

## **CHAPTER III**

### **RESEARCH METHOD**

This chapter presents several topics dealing with research method. Those are research design, population and sample, research instrument, validity and reliability testing, normality and homogeneity testing, data collecting method and data analysis.

#### **A. Research Design**

Research is the process that is done systematically and logically to get solution of the problems or to get the answer from the certain questions (Ary et al, 2002:22). Khotari (2004:1) stated that research as a scientific and systematic search for pertinent information on a specific topic. Research design is the plan of a research study. Arikunto (2010:45) said that the research design is a design used by the researcher as the guidance in carrying out a research.

This research was conducted by experimental design using quantitative approach. According to Khotari (2004:3) quantitative research is based on the measurement of quantity or amount. Experimental research is a research consist of a variable are manipulated to observe an effect on other variable. The manipulated variable is called the experimental treatment or the independent variable. The observed and measured variable is called the dependent variable (Ary et al, 2002:24).

This research used pre-experimental design by using one group pretest-posttest. This design is classified as pre-experimental design because it is little or no control of extraneous variables. That is way in this study the researcher just puts one group used pretest and posttest to see the result of the treatment. In this research, the researcher put one group and used pretest-posttest to see the result of the treatment. The influence of the experimental treatment can be seen by analyzing or comparing the average score of pre-test and post-test (Latief, 2011:96).

**Table 3.1 A Diagram of One Group Pretest-Posttest**

Y1	X	Y2
Pretest	Treatment (Independent Variable)	Posttest (Dependent Variable)

The procedures of pre-experimental research that use one group pretest-posttest design:

1. Administering a pretest before applying strategy with a purpose of measuring reading comprehension achievement of first grade students of SMPN 1 Besuki.
2. Applying the treatment on experimental group in teaching reading comprehension by using scanning technique to the subject, that is first grade students of SMPN 1 Besuki.

3. Administering a posttest after applying strategy with a purpose of measuring reading comprehension achievement of first grade students of SMPN 1 Besuki.

This research intended to investigate of using scanning technique in reading comprehension. Using treatment is aimed at proving the increase score possibly got by the research. The researcher will be known the effectiveness of signification score when the students taught using scanning technique in reading comprehension.

## **B. Population and Sample**

### **1. Population**

Arikunto (2010:108) said that a population is a set (or collection) of all elements processing one or more attributes of interest. Population is a generalization region involves object or subject that has quality and special characteristics in which is chosen by the researcher to investigates and make conclusions (Sugiyono, 2008:80). Based on the description above the researcher conclude that population is whole subject in the research. The population of this study is all of first grader students of SMPN 1 Besuki which consist of eight classes.

## **2. Sample**

Sampling is the way to take sample. According to Porte (2002:234) sampling refers to the process of obtaining sample. In this research, the sampling was selected by purposive sampling. According to Arikunto (2010:183) purposive sampling is the process of selecting sample by taking subject that is not the level of area, but it is taken based on the specific purpose. The reason of researcher used this technique is the class homogeneity in their English ability than other class, the researcher had a limited time and the researcher gave advice to choose VIIF class by the teacher.

Sample is a part that is assumed to represent a population. According to Arifin (2015:215) stated that sample is the part of population that will be researched or sample is miniature population. The sample of this research is students of F class in first grade students. It consist of 21 students, there are 14 boys and 7 girls.

### **C. Research instrument**

Instrument is one of the significant steps in conducting this research. Based on Djwandono (2008:12) a test is a tool or procedure used to measure the students' language proficiency. Therefore, the researcher must choose some instruments in process of collecting data. Instrument is a tool to collect data in this research. This research used test as instrument to collecting data. The researcher

used test to get the required data which used to measure the students' ability in reading comprehension. The researcher used pre-test and post-test to get the data.

### **1. Pre-test**

Pre-test was given to the students before the researcher taught by using scanning technique. This test needed to know the basic competence of students and how far they know about the subject that will be taught. Pre-test was given to the students at the first meeting on March 6<sup>th</sup>, 2017. The form of pre-test was multiple choices. The test items were 25 questions in the form of short functional text that is relevant to apply scanning technique. In multiple choices test, every item has four choices, there was A, B, C, and D. The time allocation is 40 minutes.

### **2. Post-test**

Post-test was given to the students after the treatment. The aim of this test is to measure students' reading comprehension after taught by scanning technique. It is done to know the final score and to know the students difference achievement before and after they get treatment. Post-test was given to the students at the third meeting on March 14<sup>th</sup>, 2017. The form of post-test was multiple choices with 25 questions in the form of short functional text that is relevant to apply scanning technique. In multiple choices test, every item has four choices, there was A, B, C, and D. The time allocation is 40 minutes.

