

CHAPTER III RESEARCH METHODS

3.1. Research Design

In this research, the writer used the experimental design to prove the hypotheses. The writer took two classes. These two classes were randomly assigned into experimental class 1 and experimental class 2. The experimental class 1 received treatment with pre-questioning, while the experimental class 2 was taught without pre-questioning. Those two groups were given a pre-test and a post-test. Here, the pre-test was given to capture students' initial ability from the experimental class 1 and experimental class 2 before the treatment was delivered to both classes and to make sure whether they have the same ability or not. At the end of the research, two groups were given the post-test after the treatment in order to find out the significant improvement in both groups. And to know whether or not there is a significant difference between two groups. The design of the research is as follows:

G1 (random) : T1 X1 T2

G2 (random) : T1 X2 T2

Notes:

G1 : The experimental class 1 where pre-questioning is applied

G2 : The experimental class 2 where without pre-questioning is applied

T1 : Pre test

T2 : Post test

X1 : The treatment of pre-questioning

X2 : The treatment without using pre-questioning

(Hatch and Farhady, 1982:22)

3.2. The Variables

Hatch and Farhady (1982:12) defined a variable as an attribute of a person or of an object which varies from person to person or from object to object. Besides, in order to assess the influence of the treatment in research, variables can be defined as independent and dependent variables. According to Hatch and Farhady (1982:15), the independent variable is the major variable that a researcher hopes to investigate, and the dependent variable is the variable that the researcher observes and measures to determine the effect of the independent variable. In this research, the independent variable was known as the treatment variable. And the writer proposed three variables in this research, as follows:

1. Reading comprehension as dependent variable (Y)
2. Pre-questioning activity as independent variable 1 (X_1)
3. Without pre-questioning activity as independent variable 2 (X_2)

3.3. Population and Sample

A population can be defined as the whole subjects of a research. And the population of this research was the second grade of SMPN 1 Kotabumi enrolled in

academic year 2010/2011 spreading into six classes from VIII A to VIII F. Each class consisted of 38-40 students. After determining the population, the writer had to choose the sample of this research. The sample itself is the representative of the examined population. Further, sample should be chosen with a certain technique in order to get a sample that describes the real population.

Since a research needs a technique to get the sample, Setiyadi (2006:38) exposed two models of sampling procedure in a quantitative research, they are probability sampling and non-probability sampling. Further, Setiyadi (2006:42) stated that a kind of probability sampling is cluster sample, which is defined as a procedure of taking sample in a population involving some different groups that are in the same stratum. Therefore, by considering the above definition and that the second grade of SMPN 1 Kotabumi consists of six classes relatively having same characteristics, the writer chose two classes (class VIII A and VIII B) as the samples based on cluster sampling.

After the samples were selected, those two classes were determined to be the experimental class 1 and experimental class 2. Hereafter, class VIII A became the experimental class 1, while class VIII B became the experimental class 2. And both classes would fill out the pre-test and post-test. In this case, the experimental class 1 got the treatments with pre-questioning, and the experimental class 2 learned without pre-questioning. Besides that, the writer took one class as try out class that was class VIII C.

3.4. Data Collecting Technique

The instrument of this research was reading test. There were two kinds of test that is pre-test and post-test. The data was gained from the students' pre-test and post-test scores. The explanation of the test as follows:

1. Try Out

The purpose of the test was to know its validity and reliability. The researcher first tried out the instrument to another class in the same grade before the pre-test was administered. The total items of the test were 50 and it was allocated within 80 minutes.

2. Pre Test

The pre-test was the first reading test administered to both classes (experimental class 1 and experimental class 2) at the beginning of the research. The pre-test was aimed for gaining the data of the students' initial reading ability. Besides, this test was administered to ensure that the students of both classes had the same English background and proficiency before two classes received the treatments. In addition, this pre-test was carried out to find out the equivalent of experimental class 1 and experimental class 2. The total items of the test were 30 in form of multiple choices. And this test was conducted within 60 minutes.

3. Post Test

Similar to the procedures of doing pre-test, post-test was the second reading test delivered to both experimental classes. At the end of the research, the

researcher administered post-test in order to find out the result of the treatments. The aim of this test was for finding whether or not there are any significant differences between students' scores of the experimental class 1 and experimental class 2 after the treatments were conducted to both groups. In other words, the post-test was carried out in order to investigate the effectiveness of pre-questioning in teaching reading to the second grader of SMPN 1 Kotabumi. This test were consisted of 30 items of multiple choice for 60 minutes.

3.5. Instrument

The researcher checked the students' reading comprehension ability by giving two reading tests to the students. The reading tests were pre-test and post-test. The aim of the pre-test was to know the students' basic reading comprehension ability before treatments. And the purpose of the post-test was to know the result of students' comprehension ability after treatments. The instruments were multiple choice, each items had four options that is: a., b., c., and d.

