

III. RESEARCH METHODS

3.1 Research Design

This research was a quantitative study which has one group as the experimental group and one group as the control group. This research design was commonly called as a true experimental design. The researcher selected one class as the experimental group using lottery technique and one class as to control group. The class aim of this research was to find out whether there was a significant increase of the student's vocabulary achievement at the second year of SMA Negeri 3 BANDAR LAMPUNG after being taught through Derivational Approach. The researcher determined class G1 as the experimental class and class G2 as the control class. The experimental class was a class which was given teaching vocabulary by using derivational approach. The control class was a class which was given teaching vocabulary in commonly technique. The design was:

$$\begin{array}{c} \mathbf{G1 \ T1 \ X \ T2} \\ \hline \mathbf{G2 \ T1 \ T2} \end{array}$$

G1 = Experiment class (taught by derivational approach)

G2 = Control class (taught by commonly technique)

T1 = Pretest

X = Treatment

T2 = Posttest-test after treatment

(Hatch and Farhady, 1982:22)

In the end of research the researcher find the differences of two classes by seeing the quality of the students' vocabulary achievement. She used Independent Group T-Test to compare the average scores from two classes.

3.2 Subject of the Research

The subjects of this research were the students at the second year of SMAN 3 Bandar Lampung. There were seven classes of the second year of SMAN 3 Bandar Lampung. They are: XI.IPA 1, XI.IPA 2, XI.IPA 3, XI.IPA 4, XI.IPS 1, XI.IPS 2, and XI.IPS 3. Each class consists of 36. In relation to the design, the researcher took two classes as the research XI.IPA 2 as the experimental class of the research and XI.IPA 4 as control class. The researcher used lottery technique to choose the treatment class. So that those all second year class got the same chance to be the sample.

3.3 Variables

The research consists of the following variables:

1. Derivational analysis as independent variable (X). It means that derivational approach doesn't depend on anything.
2. Vocabulary as dependent variable (Y). It means that the student's vocabulary achievement depends on their ability in memorizing and using a number of English words in language.

3.4 Data Collecting Technique

The data of the research were the student` vocabulary achievement before and after the treatments. The instrument of the research was multiple choice tests, where the researcher gave pretest and posttest to experiment class and control class in order to evaluate, to measure the vocabulary achievement.

In collecting Data, this research used the following procedures:

1. Pretest

The pretest was conducted before treatments. It was used to know how far the students had mastered the vocabulary before the treatments was given. The pretest used by researcher is multiple choices. The number of item in the test is 30 items and each item has four options of answers. One is the correct answer and the rests is the distracter.

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 Derivational approach. Similar to the pretest, in the posttest the researcher used of multiple choices. The questions are 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 can really understand the questions. The posttests consist of 30 items with four options. One is the correct answer and the rest are the distracter.

3.5 Steps in Collecting Data

1. Determining the subjects of the research

The subject of the research was the second grade of SMAN 3 Bandar Lampung. The researcher took two classes, one class as experimental class and the other class as control class.

2. Selecting instrument materials.

In this research, there was one pretest that was proper to the second grade of SMA. The materials took from students' handbook that was based on the educational unit level curriculum.

3. Conducting try out.

The try out was conducted in the different class of the experiment class in second class of SMA N 3 Bandar Lampung. Try out was conducted to measure the reliability of pretest and posttest. It was administered for 40 items in 90 minutes. The aim of try out was to know the quality of the test which was used as the instrument of the research, and determine which item should be revised for the pretest and posttest. This research used the result of the try out test to measure the level of difficulty and discrimination power, so validity and reliability can be found.

4. Conducting the pre test.

Pretest was conducted for 30 items in 45 minutes to measure student's basic ability. Pretest was given for experiment class and control class. The pre test was about vocabulary in content word (noun, verb, adjective, and adverb) by using suffix and prefix.

5. Conducting the treatment.

After giving pre test, the students were given four treatments by using Derivational Approach based on the lesson plan which was prepared. First treatment explained about kinds suffix and prefix in verb word, second treatment there were two activities: first activity explain about kinds of prefix in noun word. Second activity explained about kinds of suffix in noun word. And the last treatment explained about kinds suffix, prefix in adjective word and suffix in adverb word. Each treatment was held for 90 minutes.

There is schedule table of the researcher:

	Date	Activity
3.	Thursday, August 11 th 2011	First Treatment: <ul style="list-style-type: none"> ➤ The researcher gives explanation about derivation ➤ The researcher gives explanation about affixes ➤ The researcher gives kinds of affixes (prefix and suffix) ➤ The researcher gives the explanation of verb prefixes ➤ The researcher gives the explanation of verb suffixes ➤ The researcher gives the example of verb prefixes ➤ The researcher gives the example of verb suffixes
2.	Monday, August 15 th 2011	<ul style="list-style-type: none"> ➤ The researcher gives explanation about derivation ➤ The researcher give explanation about affixes ➤ The researcher gives kinds of affixes (prefix and suffix) ➤ The researcher gives the explanation of noun prefixes ➤ The researcher gives the example of noun prefixes
3.	Thursday, August 18 th 2011	<ul style="list-style-type: none"> ➤ The researcher gives explanation about derivation ➤ The researcher gives explanation about affixes

		<ul style="list-style-type: none"> ➤ The researcher gives kinds of affixes (prefix and suffix) ➤ The researcher gives the explanation of noun suffixes ➤ The researcher gives the example of noun suffixes
4.	Monday, August 22 th 2011	<ul style="list-style-type: none"> ➤ The researcher gives explanation about derivation ➤ The researcher gives explanation about affixes ➤ The researcher gives kinds of affixes (prefix and suffix) ➤ The researcher gives the explanation of adjective prefixes ➤ The researcher gives the explanation of adjective suffixes ➤ The researcher gives explanation of adverb suffixes ➤ The researcher gives the example of adjective prefixes ➤ The researcher gives the example of adjective suffixes ➤ The researcher gives the example of adverb suffixes

6. Administering post test.

The post test was administered after the application of Derivational approach. It was conducted for 30 items in 45 minutes and the aim was to find out the students' vocabulary achievement after the implementation of derivational approach. The post test was about vocabulary in content word (noun, verb, adjective, and adverb) by using suffix and prefix.

