

### **III. RESEARCH METHOD**

This chapter discusses the methods of research used in this study, that is research design, population and sample, data collecting technique, research procedures, criteria of good test, scoring system, and data analysis.

#### **3.1 Research Design**

This research is quantitative carried out by using One Group Pretest-Posttest Design. The research investigates whether there is any significant increase after students' reading comprehension ability of short functional text or not.

The design can be presented as follows:

T1    X    T2

T1    : Pretest

T2    : Posttest

X     : Treatment by using questioning technique

(Hatch and Farhady,1982: 20)

### **3.2 Population and Sample**

The population of this research at the second grade students of junior high school (SMPN 2 NATAR). There are six classes of the second grade and all classes consist of 167 students. Among those classes, the researcher took one class as the sample of research. The class is chosen randomly by using lottery.

### **3.3 Data Collecting Technique**

To collect the data the researcher used the following techniques:

#### **Try out**

The try out test was administered to determine the quality of the data collecting instrument of the research, there are reliability, validity, level of difficulty, and discrimination power. Students were given 50 items of multiple choices test in 90 minutes.

Statistical formula namely *Spearman Brown's Prophecy Formula* was used to find out the reliability of the test. If the reliability test reaches 0.50 the researcher considered that it has been reliable. The result of the reliability found through this research was 0.98 . According to the criteria of the reliability proposed by Hatch and Farhady (1982: 268), the test has high reliability in the range 0.90-1.00. It indicated that the instrument of this research was reliable and good.

The data was analyzed by computing the level of difficulty and discrimination power of the score. From the computation of level difficulty, it was found out that the items were 5 items which were less than 0.30; it means that the items were difficult. There were 14 items which were higher than 0.70, it means that the items were easy and 31 items were satisfactory (0.30-0.70). From the computation of discrimination power the researcher got that there were 4 bad items (has negative value in discrimination), 13 items were poor (has less than 2.00 index), 2 item had no discrimination (the value is zero) and 30 items were satisfactory (has higher than 2.00 index). After analyzing the data, the researcher got 24 items were good, 11 items should be revised, and 10 items were bad and should be dropped.

Based on the result of the try out test, the researcher took 40 items were administered in pre test and post test. The numbers of items and arrangement of the text in pre test were changed randomly in order to use the items in post test.

### **Pretest**

Pretest is used to find out how far the competence of the students' basic ability in reading comprehension. In pretest, the students were instructed to answer multiple choice questions about short functional text. Their scores in the pretest were used to see the students' knowledge in comprehending short functional text.

## **Posttest**

The Posttest was administered after conducting six treatments to the students. It was used to find out whether there is any significant increase in students' reading comprehension ability after six time treatments or not. The students' average score in the posttest was compared with the average score in pretest. By doing so, the researcher measures students' increase of comprehension ability of short functional text

### **3.4 Research Procedure**

The procedures of this research are:

#### **1. Determining the population and sample**

The population of this research was the second year students of SMPN 2 Natar and the researcher took one class VIIIC as the subject of this research.

#### **2. Administering tryout test**

Try out was administered in order to determine the quality of the test as instrument of the research.

#### **3. Analyzing the test**

The result of the tryout test was analyzed in order to determine the items which were good to be used in pretest.

#### **4. Administrating the pretest**

Pretest was given in order to find out the students' ability in reading comprehension of short functional text.

#### **5. Conducting treatment**

In this research, the treatment conducted in six times. In the treatment, the researcher explains about questioning technique to help the students to comprehend of short functional text. After giving the explanation of questioning technique, the researcher gave them accession training in questions formulation. During this session the experimental class taught to recognize and express the purpose of short functional text and ask questions based on the topics.

#### **6. Administering posttest**

The posttest was administered in order to know students' increasing in reading comprehension ability after they were treated by using short functional text. 40 item numbers of multiple choices were applied in this test.

#### **7. Analyzing the test result**

After conducting the pretest and posttest, the researcher analyzed the data by using Repeated Measure T-test. It was used to know whether questioning technique suitable to increase the students' reading comprehension ability of short functional text significantly or not. The data computed through SPSS program.

## 8. Reporting the result

In reporting the data, the data arranged systematically based on the pretest and posttest to see whether there is any significant increase of students' reading comprehension ability in short functional text or not.

### 3.5 Scoring System

In scoring students' result of the test, the researcher uses Percentage Score. The ideal highest score is 100. The score of pretest and posttest were calculated by using formula as follow:

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

Notes:

Where:

PS : Percentage Score

R : the total of right answer

N : total item

(Henning, 1987)

### 3.6 Try Out of Research Instrument

Whenever a test or other measuring device is used as part of the data collecting process. There are four criteria of a good test, namely, validity, reliability, level of difficulty, and discrimination power.

### **3.6.1 Validity**

A test can be said to be valid if it measures the object to be measure and suitable with the criteria (Hatch and Farhady, 1982: 251). According to Hatch and Farhady (1982: 251), there are four types of validity: face validity, content validity, construct validity and empirical or criterion-related validity. To measure whether the test has good validity, the researcher used content and construct validity.

#### **3.6.1.1.Content Validity**

Content validity is the extent to which a test measure a representative sample of the subject matter content, the focus of content validity is adequacy of the sample and not simply on the appearance of the test (Hatch and Farhady, 1982: 251). To know whether the test is good reflection of what should he tested and of the knowledge which the teacher wants the students to know, the researcher compared this test with the table of specification. If the table represents the material that the researcher wants to test, then it is valid from the point of view. A table of specification is an instrument that helps the test constructor plans the test. Jansen (2002: 107) explain that questioning technique slows down the reading process, focuses students attention on detail in the text, and make them aware gaps in the text and/or breaches with their own expectation.