3.6. Scoring System

In order to get the final score of reading test, the scoring was based on the students' correct number in answering the test items. So that, the students' score was obtained by dividing the students' correct number with the total test items (50 items for try out test, 30 items for pre-test and post-test) and then multiplying it with the total score (100). And the formula is as follows:

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

where :

S : the score of the test

R : the total of the right answer

N : the total items

(Arikunto, 2005 : 236)

3.7. Research Procedures

The procedures of the research as follows:

1. Determining the population and then selecting the sample

The population of this research was the second grader of SMPN 1 Kotabumi.

The samples were chosen by cluster sampling. The researcher took two classes. These two classes were randomly assigned into experimental class 1 and experimental class 2.

2. Arranging the materials to be taught

The materials were based on the students' handbook of junior high school.

Besides, the researcher also searched and added the materials from network.

And the researcher used narrative text as the focus.

3. Administering the try out test

The researcher prepared the try out materials and gave the try out test to another class which had the same characteristic as the samples chosen. It was

conducted to measure the reliability of pre-test and post-test and to make sure whether the test was good or bad for students.

4. Administering the pre-test

The researcher prepared the pre-test material and gave the pre-test to both classes. The aim of this test was to know the students' basic reading comprehension ability. The test consisted of 30 multiple choices and the students were required to answer the questions in 60 minutes.

5. Conducting treatments

The researcher touch reading comprehension in the experimental class 1 by using pre-questioning and without pre-questioning in the experimental class 2. The reasearcher gave three times of treatments in three meetings, which took 2x40 minutes in every meeting.

6. Administering the post-test

The researcher prepared the post-test materials and gave the post-test to both classes. The aim of the post-test was to measure the students' ability in reading comprehension after giving treatments. It consisted of 30 items of multiple choice and reading texts which took 60 minutes.

7. Data analysis

The results of pre-test and post-test in experimental class 1 and experimental class 2 were analized by using Independent group T-test to compare the data of the two means scores.

3.8. Data Analysis

The aim of data analysis was to determine whether the students' reading comprehension achievement increased or not. The data of the research was examined by using Independent group T-test. Two means of two different groups (experimental class 1 and experimental class 2) were compared. The data was statistically computed through the Statistical Package for Social Science (SPSS) version 15.0.

3.9. The Treatment of The Data

After collecting the data, the writer treated the data by using the following procedures:

3.9.1. Testing The Try Out.

The test was to delete bad items based on their level of difficulty (LD) and discrimination power (DP) and also to find the reliability and validity of the test. The writer used four formula, they were level of difficulty (LD), discrimination power (DP), pearson product moment, and Spearman Brown.

3.9.1.1. Level of Difficulty

According to Arikunto (1993:209), the test items are good if they are not too easy and not too difficult or in other word, the difficulty level is average. Here, the students of try out class were divided into two groups that is upper and lower groups. The students' scores of try out test were listed from the highest score to the lowest score. Then, the researcher took 27% from the students who had the

highest score to be the upper group and took 27% students who had the lowest score to be the lower group. And the formula of the difficulty level is as follows:

$$LD = \frac{U + L}{N}$$

Where:

LD : level of difficulty

U : the number of upper group who answer correctly

L : the number of lower group who answer correctly

N : the total number of students in upper and lower groups

The criteria are :

< 0.30 : difficult

0.30 – 0.70 : average

> 0.70 : easy

(Arikunto, 1993:221)

3.9.1.2. Discrimination Power

Arikunto (1993:213) stated that discrimination power is the ability of the item to differentiate between the students who have high ability and those who have low ability. In this research, the researcher used the items which had discrimination power greater than or equal to 0.20. And the items which felt smaller than 0.20 (poor items) were absolutely dropped. To determine the discrimination power, the researcher used the following formula:

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

Where:

DP : 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 in upper and lower groups

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/minus (-), all is poor

(Arikunto, 1993:221)

3.9.1.3. Validity and Reliability

3.9.1.3.1. Validity

Validity is the extent to which it measures what it is supposed to measure. Hatch and Farhady (1982:250) also explained that validity refers to the extent to which an instrument really measures the objective to be measured and suitable with the criteria. A test must aim to provide a true measure of the particular skill which it is intended to measure.

There are four types of validity that is (1) face validity: concerns with the lay out of the test; (2) content validity: depends on a careful analysis of the language being tested; (3) construct validity: measures certain specific characteristic in accordance with a theory of language learning; (4) criterion-related validity: concerns with measuring the success in the future, as in replacement test.

Based on types of validity above, the researcher used content and construct validity since the other two were considered to be less needed. Both of them will be explained in the following paragraph:

a. Content Validity

Hatch and Farhady (1982:251) said that content validity is the extent to which the test measures a representative sample of the subject matter content. Content validity concerns whether the tests are good reflection of the materials that need to be tested. To get the content validity of reading comprehension, the researcher tried to arrange the materials based on the objective of teaching in syllabus for second grade of junior high school students.

