CHAPTER III

RESEARCH METHOD

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

A. Research Design

In this research, the researcher used pre-experimental research. This study classified as pre-experimental research design because it has little or no control of extraneous variable (Ary *et al*: 2010: 303). Since there was no control of extraneous variable so, the researcher used one group pre-test and post-test as the research design. This design involves only one group as its subject and it involves three steps: pretest, treatments, and posttest (McMillan, 1992: 174). Pretest was administered before the treatment. It was to know the students' reading comprehension before they have been taught by using PQ4R. Posttest was administered after the treatment. Meanwhile, during the treatment, the researcher applied PQ4R as the strategy for teaching reading. That is why in this study the researcher just put one group and used as pre-test and post-test to see the result of the treatment. The subjects were not randomized and there was no pre treatment.

B. Population and Sample

Population is all members of group of people, animals, events or objects that lives together in a place and well organized to be target of conclusion from the result of the research (Sukardi, 2005: 53). According to Sugiyono (2011: 80) population is not only people, but also all of the things or objects in another world. Population is not only about the quantity of object or subject that will be learnt, but also involve the whole of characteristics of the subject or object. In this research, the population was all of the students at eighth grade of SMPN 2 Bakung.

Sugiyono (2011: 81) states that sample is part of amount and characteristics of the population. In this research, the researcher took eighth grade students in class D of SMPN 2 Bakung as the sample.

In this case the researcher investigated 22 students from class VIII-D as the experimental group and also control group. This sample is taken by sampling.

Sugiyono (2013) states "sampling is technique to take sample". The number of sample taken should appropriate to collect the data. The way to get the representative sample is by considering the nature and the distribution of population.

In this case, purposive sampling was chosen as a technique of choosing sample. This sample was chosen purposively because it was possible to get permission to conduct research in this school. Another reason was PQ4R strategy had never been applied by the English teacher at this school. It was

known when the researcher asked some questions to the English teacher informally before the research was conducted.

C. Research Instrument and Data Collection Method

Instrument is a tool used to collect the data in order to overcome the problem of the research (Moehnilabib, et al, 2003: 71). In this research, the researcher used test as the instrument in collecting data. Since the data collection method was test so the instrument used in this research was test.

In this research, the researcher used pre-test and post-test as the instrument. Pre-test was administered before applying PQ4R strategy, while post-test was administered after applying PQ4R strategy.

1. Pre-test

The researcher gave pre-test on February, 26th 2014. Pre-test was administered before the students were taught using PQ4R strategy. Pre-test is needed to know how far the students' reading comprehension ability before taught using PQ4R strategy. The pre-test was in the form of multiple choices consisting of 20 items. This kind of tests was chosen to avoid subjectivity that may affect unreliability of the tests. Multiple choice is the most obvious advantage is that scoring can be perfectly reliable. Scoring should also be rapid and economical. A further considerable advantage was that it was possible to include more items than other forms of other tests since the test-takers have only to make a mark on the paper (Isnawati, 2012: 32). The time was allocated for this test was 40 minutes.

2. Post-test

The researcher administered post-test on March, 12th 2014. After the treatment, post-test was given to the students. The test items in the post test were not really the same as the pre-test, but it has the same indicators and the text was almost the same in its difficulty level. The purpose of the post-test was to measure students' reading comprehension ability after taught by using PQ4R strategy. The post-test was in the form of multiple choices which is consisting of 20 items. The time that was allocated for this post-test was 40 minutes.

In this research, between pre-test and post-test, the researcher gave treatment to the students. The researcher gave treatment to the students three times. Treatments were carried out on March 1st, 5th, and 8th 2014. The treatment was conducted after administering pre-test. The purpose of treatment was to help the students in comprehending the text especially about recount text. In treatment, the researcher applied PQ4R strategy.

