III. RESEARCH METHODS

This chapter shows the research design, population and sample, data collecting technique, the procedure of collecting data, and hypothesis testing.

3.1 Research Design

This research investigated whether there was a significant increase in students' reading ability in identifying specific information through scanning technique. This research used quantitative design, which has *one group pretest-posttest design.* In this design, the pre-test and post-test were administered to investigated whether scanning technique could be used to increase students' reading ability in identifying the specific information significantly. Then, the mean (average score) of both pre-test and post-test compared to find out the progress before and after the treatments. Even though this design is not really considered model experiments, its internal validity was questionable, and too many uncontrolled factors which could contribute to students final scores, it is easy and useful way of getting preliminary information on this research question (Hatch and Farhady, 1982: 20).

This study used one class as experimental group using *simple random sampling,* which was selected randomly by using lottery. This class had both pre-test post-test and three treatments.

The design of the research was described as follows:

$$T_1 \; X \; T_2$$

Where:

T_1 : The Pretest

X   : Treatment

T_2 : The Post test

(Hatch and Farhadi in Setiady, 2006: 131)

This study investigated whether scanning technique could be used to increase students' reading comprehension in identifying the specific information significantly by comparing the average score (mean) of the pretest with the average score (mean) of the posttest. Firstly, the researcher administered a pretest to the students to identify their achievement of reading comprehension in identifying the specific information in monologue texts before applying the technique. Then, the students were given three treatments by using scanning technique. Eventually, a posttest was administered to identify students' reading ability in identifying the specific information in monologue text after being taught by using scanning technique. The average score of the posttest was higher than the average score of the pretest, it indicated that scanning technique could be used to increase students' reading ability in identifying the specific information significantly.

3.2 Population and Sample

The population of this research was the 2nd grade of SMPN 5 Bandar Lampung period 2011/2012. There were 7 classes in 2nd grade of SMPN 5 Bandar Lampung and consist of 34 – 40 students in each class (VIIIA-VIIIG). The sample was VIII.G as experimental class, which consist of 34 students. The class was selected randomly by using lottery, since the 2nd grade in SMPN 5 Bandar Lampung was no priority class. It was applied based on the consideration that every student in the population has the same chance to be chosen and in order to avoid the subjectivity in the research (Setiyadi, 2006: 39). The experimental class had have pre-test, post-test, and three treatments.

3.3 Data Collecting Technique

This research used reading test as the instruments (the same test for both pre-test and post-test) in collecting the data. Multiple choices test was used since its marking is rapid, simple and most importantly reliable, that is, not subjective or influenced by marker judgments (Heaton, 1975: 151). Besides, it did not require writing, thus restricting it to the skill being tested – reading. Each test contains 4 passages and 20 items of reading in which each text had some questions. The questions had four alternative answers for each (A, B, C, and D), one was the correct answer and the rest were the distracters. The scoring system was that the load of each correct answer was four points. Therefore, if one participant answers all the items correctly, s/he will get 100 points (20x5).

3.3.1 Validity of the instrument

Validity of the instrument was considered in this research. The researcher took content and constructs validity for this research. It was considered that instrument should be valid and in line with reading theory and the material. The validity of the instrument was presented as follows:

- Content validity referred to the extent to which a test measures a representative sample the subject matter contents, the focus of the content validity is adequacy of the sample and simply on the appearance of the test (Hatch and Farhady, 1982: 251). Content validity is intended to know whether the test items are good reflection of what will be covered. The test items were adapted from the materials that have been taught to the students. The test should be so constructed as to contain a representative sample of the course (Heaton, 1975: 160). This research applied two materials for the treatments. Those materials were monologues. To know whether the test have a good content validity, the items of the test is discussed with the experts (lectures and advisors) to measure the degree of agreement. The composition of the test items was presented in table 1: table of specification below

Table 1. Specification of the Validity Test

No	Skills of Reading	Item Numbers	Percentage of Items
1	Finding specific information	1, 3, 4, 6, 7, 8, 9, 12, 13, 14, 16, 17, 18, 19, 21, 23, 26, 27, 28, 32, 33, 34, 36, 39,40.	62.5 %
2	Reference	11, 15, 20, 29.	10 %
3	Vocabulary	2, 5, 10, 22, 24, 25, 30, 31, 35, 37, 38.	27.5%

- Regarding the construct validity, it measures whether the construction had already referred to the theory, meaning that the best construction had already in line with the objective of the learning (Hatch and Farhady, 1982: 251). To find the construct validity of the pretest and posttest, the theory of reading ability in identifying the specific information, references, and vocabulary are formulated the best items.

3.3.2 Reliability of the instrument

Reliability referred to the extent to which the test is consistent in its score, and gives us an indication of how accurate the test score are (Hatch and Farhady, 1982: 244). To test the reliability of the instruments, the researcher will use *split-half* method in which the reading tests are divided into halves (Hatch and Farhady,

1982: 246). By splitting the test into two equal parts (first half and second half); it is made as if the whole test has been taken in twice. The first half contains passage 1 and 2 and the items are number 1 until 10. The second half contains passage 3 and 4 involving question number 11 until 20. Moreover, by arranging the tests into first half and second half allowed the researcher to measure the test reliability by having *split half method*.