#### **3.6.1.2. Construct Validity**

Construct validity is concerned with whether the test is actually in line with the theory of what reading comprehension means (Hatch and Farhady, 1982: 252). To

know whether the test is true reflection of the theory in reading comprehension, the researcher examines whether the test questions actually reflect the means of reading comprehension or not. The researcher formulates table of specification, so every test items can be matched with the goal and the materials have been taught. The table of specification is an instrument that helps the test constructor plans of the test. The test is based on 2006 English curriculum, and the syllabus of first years SMA students and represent of the materials that taught by the teacher. The content of the test is presented in the table of specification below:

**Table1. The specification of Data Collecting Instrument**

No.	Skills of Reading	Item Number	Percentage of Item
1	Identifying a main idea	1, 7, 34, 41	8 %
2	Categorizing information	3, 4, 5, 8, 9, 11, 15, 16, 17, 22, 24, 27, 28, 29, 30, 31, 35, 37, 39, 42, 43, 44, 45, 46, 49	5 %
3	Making inferences—Visual clues	10, 13, 19, 23	8 %
4	Making inference—Word Clues	2, 14, 21, 25, 33, 36, 40, 47, 48	18%
5	Identifying reading purpose: describe, instruct, inform, persuade, summarize, or entertain (1)	6, 12, 18, 20, 26, 32, 38, 50	16%
Total		50	100%



### 3.6.2 Reliability

Reliability is a measure meant of accuracy, consistency, dependability or fairness of scores resulting from administration of particular examination.

Reliability of the test was determined by using the odd and event in order to estimate the reliability of the test. To measure coefficient of the reliability the first and second half group, the researcher used the following formula:

$$r_1 = \frac{\sum XY}{\sqrt{[\sum X^2 \sum Y^2]}}$$

Notes:

$r_1$  : The coefficient of reliability between first half and second half group

X : The total numbers of second half group

Y : Total numbers of second half group

$X^2$  : The square of X

$Y^2$  : The square of Y

To find out the reliability of the test, the writer employed “Spearment Brown’s Prophecy Formula” (Hatch and Farhady, 1982: 286)

The formula is as follows:

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

$r_k$  : The reliability of the test

$r_1$  : The reliability of half test

The criteria of reliability are:

0.90-1.01.1 : High

0.50-0.89 : Moderate

0.00-0.49 : Low

### 3.6.3 Level of Difficulty

To see the level of difficulty, the researcher used the following formula:

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

Where :

LD : Level of difficulty

U : The proportion of upper group students who answer correctly

L : The proportion of lower group students who answer correctly

N : Total number of students

The criteria are :

<0.30 : Difficult

0.30 – 0.70 : Average

.0.70 : Easy

(Shohamy, 1985: 79)

### 3.6.4 Discrimination Power

This index refers to the extent to which the item able to differentiate between high and low levels students on the test. A good item according to this criterion is one that good students get good score and get bad score. To see the discrimination index, the researcher uses the following formula:

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

(Shohamy, 1985: 81)

Notes:

DP : discrimination power

U : the proportion of upper group students who answer correctly

L : the proportion of lower group students who answer correctly

N : total number of students

The criteria are:

1. If the value is positive, it has discrimination because a large number of more knowledgeable students than poor students get the item correct if the value is zero. It means no discrimination.
2. If the value is negative, it has negative discrimination because more low-level students than high level students get the item correct.
3. In general, the higher discrimination index, the better, in the classroom situation most items should be higher than 0.20 indexes (Shohamy, 1985: 82).

### **3.7 Data Analysis**

The researcher computed the students score in order to find out the students increasing in reading comprehension ability of short functional text through questioning technique by using the following steps:

1. Scoring the pre-test and post-test
2. Tabulating the results of the test and calculating the score of the pre-test and post-test.
3. Drawing conclusion from the tabulation result of the pre-test and post-test by using statistical computerization, Repeated Measure T-Test of Statistical Package for Social Science (SPSS) version 17.0 to test whether the increase of students gain is significant or not, in which the significance determined by  $p < 0.05$ , it used as the data come from the one sample (Hatch and Farhady, 1982: 117).

### **3.8 Hypothesis Testing**

After collecting the data, the researcher analyzed them in order to find out whether there is any significant difference in students' reading comprehension ability of short functional text or not after the treatment. The researcher used Repeated Measure T-Test to know the level of significance of the treatment effect.

By seeing the probability level ( $p$ ) which is shown by two tail significance as the value of significance, we can draw the conclusion (Setiyadi, 2006: 172).

$H_1$  is approved if  $p < .$  The research uses level of significance i.e. 0.05, and the probability of error in the hypothesis is 5%.

Therefore, the hypothesis which would be cited is as follows:

$H_1$  : There is any significant difference of students' reading comprehension ability before and after being taught by using questioning technique.

$H_0$  : There is no significant difference of students' reading comprehension ability before and after being taught by using questioning technique.

Besides that, to investigated the students' activities in teaching learning process using questioning technique, the researcher analyzed the observation data and concluded the result after the observation sheets completed by the observer.

The data were analyzed by using statistical computerization Repeated Measures t-test

of SPSS 17 for Windows i.e.  $t = \frac{x_1 - x_2}{S_D}$  to test whether the difference between

pretest and post test is significant or not, in which the significance is determined by  $p < 0.05$  (Hatch and Farhady, 1982: 114). Whereas:

$$. t = \frac{x_1 - x_2}{S_D}$$

$$SD = \frac{\sum D^2 - (1/n) - (\sum D)^2}{n-1}$$

Where:

$\overline{S_D}$  = standard error of differences between two means

SD = standard deviation

n = number of students

$\bar{X}_1$  = mean score pre test

$\bar{X}_2$  = mean score post test

t = test

(Hatch and Farhady, 1982: 116)