There are six steps of PQ4R strategy were applied in this research.

a. Preview

The first step was intended to enable students to read quickly before starting to read. Students started with reading the topics, sub main topics, title and sub-title, sentence in the first and last paragraph or summary in the end of chapter. If there was no of the stated above, the students could read fast in every one or two sentences, so they will get the main point of what they will learn. Students should also concern on the main topic sentence. It would make students easier to understand

the whole sentences of the paragraph. While, according Vacca and Vacca (1999: 423) students preview the material to anticipate content, make plans for reading, and develop a mental framework for ideas to be encountered in the text.

b. Question

Students should make question that about the passage. They should use the title, sub-title, or the main topic to help them. Begin the question using "what, who, why or how". If they read by answer question, they will read carefully to remember the passage well. Vacca and Vacca (1999: 425) also state that students raise question with the expectation that they will find answer in the text. When students raised questions about the content of materials, they were likely to examine the extent of their own uncertainty and to find out what they did not know about the information they will acquire during reading. As a result of this activity, students became involved in a search for answer during reading.

c. Read

Read the passage actively, that was by giving respond of what they have read. Students should never take long note. They should try to find the answer of the question that they make. This statement also strengthened by Vacca and Vacca (1999: 425) that in reading activity student search for ideas and information that will answer their question.

d. Reflect

Since reflect was not separated step with read, but reflect is essential component of the third activity or reading, so during reading, students not only memorize but also comprehend the information of the text by connecting the information with the other information that are known, linking subtopic in the text with the main principle, solving the contradictions in the information presented and solving simulated problems with the subjects (Sudarman, 2009: 70).

e. Recite

In recite students were asked to remember the information of what they have read by stating the main point loudly and by answering the questions. The students can using the note that they make. From the notes, students were asked to make summary of what they have read. In other word, students deliberately attempt to answer their questions by rehearsing aloud what they have learned and/or writing responses to the questions raises (Vacca and Vacca, 1999: 425).

f. Review

The last activity, students read their summary or reread the whole passage if needed and they should answer the questions that they get before. Vacca and Vacca (1999: 425) states that students review and reflect on the material by organizing and elaborating on ideas encountered in the text and rereading portions to verify or expand on responses to their questions. They also state that review is an opportunity to reflect on what was read. Usually students review what

they have learnt by organizing and elaborating ideas encountered during reading. They can write summaries or critical notes or construct graphic representation to depict text relationship.

In this research, the researcher used method to collect the data that was called by data collection method. Data collection method is a systematical and standard procedure used to collect the data. The data of this study is collected through the test. The test is used to investigate the students' reading comprehension.

A test is a method to measure a person's ability, knowledge, or performance in a given domain (Brown, 2004: 3). In this study, the given domain is reading skill. Therefore, the test given is related to the reading skill.

A good test should measure the ability of the test-takers accurately. Therefore, a good test should be well-constructed (Brown, 2004: 4). The test in this research was divided into two, pre-test and post-test. Pre-test was administered before the students given treatment and post-test is administered after the students given treatment by the researcher.

D. Validity and Reliability Testing

The researcher used test as instrument to collect data. Test here was intended to measure students' reading comprehension ability. So, the researcher should make a good test that can really measure students' reading comprehension ability. A good test must fulfill and consider standardized of test itself. Measuring a good test, there were some aspects to make a good test, those are: validity and reliability.

1. Validity Testing

Validity is an important key to effective research. It is the most complex criterion of an effective test and the most important principle of language testing. It is the extent to which inferences made from assessment results are appropriate, meaningful and useful in term of the purpose of the assessment (Gronlund in Brown, 2004: 22). Validity was essentially a demonstration that a particular instrument in fact measures what it purports to measure (Cohen *et al*, 2007:133). It meant that validity testing needed to know whether the instrument used by the researcher could really measure what it measured.

There are two types of validity that will provide evidence to achieve the validity of the test. They are:

a. Content validity

To measure students' reading comprehension ability so the test used was a reading test. It meant that test is said to have content validity if it is represented the content of universe. Ary et al (2006:226) stated that to have a content validity, the instruments are representative of some defined universe or domain of content. It meant that the items of the test must really test the domain that was reading skill.

In this research, the test, pre test and post test were in the form of multiple choices. The students must answer the test related to recount text.

In this case, the researcher made four indicators of the test, pre test and post test. They are: (a) determine explicit meaning from recount text correctly, (b) determine implicit meaning from recount text correctly, (c) determine the meaning of vocabulary from the recount text correctly, (d) determine kind of tenses that used in recount text correctly.

The indicators stated above were tested in items of pre test. The first indicator was tested in test item number 1, 3, 7, 8, 10, 15, 17 and 19. The second one was tested in the test item number 2, 4, 9, 11, 12, 18 and 20. The third indicator was tested in the test item number 5, 6, 13 and 14. The last indicator was tested for number 16.

