

III. RESEARCH METHODS

3.1 Research Design

This was a quantitative research. In conducting the research, the researcher applied one group pretest-posttest design. The researcher used two classes, one class as an experimental class and second class as the tryout class. The pretest was used to find out the students' preliminary ability and the posttest was used to see how far the difference of the students' vocabulary achievement after the treatments. The treatments were given to the students by applying picture. The research was intended find out whether there is a significant difference of the students' vocabulary achievement related to content words of the first year at SMPN 2 Pekalongan Lampung Timur through picture. The research design was described as follows:

T1 X T2

Where:

T1 : pretest

T2 : posttest

X : treatments (picture)

(Setiyadi, 2006: 131)

3.2 Population and Sample

The subject of the research was the first year of SMPN 2 Pekalongan, Lampung Timur in the 2011/2012 academic year. There were five classes of the first year (VII A-VII E). The researcher was taken two classes, class VII B as class experiment, and class VII C as class try-out class. Each class in SMPN 2 Pekalongan, Lampung Timur class seven consists of 38 students. In this research, the researcher used simple random probability sampling by a lottery (Setiyadi, 2006 : 39), because each class has the same opportunity to be chosen as the subject.

3.3 Data Collecting Technique

The data of this research was the ability of the student's vocabulary achievement of daily activities, before and after the treatments.

The instrument of this research is vocabulary test. The test is multiple-choice items. The pretest and posttest was given to the students in order to evaluated, to measure their vocabulary achievement of daily activities related to content words (Nouns, Verbs, and Adjectives).

In collecting the data, the researcher used the following steps:

3.3.1 Try-out

Try-out test is a test intended to assess the quality, i.e. the reliability and validity, of the instruments used for data collection. In constructing the tryout test is multiple choices. The numbers of the test items are 40 with four options of answer

for each (A, B, C, D) and time allocated is 60 minutes. The tryout test was given in class VII C. This test should give to the students in order to know the quality of the test before the test is used to get the data on the research. The test said to have a good quality if it had good reliability and good validity, and the test is not too easy and too difficult.

3.3.2 Pretest

The pretest was conducted before the treatment. It was use to know how far the students have achievement the vocabulary before treatment is given. The test used by the researcher was an objective test in the form of multiple choices.

In this research, the researcher applied pictures that took focus on the vocabulary that the students have already mastered. Vocabulary can generally be included in an objective test that a subjective test. The researcher assumed that in measuring their ability in achievement vocabulary, the proper or the suitable test used is objective test. The number of the items in the test is 30 in which each item has four options of answer (A, B, C, D). One was the correct answer and the rests are the distracters. The aspects of vocabulary which were tested concerned about the meaning and use.

3.3.3 Treatment

In this occasion, the researcher applied the media. The treatment was given to the experimental class through pictures. The experiment was conducted in three meetings.

3.3.4 Posttest

The posttest conducted after the treatments. It was use to know how far the students have achievement English vocabulary that is taught through pictures. Similar to the pretest, the researcher used multiple choice tests. The questions were the same as the pretest.

In this research, the researcher chose content words (noun, verb, adjective) because all of them are the things that the students find in their daily life, so it is very important to know the English of those things. The material is about daily activities. The material is selected from English book for grade VII students of Junior High School.

3.4 Instrument Used for Collecting the Data

1. Type of instrument that was used in this research is multiple choice tests. The numbers of the items are 40 and each item consists of four options (a, b, c, d). The pretest and posttest are 30 items was taken from the items of tryout test. The pretest and posttest was given to the students in order to evaluated, to measure the vocabulary. All of the items are about vocabulary that refers to noun, verb and adjective.

2. Validity

The validity of the test was the extent to which it measures what it was supposed to measure and nothing else (Heaton, 1991:159). In order to measure whether the test has a good validity, the researcher analyzes the test from content, construct.

- Content validity is concerned with whether the test is sufficiently representative and comprehensive. In the content validity, the materials given were appropriate with the curriculum. In this case, the researcher uses the vocabulary that was supposed to be comprehended by the first year of students; it was based on KTSP of English for Junior High School.

To fulfill this validity, the researcher should see all the indicators of the instrument and analyze them whether the measuring instrument has represented the material that is measured or not. In this research, the researcher arranged the instrument based on the Table of Specification, which is consistent with the vocabulary material that has been given. If the measuring instrument has represented all the ideas that connected with the material that would be measured, that measuring instrument has fulfilled the aspect of content validity. To know whether the test has a good validity, the items of the test are discussed with the expert (advisors) and the colleagues the writer's classmate and the English teacher of SMPN 2 Pekalongan Lampung Timur. Content validity, can be examined from table of specification. If the table represent the material that the testers wants to test. Then it is a valid test from point of view (Sohamy, 1985:74). The content validity was constructed by including vocabulary material present in training they are verb, noun and adjective.

In this case, the researcher used vocabulary that supposed to be comprehended by the first year student's based on curriculum. To know the whether the test has good validity; the term of test was discussed with the expert (advisors) and the colleagues (the writer's classmate and the English teacher of SMPN 2 Pekalongan Lampung Timur).