To measure the coefficient of the reliability between the first and second half, Pearson Product Moment will be used, which is formulated as follows:

$$r_1 = \frac{\sum xy}{\sqrt{\left(\sum x^2\right)\left(\sum y^2\right)}}$$

Where:

r_1 = the coefficient reliability between first and second half group

X = the total numbers of first half group

Y = the total numbers of second half group

$\sum x^2$ = the square of X

$\sum y^2$ = the square of Y

(Lado in Hughes, 1991: 3)

Then to know the coefficient correlation of the whole items, Spearman Brown formula will be used:

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

Where:

rk : the reliability of the test

rl : the reliability of the half test

The criteria of reliability are:

0.90 – 1.00   = high

0.50 – 0.89   = moderate

0.0 – 0.49   = low

(Hatch and Farhady, 1982: 268)

If the reliability of the test reaches 0.50 the researcher will consider that it has been reliable. Hatch and Farhady (1982: 223) states that level of reliability about 0.90 – 1.00 it indicates that this instrument will produce consistent result when administers under similar condition to the same participant and in different time.

3.3.3 Level of Difficulty

Level of difficulty of the reading test will be used to classify the test items into difficult items and easy ones. The items should not be too difficult or too easy for the students. In this research, reading tests consist of two kinds: one for pretest and the other for posttest. Before being used, both kinds of the tests will be tried out, the result of which will be explained in this section.

In calculating the Level of Difficulty for each item, the following formula will be used:

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

Where:

LD : level of Difficulty

R   : number of students who answer correctly

N   : the total number of students following the test

The criteria are:

<0.30   : difficult

0.30-0.70 : average

>0.70   : easy

(Shohamy, 2985: 79)

3.3.4 Discrimination Power

The discrimination power (DP) is the proportion of the high group students getting the items correct minus the proportion of the low-level students who getting the items correct. In calculating the discrimination power of each item the following formula will be used:

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

DP   = Discrimination Power

Correct U   = The number of upper group students who answer correctly

Correct L   = The number of lower group students who answer correctly

N   = The total number of students who take the test

The criteria are:

DP: 0.00 – 0.19   = Poor

DP: 0.20 – 0.39   = Satisfactory

DP: 0.40 – 0.69   = Good

DP: 0.70 – 1.00   = Excellent

DP: - (Negative)   = Bad items, should be omitted

(Heaton, 1975: 180)

3.3.5 Scoring System

In scoring students result of the test, the researcher used Arikunto Formula. This ideal score is 100. The scores of pretest and posttest were calculated by using formula as follow:

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

Where:

S   : the score of the test

R   : the total of the right answers

N   : the total items

3.4 Procedure of Collecting Data

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

1. *Selecting the instrument materials:* the instrument materials (reading test) were chosen from authentic materials (English Magazine and Module). The selecting process considered materials that have been taught to the students and the students' interest.

2. *Determining research instrument:* for both reading tests (pre-test and post-test), the materials were taken from students' authentic materials (short articles or monologue texts), i.e. English magazines (two passages) and English textbook (three passages). It is aimed at making an equal proportion and level of difficulty of both pre-test and post-test. The numbers of the items will be arranged in such a way so that the reliability of the tests can be seen through split-half method.

3. *Determining the population and sample of the research:* the sample of the research was determined through *simple random probability sampling.* It means that the sample was selected randomly by using lottery, since the 8th grade in SMPN 5 Bandar Lampung was not stratified class, there was no priority class. There were seven classes of eight grades at SMPN 5 Bandar Lampung.

4. *Administering try out test:* the researcher administered the try out using reading text and 40 items of multiple choices, the maximal points. It was taken 90 minutes. The test was given to find the quality of the test before it was used in order to get the data on the research. It was to find out whether the test items were good or not in validity, reliability, level difficulty and the discrimination power. The researcher used split-half method to measure the reliability in which required her to provide the items into two same groups, first half and second half.

5. *Determining final test of the instrument.* In this step, the researcher revised the instrument based on the result of try out test. The revision was done by changing the ambiguous statement, distracters, double correct answers.

6. *Administering the pre-test:* pre-test was conducted before the treatments. It was done to check students' reading comprehension to identify the specific information in various types of texts. Pre-test was administered for about 45 minutes on 1st week.

7. *Giving treatment:* three treatments by using scanning technique were given in two weeks. The treatments were classroom activity, which used and applied scanning technique in reading.

8. *Conducting post-test:* post-test was conducted to find out whether there is a significant increase in students' reading comprehension in identifying the specific information after the treatments. It was administered for 45 minutes in experimental group.

3.5 Hypothesis Testing

The hypothesis is stated as follows:

There is significant difference of students' reading comprehension achievement in class VIIIG of SMPN 5 Bandar Lampung after being taught through scanning technique. The hypothesis was analyzed by using repeated measure t-test though computing with Statistical Package for Social Science (SPSS) version 15.0 for window. The researcher used the level of the significance 0.05 in which the hypothesis is approved if Sign < ά. It means that the probability of error in the hypothesis is only 5 %.