

III. METHODOLOGY

This chapter consists of research design, population and sample of the research, data collecting technique, procedures of collecting data, instrument of the research, criteria of good test, validity, reliability, level of difficulty, discrimination power, scoring system, and data analysis. Each of these points is described in detail as follows.

3.1 Research Design

This research was a quantitative research. The objective of this research was to find out whether there is significant difference between the students who are taught through direct method and those who are taught through silent way. In this research the researcher used true experimental design that is pretest and posttest two group experimental design. The experimental class 1 was taught using direct method, while the experimental class 2 was taught using silent way. The two classes were compared to find out the difference on the students' score of vocabulary. The research design is described as follows:

$$G_1 = T_1 X_1 T_2$$

$$G_2 = T_1 X_2 T_2$$

G_1 : The experimental class 1 (Direct Method)

G_2 : The experimental class 2 (Silent Way)

T_1 : Pre-test

T₂ : Post-test

X₁ : Treatment by using direct method

X₂ : Treatment by using silent way

(Hatch and Farhady, 1982:20)

This design used pretest to find out students' achievement on vocabulary (concrete noun) before the treatments. Afterward, the researcher had given three treatments by using picture and translation. Eventually, the researcher administered a posttest to find out the students' vocabulary achievement after being taught by using picture and translation.

Before the test was used to collect the data of students' vocabulary achievement (concrete noun), the researcher firstly tried it out to the students. The try out test was held before all the test and the treatments were given to the students. The aim of the try out test was to find out the equality of the items of the test that were used in the research.

3.2 Population and Sample of the Research

The population of this research was all the fourth grade students of SDN 1 Pisang, Penengahan, Lampung Selatan. There were two classes, IVa as experimental class 2 and IVb as the experimental class 1. Each of them consisted of 20 students. The researcher selected the population research by using simple probability sampling. In simple probability sampling the class was selected randomly by using lottery, it was used based on the consideration that every class had the same opportunity to be selected and in order to avoid the subjectivity in the research (Setiyadi, 2002: 33).

3.3 Data Collecting Technique

The data of this research was the students' vocabulary achievement related to concrete nouns (things in the classroom, my body, and my house) before and after the treatment. The researcher used tests as the instrument. There were pretest and post test.

1. Pre-test

The pretest had been administered before the treatments. It was done to investigate the students' vocabulary achievement before they were given the treatment. The test used by the researcher was an objective test in form of multiple choices. The number of items was 40 with four alternative answers for each. One was the correct answer and the rest were the distracters. The pretest was conducted in 60 minutes.

2. Post-test

The post test had been administered to the students after they were getting the treatments. It was done to investigate the students' vocabulary achievement after being taught by using direct method and silent way. Similar to the pre test, the researcher used an objective test in form of multiple choices. The number of items was 40 with four alternatives answers for each. One was the correct answer and the rest were the distracters. The post test was conducted in 60 minutes.

3.4 Procedures of Collecting Data

In collecting the data, this research used the following procedures:

1. Determining the population and selecting sample

The population of the research was the fourth grade students of SD Negeri 1 Pisang, Penengahan, Lampung Selatan. The sample was chosen by using simple random probability through lottery drawing. The researcher took 2 classes, class IV b consists of 20 students as experimental class 1, class IVa as experimental class 2.

2. Selecting Materials Instrument

In this research. the researcher chose concrete nouns because:

- a. All of them were the things that the pupils find in their daily life, so it was very important for them to know the English of those things.
- b. The students in the fourth grade of elementary school are the children who are eight or nine years old.

In those ages the children more understand about concrete things than abstract ones. It is easier for them to learn about something that they can really see or touch than the abstract thing. The first material was about things in the classroom, the second material that was taught in this research was my body, and third material was my house. The material were selected from the English hand book for the fourth grade of elementary school.

3. Administering Try out Test

The try out test items were carried out after choosing the subjects. This was multiple choices test. The number of the test items was 50 with four alternative answers for each (A, B, C, D), one as the correct answer and the rest were the distracters. The try out test was conducted in 60 minutes. The aim of try out test was to make sure the quality of the test which covers

validity, reliability, level of difficulty, and discrimination power of the test which was used as the instrument of the research. After conducting the try out test, 10 items were dropped and the rests were used in the pretest and posttest.

4. Administering the Pre-test

Pretest was conducted to measure the students' mastery of vocabulary being taught through direct method and silent way. The test was in form of multiple choices test with 40 items and four alternative answers for each (A, B, C, D). One was the correct answer and the rest were distracters. The pretest was conducted in 60 minutes.

