

III. RESEARCH METHOD

3.1 Research Design

This research is qualitative quantitative research. In conducting this research, the writer used one group pre – test post – test design to investigate there is an increase of students' vocabulary achievement through crossword puzzle game. Then, the student's improvement can be find out by comparing the means (average score) between pre test and post test. It used to find out the progress before and after the treatment and to get the exact data that crossword puzzle game succeeds to increase the students' achievement in learning vocabulary in a group work activity, the writer decided to check the process of teaching vocabulary by using crossword puzzle game in a group work activity by using observation sheet in the middle of treatment. The writer used one class that was given the try out test class and one class where the students received pre test before three – time treatments and after the treatments they received post test. The design could be presented as follows:

T1 X T2

Where:

T1 : Pre – test

T2 : Post – test

X : Treatment (using crossword puzzle)

(Hacth and Farhady, 1982:22)

3.1 Population and sample

The population of this research was all seventh grade students of SMPN 10 Bandar Lampung in the second semester of academic year 0f 2010/2011. There were seven classes of the seventh grade that consists of 32 students but the writer just took one class that was given the treatments in 7A and one class that was given the try out in 7E. The writer had chosen the class randomly.

3.2 Research Instrument

A. Test

To investigate the student's vocabulary achievement before and after they were given the treatment, the writer used the test as the instrument in the form of objective test. The instrument used in the pre test and post test. The pretest was given to know the students' ability about vocabulary before the treatments. The posttest gave to know the student's vocabulary achievement after the treatments.

The try out test consist of 40 multiple choice questions. Pre test and post test consist of 30 items. The students answered the test by choosing the best answer and then wrote down the answer on the answer sheet.

B. Observation

On the other side, to get the exact data that crossword puzzle game succeeds to increase the students' achievement in learning vocabulary in a group work activity, the writer decided to check the process of teaching vocabulary by using crossword puzzle game in a group work activity. In this case, the writer

used an observation sheet that was used in the middle of teaching learning process.

3.3 Research Procedure

The research conducted during normal class periods with the following procedures:

1. Determining the research problems

The problem of the research was intended to find out whether crossword puzzle game can significantly increase the achievement of students' vocabulary in group work activity and to investigate the process in teaching vocabulary by using crossword puzzle in a group work activity.

2. Finding the population and sample

The population of this research was all seventh grade students of SMPN 10 Bandar Lampung in the second semester of academic year 0f 2010/2011. There were seven classes of the eleventh grade that consists of 32 students but the writer took one class that was given the treatment in 7 A and one class that was given try out in 7 E. The writer has chosen the class randomly.

3. Determining the research design

The researcher conducted the research by using one group pretest post design.

4. Administering try out test

The try out of test item carried out after choosing the subjects. There were 40 items. Try out administered in 90 minutes. The aim of the test is to know the quality of the test, which used as instrument of the research.

5. Administering the pretest

The pre test did in order to see the students' achievement of vocabulary before giving the treatment by using crossword puzzle technique. The total items for pretest were 30 items and time allocation was 60 minutes.

6. Conducting the treatment

After giving the pretest to the students, the writer conducted the treatment for three meetings in 7 A. Then, during the process of treatment, the writer and also the english teacher observed the students' activity in group work activity and in the whole class activity.

7. Administering the posttest

The post test administered before the class was finished, it conducted about sixty minutes. There were 30 items related to the topic that the students had been learn. The aim of the posttest was to know the students' progress after being taught by using the crossword puzzle game.

8. Analyzing the data

Both of the pretest and posttest results of the class treated by using one group pretest posttest design. It used in order to find out whether crossword puzzle game can increase the achievement of students' vocabulary in a group work activity and for analyzing the process all available data selected into an observation to investigate the process in teaching vocabulary by using crossword puzzle game in a group work.

9. Concluding the results

After analyzing the results of both pretest and posttest, the conclusion explained based on the result.

10. Reporting the results

The result of this research reported in the script including the suggestion from the writer.

3.4 Data Collecting Technique

The data of this research was the ability of the student's vocabulary achievement before and after the treatments. In collecting the data, the writer used the following ways:

1. Try Out

The test was try out test in order to know standard of the test. There were 40 items of the test. From the result of this try out test, every item analyzed and decided whether the items were used or not for the pre test and post test.

2. Pre – test

The pretest conducted before the treatment. It used to know how far the students have mastered the vocabulary before treatment is given. The item that the writer used in pretest is multiple choice items. The pre test administered in order to see the students' achievement of vocabulary before giving the treatment using crossword puzzle game as technique. The numbers of the items in the test were 30 items.

3. Treatment

The class was given the treatments with three different lesson plans. Those three lesson plans consisted of the topic (about job). One treatment consisted of 90 minutes. The technique that used was crossword puzzle game of certain boxes consist of several letters with some question to guide the students to

answer and fill them. Then, during the process of treatment, the writer and also the english teacher observed the students' activity in group work activity and in the whole class activity.

4. Post test

The posttest conducted after the writer conducted the treatments. It used to know to measure how far the influence of the treatment toward the student's vocabulary achievement. Similar to the pretest, the writer used test in the form of multiple choice items. There were 30 items and time allocation was 60 minutes.

By using those kinds of tests in collecting data, it would be easy to measure how far the students understand the words as the target language of vocabulary.

3.5 Try Out

After choosing the subject, the try out test items was carried out. The aim of try out was to know the quality of the test that used as the instrument of the research and determine which item should be revised for the pre test and post test. Try out was conducted to measure the validity and reliability of pre test and post test. This was multiple choice tests consisted of 40 items. This research used the result of the try out test to measure the level of difficulty and discrimination power, to find out the validity and reliability. The writer used 7 E the one class that was given the try out test.