Based on the curriculum KTSP 2006, the content of try-out was presented in the table of specification bellow:

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

No.	Word Classes	Number of Item	Percentage
1.	Noun	4, 5, 10, 11, 13, 16, 18, 20, 22, 27, 30, 31, 34, 35, 37.	30%
2.	Verbs	1, 2, 6, 7, 8, 9, 12, 15, 17, 19, 21, 23, 24, 26, 29, 32, 33, 36, 38, 39, 40.	60%
3.	Adjective	3, 14, 25, 28.	10%
Total			100%

- **Construct Validity** examines whether the test actually in line with the theory, it means that whether the test is in line with the school curriculum. In this research, the researcher used the vocabulary that is supposed to be comprehended by the first year students of Junior High School. The material was under topic of daily activity which was representative of vocabulary material based on the curriculum used in Junior high school; KTSP (Kurikulum Satuan Tingkat Pendidikan 2006).

3.5 Reliability

Hatch and Farhady (1982: 243) states that reliability of a test can be defined as the extent to which a test produced consistent results when administer under similar conditions. In order to estimate the reliability of the test, this research will used split-

half technique and to measure the coefficient of the reliability between odd and even group, this research uses “The Pearson Product Moment Formula” as follows:

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

Where:

rl : 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)

The criteria of reliability are:

0.80 – 1.00 : very high

0.50 – 0.79 : moderate

0.00 – 0.49 : low

(Hatch and Farhady, 1985: 247)

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

The formula is as follows:

$$rk = \frac{2rl}{1 + rl}$$

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)

3.6 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

(Shohamy, 1985:79)

Table 1. The difficulty level of the try out test

No	Number of item	Computation	Criteria	Decision
1.		<0.30	Difficult	Dropped
2.	1,2,3,4,5,7,8, 10,11,13,14,15, 16,18,19,21,23, 24,25,27,28,29, 30,32,34,35,36, 38,39,40	0.30-0.70	Average	Administered
3.	6,9,12,17,20, 22,26,31,33,37	>0.70	Easy	Dropped

Based on the result of the try out test related to the criteria, it can be inferred that there were ten items had the result more than 0.70 (see table.1). It means that the items were easy. Therefore, those items were dropped. No item was less than 0.30 (see table 1). So, there was no difficult item. Mean while, 30 average items were administered to be reference for the pretest and the posttest (see table 1). The result of the difficulty level of the try out test shown on appendix.

3.7 Discrimination Power

Discrimination power is the degree to which the test can discriminate between the lower and the upper students. To find out the discrimination power, this research uses 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:

1. If the value is positive discrimination a larger number of more knowledgeable students than poor are students get the item correct. If the value is zero, no discrimination.
2. If the value is negative, it means that more low-students than high level students get the item correct.
3. In general, the higher the discrimination index, the better. In classroom situation, most items should be higher than 0.20 indexes.

(Shohamy, 1985: 81)

Table 1. Discrimination Power of the try out test

No	Number of item	computation	Criteria	decision
1.	6, 9, 12, 22	0.00	Poor	Dropped
2.	17	<0.00	Poor	Dropped
3.	20, 26, 31, 33, 37	<0.20	Poor	Dropped
4.	1, 2,3, 4, 5, 7, 8, 10, 11, 13, 14, 15, 16, 18, 19, 21, 23, 24, 25, 27, 28, 29, 30, 32, 34, 35, 36, 38, 39, 40.	0.20 or >0.20	Good	Administered

Based on the calculation of discrimination power (see table 2), the result of the try out test shows that there was four items had zero discrimination. It means that, the items could not discriminate the upper and the lower students well. Therefore, those items were dropped since the discrimination result was negative, which means low level students answered more than high level students. Five items did not fulfill the standard of discrimination power since those items had discrimination power index under 0.20 which means that the items had poor discrimination power. So that, those items were dropped. Meanwhile, 30 items had good discrimination power; therefore, those items were administered to be the reference for the pretest and the posttest. A further of discrimination power is shown on appendix.

3.8 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 are calculating 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)

3.9 Data Analysis

After conducting pretest and posttest, the researcher will analyzed the data. It is used to know whether there is any significant difference of the students' vocabulary achievement of the first year at SMPN 2 Pekalongan Lampung Timur through picture.

The researcher examines the students' score using the following steps:

1. Scoring the pretest and posttest
2. Tabulating the score of the students' vocabulary test results using Repeated measures T-test. The formula manually is as follows:

$$\frac{\bar{X}_1 - \bar{X}_2}{S_{\bar{D}}} \quad \text{in which} \quad S_{\frac{D}{D}} = \frac{S_D}{\sqrt{n}}$$

Where:

\bar{X}_1 = Mean of the pretest

\bar{X}_2 = Mean of the posttest

$S_{\frac{D}{D}}$ = standard error of differences between two means (denominator)

SD = standard deviation

n = number of students

(Hatch and farhady, 1982: 116)

In this research, the researcher will use statistical computerization.

3. Drawing conclusion from the tabulated result of the pretest and posttest administering, that is statistically analyzed using SPSS (Statistical Program for Social Sciences) in order to test whether increase of the students' gain was significant or not.

3.10 Hypothesis Testing

Hypothesis testing is intended to see whether the hypothesis that is proposed in this research is accepted or not. To test the hypothesis, *repeated measures T-test* was conducted at the significant level of 0.05 ($P < 0.05$).

The hypotheses are:

Ho : There is no significant difference of the students' vocabulary achievement after being taught through pictures.

Hi : There is significant difference of the students' vocabulary achievement after being taught through pictures.

(Hatch and Farhady, 1982:111)

The criteria are :

1. If the t-value is lower than T-ratio: Ho is accepted there is no significant difference of the students' vocabulary achievement after being taught through pictures.
2. If the t-value is higher than T-ratio: Hi is accepted there is significant difference of the students' achievement after being taught through pictures.