In the post test, the first indicator is tested in the test item number 1, 3, 4, 5, 7, 9, 18 and 20. The second indicator was tested for number 2, 6, 8, 10, 11, 15 and 19. The third one was tested for number 12, 13, 14 and 17. And the last one was tested for number 16.

From the distribution of the indicator in pre test and post test item, the researcher made percentage as follow:

a. determine explicit meaning from recount text correctly, the percentage is:

$$\frac{the\ number\ of\ items}{the\ number\ of\ questions}x100\% = \frac{8}{20}x100\% = 40\%$$

b. determine implicit meaning from recount text correctly, the percentage is:

$$\frac{the\ number\ of\ items}{the\ number\ of\ questions}x100\% = \frac{7}{20}x100\% = 35\%$$

c. determine the meaning of vocabulary from the recount text correctly, the percentage is:

$$\frac{the\ number\ of\ items}{the\ number\ of\ questions}x100\% = \frac{4}{20}x100\% = 20\%$$

d. determine kind of tenses that used in recount text correctly, the percentage is:

$$\frac{the\ number\ of\ items}{the\ number\ of\ questions}x100\% = \frac{1}{20}x100\% = 5\%$$

From the explanation above, it could be concluded that the test had a content validity.

b. Construct Validity

According to Isnawati (2012: 29) a test said to have construct validity if it can be demonstrated that it measures just the ability which is supposed to measure. The word construct refers to any underlying ability which is hypothesized in a theory of language ability. So, this construct validity is refers to the theory of language learning. It is strengthened by Brown (2004: 25) that a construct is any theory, hypothesis or model that attempts to explain observed phenomena in our universe of perception.

2. Reliability Testing

The next way to know a good test was by 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. If the students are given the same test on two different occasions, the test should yield similar results (Isnawati, 2010: 11). The researcher used word "similar", because it was

almost impossible for the test-takers to get exactly the same scores when the test was administered again in the following day. This was because of the fact that human beings did not simply behave in exactly the same way on every occasion, even when the circumstances seem identical.

A test should be reliable. It means that a test should be consistent and dependable (Brown, 2004: 20). What is meant by consistent and dependable here was that the result of the test will be consistent in any situation of the test (Bachman, 2005: 5). It meant that whenever the test was administered, it would show the similar or even the same result.

To measure the reliability of the test, Kuder-Richardson Reliability Formula is used. To get Kuder-Richardson reliability, it requires test administration only once. One correct answer is given point one, while incorrect answer is given point zero (Isnawati, 2012: 22). The formula is as follow:

$$\text{KR-20} = \frac{k}{k-1}\left[1 - \frac{\Sigma pq}{s^2}\right]$$

In which:

K = number of items

P = proportion of correct answer for an item

Q = proportion of incorrect answer of an item

S^2 = variance

The result of that formula showed the reliability of the test with the criteria

Table 3.1 Criteria of Reliability Testing

The Criteria	The Description
$r < 0.40$	The reliability is low
$0.40 < r \leq 0.80$	The reliability is moderate
$0.80 < r$	The reliability is high

Based on the pre-test that has been done on February 26th, 2014, the result of the test show the reliability as follow:

$$\text{KR-20} = \frac{k}{k-1}\left[1 - \frac{\Sigma pq}{s^2}\right]$$

$$= \frac{20}{20-1}\left[1 - \frac{1,2463}{7,56}\right]$$

$$= \frac{20}{19}\left[1 - 0,1648\right]$$

$$= 1,052 \, [0,8352]$$

$$= 0,8752$$

The result of the test showed that the reliability high. It meant that the test is reliable.

While the post test that has been done on March 12th, 2014, the result of the test show the reliability as follow:

$$\text{KR-20} = \frac{k}{k-1}\left[1 - \frac{\Sigma pq}{s^2}\right]$$

$$= \frac{20}{20-1}\left[1 - \frac{1,7272}{3,722}\right]$$

$$= \frac{20}{19} [1 - 0,464]$$

$$= 1,052 \ [0,536]$$

$$= 0,56$$

The result of the reliability testing was moderate. It meant that the test was reliable.