5. Conducting the Treatment

After hiving pretest to students, the students were given two treatments by using direct method and silent way based on the lesson plan which had been prepared. The treatments were conducted in 60 minutes.

6. Administering Post-test

Posttest was conducted to measure the students' mastery of vocabulary after being, taught through direct method and silent way. The test was in form of multiple choices test with 40 items and 4 alternative answers for each (a, b, c, d). One was the correct answer and the rest were the distracters. The posttest was conducted in 60 minutes.

7. Analyzing the Data

The researcher analyzed the data in order to find out whether there was a significant different of vocabulary test score of the students who were taught

through direct method and those were taught through silent way. The researcher analyzed the data by using reckoning.

3.5 Instrument of the Research

The research instrument is vocabulary test in the form of objective test. In this research, the researcher administers tests. Try out test is given to know how the quality of the test which is used as the instrument of the research. The pre-test is given in order to know the students vocabulary before the treatments. The items number of pre-test is 40 in multiple choice question (a,b,c,d). The post-test is given in order to know the students vocabulary achievement after the treatments. The test was in the form of multiple choice test. The items number of post-test is 40, the questions are the same with pre-test but different position in number. The test evaluated the meaning of vocabulary, and the vocabularies that were included in the test were related to concrete nouns (things in the classroom, my body, and my house). The validity if the test concerned with the content and constructs validity.

3.6 Try Out of the Instrument

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

3.6.1 Validity

According to Heaton (1991: 159), the validity of the test is the extent to which it measures what it is supposed to measure. There are three kinds of validity they are

content validity, construct validity, and face validity. This research used two kinds of validity, those are content validity and construct validity.

a. Construct Validity

Construct validity focuses on the kind of test that is used to measure the ability. According to (Setiyadi, 2002: 26) if the instrument just measures one aspect, for example vocabulary, the construct validity can be measured by evaluating items in the test. If all items have measured vocabulary mastery, this instrument has fulfilled construct validity. In this research, the researcher has already used vocabulary test as the instrument, moreover all the items in the test measures vocabulary mastery, so it has fulfilled construct validity.

b. Content Validity

This kind of validity depends on a careful analysis of the language being tested and of the particular course objectives. The test should be constructed as to contain a representative sample of the course (Heaton, 1991: 160). It means that the test should represent the materials that have been taught to the students. This research applied there materials for the treatments. That material is concrete nouns (thing in the classroom, my body, and my house). It means that to get a good content validity, the test should represent those materials.

3.6.2 Reliability

Reliability of a test can be defined as the extend to which a test produces consistent result when administrated under similar condition (Hatch and farhady,

1982; 243). To know the reliability of the test, the research used Product Moment Correlation. The formula as follows:

$$r_{xy} : \frac{n\Sigma xy - (\Sigma x)(\Sigma y)}{\sqrt{[n\Sigma x^2 - (\Sigma x)^2][n\Sigma y^2 - (\Sigma y)^2]}}$$

Notes:

r_{xy} : Coefficient of reliability between odd and even groups

x : total numbers of odd group

y : total numbers of even group

x^2 : square of x

y^2 : square of y

(Arikunto, 2002: 157)

To know the whole reliability of the test, the researcher used Spearman Brown Method. The formula is:

$$r_{11} : \frac{2(r^{11/22})}{(1 + r^{11/22})}$$

Notes:

r_{11} : The coefficient or reliability of the whole.

(Spearman-Brown Formula)

r : Coefficient of reliability of the half test.

The criterions are:

Coefficient of correlation will always be between 0.00 up to + 1.00

0.00 up to 0.19 : very low

0.20 up to 0.39 : low

0.40 up to 0.59 : average

0.60 up to 0.79 : high

0.80 up to 1.00 : very high

In this research, the result of the reliability is 0.95 (Appendix 1), it can be concluded that the test has a high reliability in which the criteria for high reliability is in the range 0.80 - 1.00. It indicates that the instrument would produce consistent result when administered under similar condition to the same participant and in the different time (Hatch and Farhady, 1982: 286). Therefore, it could be stated that the test had fulfilled the criteria of reliability. In order words, the test was reliable.

3.6.3 Level of Difficulty

The level of difficulty is generally expressed as the fraction (or percentage) of the students who answered the items correctly. The difficulty level of an item simply shows how easy or difficult the particular item proved in the test.

