to draw the conclusion in significant level of 0.01 (P<0.0) in which the hypothesis is proved if Sig<α. It means that the probability of error in the hypothesis is only about 5%.

The formula is as follow:

\[ t = \frac{\bar{X}_1 - \bar{X}_2}{S_D} \]

in which \( S_D = \frac{S_D}{\sqrt{n}} \)

Notes:
\( \bar{X}_1 = \) Mean of pretest
\( \bar{X}_2 = \) Mean of posttest
\[ S_B = \text{Standard error of differences between two means (denominator)} \]
\[ S_D = \text{Standard deviation} \]
\[ n = \text{Number of students} \]

(Hatch and Farhady, 1982:116)