E. Normality and Homogeneity Testing

1. Normality Testing

   The hypotheses for testing normality are:

   a. H_o: Data is in normal distribution

   b. H_a: Data is not in normal distribution.

   Critic area is in which H_0 was rejected when the significance value was lower than 0.05 ($\alpha = 5\%$). The analysis was as follows:

a. Testing data from pre-test score using SPSS 16.00

Table 3.2 One-Sample Kolmogorov-Smirnov Test

		Pretest
N		22
Normal Parameters[a]	Mean	51.14
	Std. Deviation	10.343
Most Extreme Differences	Absolute	.180
	Positive	.180
	Negative	-.141
Kolmogorov-Smirnov Z		.845
Asymp. Sig. (2-tailed)		**.473**

a. Test distribution is Normal.

b. Testing data from post-test score using SPSS 16.00

Table 3.3 One-Sample Kolmogorov-Smirnov Test

		posttest
N		22
Normal Parameters[a]	Mean	63.18
	Std. Deviation	9.580
Most Extreme Differences	Absolute	.176
	Positive	.176
	Negative	-.097
Kolmogorov-Smirnov Z		.823
Asymp. Sig. (2-tailed)		**.506**

a. Test distribution is Normal.

Based on the output from SPSS above was known that the significance value from pre-test was 0.473 and from the post test was 0.506. Both value from pre-test and post-test were bigger than 0.05. The sig/p value on pre-test was 0.473 and it was bigger than 0.05 (0.473 > 0.05). It meant that H_0 was accepted and H_1 was rejected and the data was in normal distribution. Then, for post-test score the value of sig/p was 0.506 and that was bigger than 0.05 (0.506 > 0.05). It also means that H_o was accepted and H_a was rejected and the data was in normal distribution. So, it could be interpreted that both of data (pre-test and post-test score) were in normal distribution.

2. Homogeneity Testing

Table 3.4 Homogeneity Testing

No.	Pretest	X_1^2	posttest	X_2^2
1	50	2500	50	2500
2	55	3025	60	3600
3	50	2500	50	2500
4	55	3025	60	3600
5	60	3600	85	7225
6	40	1600	60	3600
7	40	1600	65	4225
8	45	2025	65	4225
9	65	4225	70	4900
10	50	2500	65	4225
11	45	2025	55	3025
12	45	2025	55	3025
13	40	1600	50	2500
14	60	3600	80	6400
15	70	4900	65	4225
16	40	1600	60	3600
17	40	1600	60	3600
18	60	3600	70	4900
19	75	5625	75	5625
20	50	2500	55	3025
21	50	2500	60	3600

22	40	1600	75	5625
	1125	59775	1390	89750

$$SD_1^2 = \frac{\sum X_1^2}{N_1} - \left(\overline{X}_1\right)^2$$

$$= \frac{59775}{22} - 2614.93$$

$$= 102.12$$

$$SD_2^2 = \frac{\sum X_2^2}{N_2} - \left(\overline{X}_2\right)^2$$

$$= \frac{89750}{22} - 3991.94$$

$$= 87.60$$

$$F_{max} = \frac{S\ max}{S\ min}$$

$$SD_1{}^2 = 102.12$$

$$SD_2{}^2 = 87.60$$

$$F_{max} = \frac{102.12}{87.60}$$

$$F_{max} = 1.166$$

$$df_1 = N_1 - 1 = 22-1 = 21$$

$$df_2 = N_2 - 1 = 22-1 = 21$$

The calculation showed the result of F_{max} is 1.166. It was called homogeneous if F_{max} calculation was lower than F table. Since $df_1 = 21$ and $df_2 = 21$, so it was taken for $df_1 = 20$ and $df_2 = 20$. The value of F table in 5% level was 2.12. It could be said that the result of F_{max} calculation was lower than F table or $F_{table} > F_{calculation}$ (2.12 > 1.166). It meant that

the variance value in the class sample based on pre-test and post-test score was homogeneous.

F. Data Analysis

The data that was collected from the instrument, test, then analyzed using quantitative methods. So, the researcher would analyze the data using statistical technique. The technique is used to find significant different score of students' reading comprehension before and after taught by using PQ4R strategy.

The researcher in this research used Paired Sample T Test stated by SPSS 16.0.