III. RESEARCH METHODS

This chapter discusses some aspects; setting and subject of the research, research design, population and sample, research procedure, data collecting technique, criteria of test, and data analysis. They are classified like the followings.

3.1 Setting and Subject of the Research

This study was conducted at SMA YP UNILA Bandar Lampung. This school was chosen as the setting because of the writer had been a practice teacher at this school, so the writer has been familiar with the school, the headmaster, the English teachers, and the students. He tried to find out a strategy in order to help the English teachers and the students to solve the problem faced in their classrooms. The researcher did the study by becoming the teacher and the researcher because he taught the class by himself while conducting this research. Besides that this school is preparing itself to compete with other schools in Bandar Lampung. Hence, this school is much concerned with the improvement of learning, and one of them is English. This school has an English laboratory. Even the teachers always try to find various strategies in order to get better teaching and learning to improve students' English skills. The subjects of his study were the first year students of SMA YP UNILA Bandar Lampung.

3.2 Research Design

In conducting this research the researcher used pretest posttest control group design. It took two classes from the population namely experimental class and control class. Each group received pretest, treatment and posttest. In the experimental class, the researcher taught through derivational affixes while in control class, the researcher taught through translation. The research design could be represented as follow:

G_1 T_1 X T_1

G_2 T_2 O T_2

In which:

G_1= Experimental class

G_2 = Control class

T_1 = Pretest

T_2 = Post test

X = Treatment (teaching vocabulary through derivational affixes)

O = Regular teaching (teaching vocabulary through translation)

(Hatch & Farhady, 1982:22)

Whereby, T_1 was a test of vocabulary which had been administered before the treatment was given. X was the treatment in teaching vocabulary through derivational affixes. O was the treatment in teaching vocabulary through translation. T_2 was a test of vocabulary which was administered to the students after the students had received the treatment. The mean of the results of pretest and posttest were identified. Then, the mean from pretest results was compared to the

mean from posttest results, In order to see whether there was significant difference among them. The mean of the test was used to draw conclusion whether teaching derivational affixes could increase the students' vocabulary achievement.

3.3 Population and Sample

The population of the research was the first year students of SMA YP UNILA Bandar Lampung. There are 11 classes of the first year of SMA YP UNILA and each Class consists of 35 to 40 students. In this research, the researcher took three classes by using lottery. Each class was written on a small piece of paper. Then, the paper was rolled and put into a box after that the box was shaken, and then the researcher took three pieces of the rolled paper, the first paper as try out class, the second paper as experimental class and the last class as control class. The researcher used a lottery to make sure that all classes had the same chance to be selected. The first year students were chosen because they have studied English for three years at SMP and they still have chance to apply the technique of learning vocabulary proposed in this study. It did in the odd semester academic year 2011-2012.The classes that were lucky were class X.10 as the try out class, class X.9 as experimental class and class X.3 as control class.

3.4 Research Procedures

The procedures of the research can be seen as follows:

1. Determining the sample.

   The researcher used lottery to determine try out class, control class and

experimental class.

2. Administering the try out

   The try out was administered to know the quality of the test and to determine the items should be revised for the pretests

3. Administering the pretest

   Before conducting the treatment, the pretest was administered for both experimental class and control class.

4. Conducting the treatment

   In conducting the treatment the researcher applied derivational affixes in teaching vocabulary for the experimental class and the control class will use conventional technique that was translation technique. The treatment was administered three times for each group.

5. Administering the posttest

   After conducting the treatment, the pretest was administered for both experimental class and control class.

6. Analyzing the data

   The data was analyzed by using Independent group T -test and the result of T-value was used to test the hypothesis stated by the researcher.

3.5 Data Collecting Technique

In collecting the data, the researcher used pretest and posttest as the instruments:

1. Pretest

   A pretest of vocabulary had been administered to the students before the treatment was given to see how far the students' vocabulary mastery and to

know whether both experimental and control class were equals or not in the terms of their vocabulary mastery before the treatment was given, Pretest that was given in control and experimental class were the same. While the data from pretest in control class just to control the data from the experimental class. The test given in pretest contained 30 items.

2. Post test

After giving the treatment, a posttest of vocabulary once again was administered to the students' in order to see whether the technique of teaching vocabulary or the treatment increases the students' vocabulary mastery. The test given in pretest contained 30 items. The result of the posttest of two classes would be compared in order to know whether derivational affixes explication was effective or not.

3.6 Criteria of the Test

To get the data, the researcher gave try out to the class to determine the quality of test items. To know whether the test was good or not, some criteria should be considered. The criteria of a good test are: validity, reliability, level of difficulty and discriminating power.

3.6.1 Validity

A test can be said valid if the test measures the object to be measured and suitable with the criteria (Hatch & Farhady, 19S2:250). To know the validity of the test, the researcher emphasizes only on the content and constructs

validity.

a. Content validity

Content validity is the extent to which a test measures a representative sample of the subject matter content, the focus of content validity is on the adequacy of the sample and not simply on the appearance of a test (Hatch and Farhady, 1982:251). It means the items or the test should represent the material being discussed. To get the content validity, the test items were adapted from the students' book. Then the test was determined according to the materials that have been taught to the students.

b. Construct validity

Construct validity is concerned with whether the test is actually in line with the theory of what it means to know the language (Hatch and Farhady 1982:252). It means that the items should really measure the students' vocabulary achievement.

To fulfill this validity, the researcher would see the indicator of the instrument and analyze them whether measuring instrument have represented the material that measured or not. In this research, the researcher arranged the instrument based on the material that was given that was vocabulary and the researcher made the instrument related to vocabulary that was content word (noun, verb, and adjective). The writer only used content ter useword because content words cover the materials.