In the research, the content of the test items is presented in the table of specification below:

Table 3.1.
Table of Specification of Reading Skills

No	Reading Skills	Item Number	Percentage of Items
1	Determining Main Idea	12., 24., 30., 32., 34., 37., 48.	14 %
2	Finding Supporting Details	1., 4., 6., 10., 16., 17., 23., 27., 28., 31., 43., 44., 46., 47.	28 %

No	Reading Skills	Item Number	Percentage of Items
3	Finding Inference Meaning	2., 3., 7., 8., 13., 18., 19., 25., 29., 33., 38., 39., 40., 45.	28 %
4	Understanding Vocabulary	9., 15., 20., 22., 26., 36., 41., 50.	16 %
5	Finding Reference	5., 11., 14., 21., 35., 42., 49.	14 %
Total		50 items	100 %

b. Construct Validity

Construct validity concerns whether the tests are true reflection of the theory of the trait – in our case – language which is being measured. To find construct validity of the test, the researcher formulated the test by the concept of reading comprehension.

3.9.1.3.2. Reliability

Reliability is a necessary characteristic of any good test: for it to be valid at all, a test must first be reliable as a measuring instrument. Reliability refers to the extent to which a test produces consistent result when administered under similar condition (Hatch and Farhady, 1982:244)

To investigate the reliability of the reading test, the researcher used Pearson Product Moment which measures the correlation coefficient of the reliability between odd and even number (reliability of half test) in the following formula:

$$r_{xy} = \frac{N \sum xy - (\sum x)(\sum y)}{\sqrt{[N \sum x^2 - (\sum X)^2][N \sum y^2 - (\sum y)^2]}}$$

where:

r_{xy} : the correlation coefficient of reliability between odd and even

- N : the number of students who take part in the test
 x : the total numbers of odd number items
 y : the total numbers of even number items

(Hatch and Farhady, 1982:199)

After getting the reliability of half test, the researcher used Spearman Brown to determine the reliability of the whole test, as follows:

$$r_k = \frac{2r_{xy}}{1 + r_{xy}}$$

where:

- r_k : the reliability of the whole test
 r_{xy} : the reliability of half test

(Hatch and Farhady, 1982:247)

the criteria of reliability are:

- 0.90 – 1.00 : high
 0.50 – 0.89 : moderate
 0.00 – 0.49 : low

3.9.2. Normality Test

Normality test was used to measure whether the data of the test have normal distribution or not. The students' score of pre-tests and post-tests both group are analyzed to gain the normality test. The hypotheses for the normality test are as follows:

H_0 : The data is not distributed normally

H_1 : The data is distributed normally

In this research, " H_0 is accepted if significant value does not exceed level of significance at 0.05, meanwhile, H_0 is rejected if significant value exceeds level of significance at 0.05".

3.9.3. Testing The Homogeneity Test

The statistical formula of F-test was used to test whether the data (pre-test and post-test scores) from the experimental class 1 and experimental class 2 had homogenous variance or not. The formula of homogeneity is as follows:

$$F = \frac{S_1^2}{S_2^2}$$

In which $S^2 = \frac{\sum x^2 - \frac{(\sum x)^2}{N}}{N-1}$ or

$$S = \sqrt{\frac{\sum x^2 - \frac{(\sum x)^2}{N}}{N-1}}$$

(Hatch and Farhaday, 1982 : 58-59)

Notes:

F : the homogeneity of the item test

S^2 : variance

S : standar deviation

S_1^2 : the larger variance

S_2^2 : the smaller variance

N : the amount of the students

x : the students' score

The criteria are:

H_0 : F-test \leq F-table (the variance of the data is homogenous)

H_1 : F-test \geq F-table (the variance of the data is not homogenous)

3.9.4. Testing The Hypotheses Test (t-test)

This test was to test the hypotheses proposed by the writer was accepted or not.

The formulation of the hypotheses that (t-test) is as follows:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{S \sqrt{\frac{1}{N_1} + \frac{1}{N_2}}}$$

in which $S = \sqrt{S^2}$

$$S^2 = \frac{(N_1 - 1)S_1^2 + (N_2 - 1)S_2^2}{(N_1 - 1) + (N_2 - 1)}$$

Notes :

\bar{x}_1 : the mean of the experimental class 1

\bar{x}_2 : the mean of the experimental class 2

S : standard deviation

N_1 : the number of the students in the experimental class 1

N_2 : the number of the students in the experimental class 2

The criteria are :

H_0 : t-ratio \leq t-table = accepted

H_1 : t-ratio $>$ t-table = rejected

(Hatch and Farhady, 1983)