3.5.1 Validity of the Data

A. Test

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

- Content validity, can be determined from table of specification. If the table represent the material that the tester wants 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 writer used vocabulary of job to be comprehended by seventh grade students. The writer used the table of specification to check content validity of the test items. Table validity helped 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 Test

| No | Aspect | Items | Total | Percent |
|----|-----------------------------------|---|-------|---------|
| 1 | Noun - Proper noun | 1, 4, 12, 14, 20, 21, 24, 33, 35, 37, 39 | 11 | 27.5 % |
| | - Animate noun | 3, 15, 16, 18, 26, 28, 30, 31, 32, 36, 40 | 11 | 27.5 % |
| 2 | Verb (regular/ irregular verb) | 2,5, 6, 7, 8, 10, 13, 17,22 ,23,25, 27 , 29, 38 | 14 | 35 % |
| 3 | Adjective | 9,11,19, 34 | 4 | 10 % |
| | total | | 40 | 100 % |

- Construct validity is concern with the test, whether the test is actually in line with the theory focuses that is used to measure the ability. It is used to the research which has many indicators. According to Setiyadi (2006). It means that the items should really measure the students' vocabulary achievement.

B. Process

In order to make the data more valid, the writer employed triangulation.

Triangulation is a manner of collecting the data by combining two or more models in order to enrich the data and to have accurate conditions (Setiyadi, 2006: 11).

The writer used two types of triangulation, they were time triangulation and methodology triangulation. Time triangulation was used in different time at the same class, where as the methodology triangulation is used some methods such as observation and questionare to gather the same data.

3.5.2 Reliability of The Test

Reliability refers to the extent to which the test is consistent in its score and gives us and indication of how accurate the test score are (Hatch and Farhady, 1982 :244). To find out the reliability of the test, the writer used split-half technique which requires her to split the test in two similar parts, first and second half (Hatch and Farhady, 1982: 246). To measure the coefficient of the reliability between first and second half, the writer used Pearson Product Moment formula.

The formula was:

$$r_1 = \frac{\sum xy}{\sqrt{\sum X^2 \sum Y^2}}$$

(Lado; 1964 in Huges, 1989: 32)

Where:

- r_1 = coefficient reliability between 1st half and 2nd half
- X = total number of the 1st group
- Y = total score of 2nd group
- X^2 = square of x
- Y^2 = square of y

Then to know the coefficient of the whole items, the researcher used Spearman

Brown formula:

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

Where:

- r_k = reliability of full test
- r_1 = reliability of half of the test

The criteria of reliability were:

- 0.80 – 1.00 = very high
- 0.60 – 0.79 = high
- 0.40 – 0.59 = average
- 0.20 – 0.39 = low
- 0.00 – 0.19 = very low

(Hatch and Farhady, 1982: 246)

3.5.3 Level of Difficulty of the Test

Level of difficulty relates how to measure the easy or difficult the item is from point of view of the students who take the test (Shohamy; 1985:79). Level of difficulty can be determined by dividing the number of the students who answer correctly by the total number of the students who cannot answer correctly (Shohamy: 1985:79).

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

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:

LD < 0.30 = Difficult
 LD = 0.30 – 0.70 = satisfactory
 LD > 0.70 = easy

(Shohamy, 1985:79)

3.5.4 Discrimination Power of the Test

The discrimination Power (DP) is the portion of the high group students getting the item correct minus the proportion of the low level who got the items correct (Sohamy, 1985:81).

To know the discrimination power of the test, the writer used the following formula:

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

DP = Discrimination Power
 U = The proportion of upper group
 L = The proportion of lower group
 N = Total number of students

(Sohamy, 1985: 81)

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

3.5.5 Scoring System of the Test

In scoring the student's result of the test, the writer used Arikuto's formula (1969:271) the highest possible score was 100.

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

S: score
R: right answer
N: total items

In order to know the students' vocabulary achievement through crossword puzzle game in a group work, the writer calculated the students' score by doing three activities:

1. Scoring the pretest and posttest.
2. Tabulating the result of the test and finding the mean of the pretest and posttest. The mean calculates by applying:

$$X = \frac{\sum X}{N}$$

Note:

X = mean

$\sum X$ = the total score of the student

N = number of the students

3. Drawing conclusion from tabulated results of the test given that is Statistically analyzing the data using SPSS 15.0

3.6 Treatment of the Data

A. Test

After conducting pretest and posttest, the writer analyzed the data. It was used to know whether there was an increase of the students' vocabulary achievement before and after being taught crossword puzzle game in a group work.

The following was used to examine the students' score:

1. Scoring the pretest and posttest.
2. Tabulating the score of the students' vocabulary test results using Repeated measures T-test.

The formula manually was as follows:

$$\frac{X_1 - X_2}{S D} \quad \text{in which } S \frac{D}{D} = \frac{S_D}{\sqrt{n}}$$

Where:

X₁ = mean of the pretest

X₂ = mean of the posttest

S = 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 used statistical computerization.

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

B. Process

The writer provided an analysis by using the steps proposed by Meolong (1990), the data is analyzed by using following steps:

1. Interpreting all data available by selecting them into an observation. In this step, the writer selected the data in order to keep them relevant with the research question about the process of teaching vocabulary by using crossword puzzle in a group work activity.
2. Arranging all collected data according to their categories based on the research question. They are process of teaching vocabulary by using crossword puzzle game in a group work activity.
3. Interpreting all collected data and making conclusion.

3.8 Hypothesis testing

Ho = Crossword puzzle cannot significantly increase students' vocabulary achievement by using crossword puzzle game in a group work activity.

Hi = Crossword puzzle can significantly increase students' vocabulary achievement by using crossword puzzle game in a group work activity

The hypothesis testing was used to prove whether the hypothesis proposes in this research is 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 ($P < 0.05$).