7. Analyzing the data.

After doing all procedures, the researcher was calculated the percentage between the pretest and posttest, In order to know whether Derivational approach can be used to increase the students` vocabulary achievement.

3.6 Instrument of the Research

The instrument was used pretest and posttest. Pretest was given before the treatment in order to know how far the students` competence in vocabulary and posttest was given after presenting the treatment in order to know the increasing of students` vocabulary. The form of the test was multiple choices test. The total number of item of pretest was 30 items and then the total number of posttest was 30 items.

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 or not, this research used content, construct, face validity.

a. Content validity,

It can be determined from table of specification. The table represented the material that the tester wanted to test. Then it is a valid test from point of view (Sohamy, 1985:74).content validity is concerned with the test is sufficiently representative and comprehensive for test. In the content validity, the materials given are stable with the curriculum. In this case, the researcher used the vocabulary of job description to be comprehended by grade XI students. The researcher used the table of specification to check content validity of the test items. Table validity can help us to determine which test was the most relevant

to our particular situation and it was also necessary to check whether test items have a good content validity.

• **Table 1. Table of Specification of Try Out Test**

No	Aspect	Items	Total	Percent
1	Noun	2., 2., 14., 16., 18., 19., 20., 22., 23., 24., 25., 26., 27., 29., 30., 35.	16	40 %
2	Verb	3., 5., 9., 11., 34., 38., 40., 37.	8	20%
3	Adjective	1., 7., 13., 15., 17., 28., 31., 32.	8	20 %
4	Adverb	4., 6., 8., 10., 33., 36., 39., 21.	8	20 %
	Total		40	100 %

b. Construct Validity

Construct validity was concerned to know the certain language knowledge skill. To know the test was true reflection of language which was being measured, the researcher examined whether the questions of the test actually reflect what was meant to know a language.

To get the construct validity, the test was adopted from student's hand book. Then, the test was determined according to the material that was taught to the students. In other words, the researcher wrote and made the test based on the material in the Curriculum Based School for SMA.

c. Face Validity

According to Heaton (1991:159), face validity concerns with what teachers and students thinks of the test. If a test looks right to other testers, teachers, and students, it can be describe as having at least face validity. In this research, the face validity of the vocabulary test has been previously examining by both

advisors and colleagues, until the test which will in form of instruction look right and understandable to other.

2. Reliability

Hatch and Farhady (1982: 243) state that reliability of a test can be defined as the extent to which a test produces consistent result when administered under similar conditions. In order to estimate the reliability of the test, this research used split-half technique and to measure the coefficient of the reliability between odd and even group, this research used “The Pearson Product Moment Formula” as follows:

$$r_l = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$$

Where:

r_l : coefficient of reliability between odd and even numbers items

x : odd number

y : even number

$\sum X^2$: total score of odd number items

$\sum y^2$: total score of even number items

$\sum XY$: total number of odd and even number

(Lado : 1961 in Hughes, 1991: 32)

Then this research used “Spearmen Brown Formula” to know the coefficient correlation of the whole items.

The formula is as follows:

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

Where:

r_k : reliability of a full test

r_l : reliability of half test

The criteria of the reliability are:

0.90 – 1.00 = high

0.50 – 0.89 = moderate

0.00 – 0.49 = low

(Hatch & Farhady, 1985: 247)

3. Level of Difficulty

A good test is the one which is not too easy or too difficult. In order to find out the level difficulty, this research used the following formula:

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

Where:

LD : level of difficulty

R : number of students who answer correctly

N : the total number of the students following the test

The criteria are:

< 0.30 : difficult

0.30 – 0.70 : average

> 0.70 : easy

4. Discrimination Power

Discrimination power was used to indicate the discrimination of the fail and the success of the students. To find out the discrimination power, this research 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 are:

0.00 – 0.19 = poor

0.20 – 0.39 = satisfactory

0.40 – 0.69 = good

0.70 – 1.00 = excellent

Negative (-) = bad item, should be omitted

(Shohamy, 1985: 81)

5. Scoring System

In scoring the students result of the test, this research used Arikunto's formula.

The ideal higher score is 100. The score of pretest and posttest were calculated by using formula as follows:

$$S = \frac{R}{N} 100$$

Where:

S : the score of the test

R : the total of the right answers

N : the total items

(Arikunto, 1997: 212)

3.7 Data Analysis

After conducting pretest and posttest, the researcher analyzed the data. It was used to know whether there was significant increase of the student's mastery. 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 by using Repeated measures T-test
3. Drawing conclusion from the tabulated result of the pretest administering, that is statistically analyzed using SPSS (statistical Program for Social Sciences) in order to test whether increase of the students score gain is significant or not after being taught derivational approach.

3.8 Hypothesis Testing

H_0 = There is no significant increase of students' vocabulary achievement after being taught derivational approach.

H_1 = There is significant increase of students' vocabulary achievement after being taught derivational approach.

The hypothesis testing was used to prove whether the hypothesis proposes in this research was accepted or not. The hypothesis analyzed by using Repeated measure T – Test through computing with statistical Package for Social Science (SPSS) version 15.0 for window at the significance level of 0.05 ($P < 0.05$).