It is calculated by the following formula:

$$FV = \frac{R}{N} \times 100$$

Note:

FV : Level of Difficulty.

R : The number of students who answer correctly.

N : The number of students who take the test vocabulary achievement

(Arikunto, 2002:156)

The criterions are:

0.0 up to 0.30 : difficult.

0.30 O up to 0.70 : middle.

0.70 up to 1.00 : easy.

(Sudjana, 1996: 374)

Based on the try out test related to those criteria, there were 4 easy items (7, 30, 41, 43), 36 middle items (1., 2., 3., 4., 5., 6., 8., 10., 11., 12., 13., 15., 17., 18., 19., 21., 22., 23., 25., 26., 27., 28., 29., 31., 33., 34., 35., 37., 38., 39., 40., 44., 45., 47., 48., 49.), and 12 difficult items (9., 14., 16., 20., 24., 32., 36., 42., 46., 50.).

So The researcher used easy items and middle items.

3.6.4 Discrimination Power

Discrimination power is used to indicate the discrimination of the fail and the success of the students. To find out the discrimination power used the following formula:

$$D = \frac{U - L}{\frac{1}{2}n}$$

Notes:

D : Discrimination Power

U : The number of upper group who answer correctly

L : The number of lower group who answer correctly

n : The total number of students.

The criterions for discrimination power are:

1. If the value is positive, it has positive discrimination because large number or more knowledgeable students then poor students get the item correct. If the value is zero, it means that there is no discrimination.

2. If the value is negative; it has negative discrimination because lower and higher levels of students get the item correct.
3. In general, the higher discrimination index is better. In the classroom situation, most items should be higher than 0.20 index.

(Shohamy, 1985: 81).

Based on the try out test related to those criteria, there were 4 easy items (7, 30, 41, 43), 34 middle items (1., 2., 3, 4., 8., 10., 11., 12., 13., 15., 17., 18., 19., 21., 22., 23., 25., 26., 27., 28., 29., 31., 33., 34., 35., 37., 38., 39., 40., 44., 45., 47., 48., 49.), and 12 difficult items (5., 6., 9., 14., 16., 20., 24., 32., 36., 41., 46., 50.).

3.7 Scoring System

In scoring the pupils result of the test, this research used Arikunto's formula. The ideal higher score was 100. The scores of pre tests and post tests were calculated by using formula as follow:

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

Notes:

S = the score of the test

R = the total of the right answers

N = the total items

(Arikunto, 1997: 212)

3.8 Data Analysis

The researcher analyzed the data in order to find out whether direct method is more effective in teaching vocabulary than silent way. The steps of analyzing the data of this research are as follows.

3.8.1 Administering Test of normal Distribution

This test is to know whether the data are normally distributed or not. The researcher used the chi square (χ^2) test.

The test criterions are:

$$H_0 : \chi^2 \text{ - ratio is lower than } \chi^2 \text{ - table.}$$

(The data is normal)

$$H_a : \chi^2 \text{ - ratio is higher than } \chi^2 \text{ -table.}$$

(The data is not normal)

3.8.2 Testing the Homogeneity of Variance

This test is to determine the data in the experimental class 1 and in the experimental class? are equal or not.

In this case, the researcher will use F-test:

$$F : \frac{S^2(\text{the bigger variance})}{S^2(\text{the smaller variance})}$$

The test criterions are:

$$H_0 = F\text{-ratio is lower than } F\text{-table.}$$

(The variance of the data is homogeneous)

$$H_a = F\text{-ratio is higher than } F\text{-table.}$$

(Sudjana. 1984:-1-50)

3.8.3 Hypothesis Test

According to Subana (2000: 177) the hypothesis test is used to prove whether the hypothesis proposed by the whiter is accepted or not. The hypothesis is tested by using *t-test*. The formula is as follows:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{s\sqrt{1/n_1 + 1/n_2}}$$

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

\bar{X}_1 = Mean of the control class.

\bar{X}_2 = Mean of the experimental class.

S = Standard deviation.

n_1 = The number of students in the experimental class.

n_2 = The number of students in the control class.

The criterion are:

The null hypothesis (H_0) is accepted if t-ratio is \leq t-table.

The null hypothesis (H_i) is rejected if t-ratio is $>$ t-table.

H_0 = There is no significant difference achievement between the students who are taught through Direct Method and those who are taught through Silent Way.

H_i = There is significant difference achievement between the students who are taught through Direct Method and those who are taught through Silent Way.

(Hatch and Farhadv. 1982:111).