## **D. Validity and Reliability Testing**

There are two important characteristics that every measuring instrument should possess: validity and reliability (Ary et al, 2002:213). In this research, the test of reading comprehension has constructed to meet the criteria of validity and reliability test.

### **1. Validity**

The most complex criterion of an effective test and the most important principle of language testing is validity (Isnawati, 2014). It is to extent to which inferences made from assessment result are appropriate, meaningful, and useful in terms of the purpose of the assessment (Gronlund in Brown, 2004:22). Based on Ary et al (2002:225) validity is the most important consideration in developing and evaluating measuring instrument. Therefore, validity refers to how well a test measures what it is purported to measure. Validity is always specific to the particular purpose for which the instrument is being used.

There are four types of validity will provide evidence to achieve the validity of the test. They are content validity, criterion-related validity, construct validity, and face validity. The researcher used content validity in this research. Content validity is a kind of validity which depends on careful analysis of the language being tested and of the particular test. Isnawati (2014) stated that the test will have content validity if it includes a proper sample of the structure or content which is relevant with the purpose of the

test. This test construct based on standard competence and basic competence (SK-KD) in KTSP 2006 at the level of junior high school.

In this research, the researcher asked the students to answer the multiple choice test to measure students' comprehension in reading text. The researcher asked them to answer the questions based on the text. The researcher made this test based on the course in the syllabus of first grade SMPN 1 Besuki. Therefore this test is valid in term of content validity.

## **2. Reliability**

Reliability is the degree to which an assessment tool procedures stable and consistent results. A test must be reliable as a measuring instrument. It means that reliability is a test can be used to know that test is consistent and dependable. According to Ary et al (2002:236) reliability of measuring instrument is the degree of consistency with which it measures whatever it is measures. Reliability is necessary characteristics of any good test to be valid at all. Therefore, Arikunto (2010:221) stated that the instruments has been reliable automatically the data is reliable.

The researcher gives test as much 25 questions for students of SMPN 1 Besuki to know the reliability of test. In this research, the researcher used KR-20 formula to measure the test to be reliable, most of them used this formula because not crucial and requires test administration only once (Fraenkel and Wallen, 2005:156).

**KR-20 formula**

$$r_{11} = \left[ \frac{n}{n-1} \right] \left[ \frac{S_t^2 - \sum p_1 q_1}{S_t^2} \right]$$

Where:

$r_{11}$  = reliability coefficient

$n$  = number of test items

$S_t^2$  = standard deviation

$p_1$  = proportion of passing the test item

$q_1$  = proportion of failing the test item

$\sum p_1 q_1$  = sum of passing the test item times to failing the test item

According to Riduwan (2004:136), the criteria of reliability instrument can be divided into 5 classes, those are very reliable, reliable, enough reliable, rather reliable, less reliable. The criteria of reliability can be showed as follow:

**Table 3.2 Criteria of Reliability**

<b>Interval coefficient</b>	<b>Correlation</b>
0.80 - 1.000	Very reliable
0.60 - 0.79	Reliable
0.40 - 0.59	Enough reliable
0.20 - 0.39	Rather reliable
0 - 0.19	Less reliable

To know the reliability of the test, the researcher conducted tryout of the test. The purpose of tryout itself was to know the clear instruction of the test and to achieve the reliable scores. Tryout test conducted in different class that is 7E



class. They were chosen because they have almost same level as the experimental group.

In tryout, the researcher asked the students to answer the questions in the pre-test. And the result as follow:

**Table 3.3 The Table to Compute the Reliability Using Kuder Richardson Formula (KR-20)**

Item	Np	p1	Nq	q1	p1.q1
1.	9	0.4285714	12	0.5714286	0.244898
2.	21	1	0	0	0
3.	20	0.952381	1	0.047619	0.0453514
4.	19	0.9047619	2	0.0952381	0.0861678
5.	8	0.3809524	13	0.6190476	0.2358277
6.	21	1	0	0	0
7.	21	1	0	0	0
8.	11	0.5238095	10	0.4761905	0.2494331
9.	16	0.7619048	5	0.2380952	0.1814038
10.	10	0.4761905	11	0.5238095	0.2494331
11.	1	0.047619	20	0.952381	0.0453514
12.	19	0.9047619	2	0.0952381	0.0861678
13.	7	0.3333333	14	0.6666667	0.2222222
14.	3	0.1428571	18	0.8571429	0.1224489
15.	21	1	0	0	0
16.	21	1	0	0	0
17.	20	0.952381	1	0.047619	0.0453514
18.	21	1	0	0	0
19.	21	1	0	0	0
20.	15	0.7142857	6	0.2857143	0.2040816
21.	21	1	0	0	0
22.	20	0.952381	1	0.047619	0.0453514
23.	21	1	0	0	0
24.	21	1	0	0	0
25.	11	0.5238095	10	0.4761905	0.2494331
					$\sum p1q1=$ 2.3129167