The writer used table of spesification to check content validity of the test items. The percentage in the table indicated the relatives degree of emphasis of each content area and each instructional objectives that were given in the test.

Table 1. Table of specification of the try-out test

No	Word Classes	Number of Item	Percentage
1.	Noun	7., 12., 14., 16., 17., 24., 25., 26., 28., 29..	25
2.	Verbs	2., 3., 10., 11., 13., 15., 19., 23..	20
3.	Adjective	1., 4., 5., 6., 8., 9., 18., 20., 21., 22., 27., 30., 31., 32., 33.,34., 35., 36., 37., 38., 39., 40..	55
Total			100%

3.6.2 Reliability

Reliability refers to extent to which the test is consistent in the score and gives us an indication of how accurate the test scores are (Hatch & Farhady 1982:244). To estimate the reliability of the test, the researcher used the split half method to analyze the odd (x) and even number (Y) of the test items. To measure the coefficient of the reliability between odd and even group, the researcher uses Pearson Product Moment formula:

$$r_{xy} = \frac{N\sum XY - \left(\sum X\right)\left(\sum Y\right)}{\sqrt{\left(N\sum X^2 - \left(\sum X\right)^2\right)\left(N\sum Y^2 - \left(\sum Y\right)^2\right)}}$$

r_{xy} : Correlation coefficient

X : The right answers of odd part

Y : The right answers of even part

N : Total number of the students

(Hatch & Farhady, 1982:198)

The next step to measure the coefficient of the whole items of the test, the Spearman Brown Formula is used:

$$r_k = \frac{2r_1}{1+r_1}$$

$r_{k:}$ the reliability of the test

$r_{1:}$ the reliability of half of the test

Criteria of reliability as follows

0.00 – 0.49 is low

0.50 - 0.89 is moderate

0.90- 1.00 is high

If the result of the reliability is less than 0.50 the items will be revised

(Hatch & Farhady. 1982:247)

3.6.3 Level of Difficulty

Level of difficulty (LD) relates to how easy or difficult the item is from the students point of view who took the test. The level of difficulty can be determined by dividing the number of students who got it right by the total number of students. The formula is as follows;

$$LD = \frac{R}{N}$$

LD is level of difficulty

R is the number of students who answer correctly

N is the total number of students who lake part in the test

Criteria of level difficulty are as follows:

LD < 0.30 : difficult

LD = 0.30 - 0.70 : satisfactory

LD > 0.70 : easy

(Shohamy, 1985:79)

3.6.4 Discriminating Power

Discriminating power refers to the extent to which the item differentiates between high and low level students on that test. To calculate the discriminating power of the test, the researcher used the following formula:

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

DP = discriminating power

U = the number of upper group who answer correctly

L = the number of lower group who answer correctly

N = total number of students

(Shohamy, 1985:81)

Criteria of Discrimination Power are as follows:

1. If the value is positive, it has positive discrimination because a larger number of more knowledgeable students than poor students get the item correct.
2. If the value is zero, it means no discrimination.
3. If the value is negative, it has negative discrimination because more low-level students than high level students got the item correct.

In general, the higher discrimination index is the better. In classroom situations most items should he higher than 0.20 index. If the result of discrimination power is less than 0.20 or negative the test will be revised. (Shohamy. 1985:81)

3.7 Data Analysis

To analyze the data, the results of pretest and posttest was calculated to find the mean of the results by applying the following formula:

$$X = \frac{\sum x}{n}$$

X = mean

$\sum x$ = sum of students' score

n = total student

(Hatch & Farhady: 1982: 55)

3.7.1 Hypothesis Testing

After finding the mean of pretest and posttest, independent group T-test was employed to compare both of the mean in order to see whether the two mean was significantly different.

$$t = \frac{\overline{x_h} - \overline{x_l}}{\sqrt{\left(\frac{s_h}{\sqrt{n_h}}\right)^2 + \left(\frac{s_I}{\sqrt{n_I}}\right)^2}}$$

t = comparison of two means

$\overline{x_h}$ = mean of scores of high achieving student group

$\overline{x_I}$ = mean of scores of low achieving student group

s_h = standard deviation of high achieving students group

s_I = standard deviation of low achieving students group

n_h = the total number of high achieving students

n_I = the total number of low achieving students

(Hatch &Farhady 1982:112)

After obtaining the results of T-value, it would be compared to T-table. If T-value is lower than T-table, it means that the two means is not significantly different. Therefore, the treatment cannot increase the students' vocabulary achievement. If T-value is higher than T-table, it means that the two means is

significantly different. Therefore, the treatment can be used to increase the students' vocabulary achievement.

The hypothesis of this research is:

Ho = There is no significant difference of students' vocabulary mastery between students taught through derivational affixes and students taught through translation.

Hi = There is a significant difference of students' vocabulary mastery between students taught through derivational affixes explication and students taught through translation.

The criteria are:

1. If the T-value is higher than 0.05, Hi is accepted.
2. If the T- value is lower than 005, Ho is accepted.

3.7.2 Normality Testing

The test was employed to know whether the data were normally distributed or not. In this case, the researcher used Kolmogorov-Smirnov test in SPSS 16, the criteria of this test are:

- Sig-value or probability values <0.05 means the distribution of the data is not normal.
- Sig-value or probability values >0.05 means the distribution of the data is normal.

3.7.3 Homogeneity Testing

This test was intended to test whether the variance of the data in the experimental class and in the control class is equal or not. The formula according to Sudjana (1999:249) is:

$$F = \frac{S_1^2}{S_2^2}$$

Which:

S_1^2: the larger variance

S_2^2 : the smaller variance

The criteria are:

- Accept Ho if F-ratio is lower than or equal to F-table which means the variance of the data is homogenous.
- Reject Mo if F-ratio is higher than F-table which means the variance of the data is heterogonous.