Therefore, the reliability is:

$$r_{11} = \left[ \frac{n}{n-1} \right] \left[ \frac{S_t^2 - \sum p_1 q_1}{S_t^2} \right]$$

$$r_{11} = \left[ \frac{25}{25-1} \right] \left[ \frac{18.5 - 2.3129167}{18.5} \right]$$

$$r_{11} = [1.041] [0.8749775]$$

$$r_{11} = 0.9108515775$$

From the analysis, the researcher got the result of pre-test tryout score. The reliability coefficient is 0.91. From the above evidence, it was found that the reliability of test is very reliable. And also it can be tested on students.

### E. Normality Testing

Normality distribution test is a test to measure whether our data has a normal distribution. Normality test used to determine whether data set well-modeled by a normal distribution or not. To know the normality, the researcher used *Kolmogrov-Smirnov test* with SPSS 16.0. If the value is smaller than 0.05 indicates that the data are non-normal. And if the value is higher than 0.05 indicates that the data is normal. The result can be seen in the table below.

**Table 3.4 Normality test**

<b>One-Sample Kolmogorov-Smirnov Test</b>		VAR00001
N		21
Normal Parameters <sup>a</sup>	Mean	64.00
	Std. Deviation	11.662
Most Extreme Differences	Absolute	.182
	Positive	.182
	Negative	-.182
Kolmogorov-Smirnov Z		.835
Asymp. Sig. (2-tailed)		.488

a. Test distribution is Normal.

Based on the table above, output One Sample Kolmogorov-Smirnov Test shows that the subjects are 21 students. The value of Kolmogorov-Smirnov Z is 0.835 and the Asymp. Sig (2-tailed) is 0.488. If the probability  $> 0.05$ , it means that the data is normal. The sig. is 0.488 bigger than 0.05 ( $0.488 > 0.05$ ). It means that the data is distributed normally.

#### **F. Data Collecting Method**

Data collecting method is way to collect the data from an instrument. Data collecting method was needed to obtain the research data. Tanzeh (2009:57) stated that data collecting is systematic and standardized procedure to obtain the necessary data. In this research used test as instrument and administering test as the method to collecting data.

Test is method to collecting data to measure students' achievement. It can be series of questions which are used to measure skill, knowledge, intelligence or

ability that have by students. Therefore, a test is a method to get the data by giving some questions to the respondent or students.

In this research, the researcher used multiple choice technique to test reading skill. Using multiple choice, the test-takers provide evidence of successful reading by marking a mark against one out of a number of alternatives (Isnawati, 2014). This test used to measure students' achievement in reading comprehension before and after they taught by scanning technique.

There are procedures of conducted the research:

1. Give the pre-test to measure students' achievement in reading comprehension before they are taught by using scanning technique.
2. Give the treatment, which is by applied scanning technique to the students.
3. Give the post-test to measure students' achievement in reading comprehension after they are taught by using scanning technique.

**Table 3.5 The Schedule of Test and Treatment**

No.	Activity	Date
1.	Pre-test	March 6 <sup>th</sup> , 2017
2.	Treatment	March 7 <sup>th</sup> , 2017 March 13 <sup>th</sup> , 2017
3.	Post-test	March 14 <sup>th</sup> , 2017

## **G. Data Analysis**

Data analysis is the process of evaluating data using analytical and logical reasoning to examine the data provided. The data obtained from research result of students test that were analyzed quantitatively. Quantitative data analysis is also called statistical analysis. It means that the result of the data served up in numeral form.

The data result was processed by comparing with the first data (pre-test) and the second data (post-test) to see whether there will be significant difference after given by treatment. If the post test of teaching reading comprehension's score-test is higher than pre-test, it means that reading comprehension by using scanning technique is effective. To get the achievement of reading comprehension test, the writer gave the student a test after got treatment reading comprehension by using scanning technique. The test was multiple choice test. In this research, the researcher used analysis compare means-paired sample T test by SPSS 16.0 because the researcher use one group experiment using two test, there are pre-test (without treatment) and post-test (using treatment). After that, the researcher compared the mean from the result of pretest and post-test. Using SPSS 16.0 means that the researcher did not use manual computation, all data collected were accounted by using SPSS 16.0 program in this case was paired sample T test.