CHAPTER III
METHODOLOGY OF THE RESEARCH

3.1 Research Method

Method is an important aspect in conducting research. This research has used quantitative research design. This researcher has used quasi experiment research, and this research has used non-equivalent control group design. In non-equivalent control group design, at the first time of research, the researcher already has given pre-test to experiment and control class to measure the first ability of students before treatment. Next at the end of the time of experiment, the researcher already has given the post test for both classes. In this research, the researcher already has taken two classes, the first class already be experiment class and the second class already be a control class.

The design of this research already has used non-equivalent control group design as proposed by Cohen (2007:283) as follows:

Experiment	O_1	X	O_2
Control	O_3		O_4

Notes:

O_1 = pre-test of the experiment group

O_2 = post-test of the experiment group

O_3 = pre-test of the control group

O_4 = post-test of the control group

X = treatment which is given to the experiment group

Furthermore, this researcher has chosen non-equivalent control group design, the experiment group and control group has been not chosen randomly. However both of groups got the same material in teaching learning process. In the experimental class, the students already has been taught by using PQRST method in teaching reading, and in the control class the students are not given treatment. In this research, the researcher has used control class as a comparison for the experimental class. It is used to find whether there is effect of using PQRST method towards students' reading comprehension achievement.

3.2 Population, Sample, and Sampling Technique

3.2.1 Population

The population of this research took students of SMAN 4 Kotabumi academic year 2018/2019 at the eleventh grade which consists of 234 students.

TABLE 3
RESEARCH POPULATION

No	Class	Gender		Total
		Male	Female	
1	XI MIPA 1	9	21	30
2	XI MIPA 2	12	18	30
3	XI MIPA 3	10	20	30
4	XI MIPA 4	12	17	29
5	XI IPS 1	14	17	31
6	XI IPS 2	15	12	27
7	XI IPS 3	15	11	26
8	XI IPS 4	15	16	31
Total		102	132	234

Source: SMAN 4 Kotabumi

3.2.2 Sample

In this research, the researcher has used two classes as sample of the research. The number of sample is 62 students. The samples in this research are XI IPS 1 chosen as an experimental class and XI IPS 4 chosen as control class.

TABLE 4
RESEARCH SAMPLE

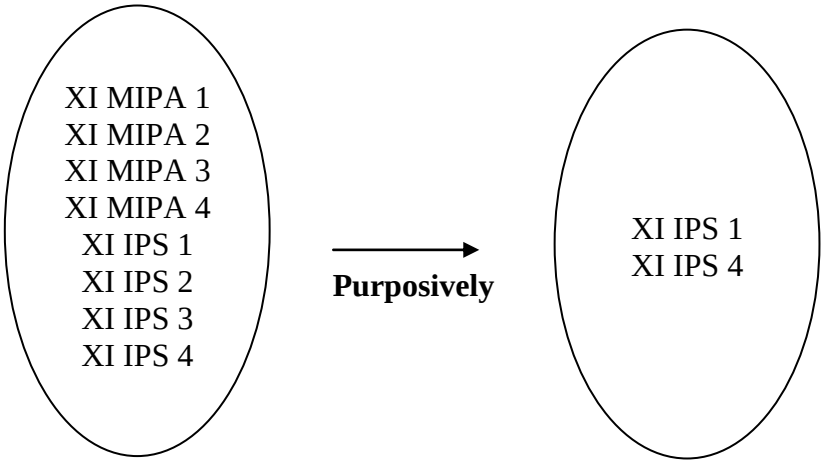
No	Sample	Class	Number	Total
1	Control Class	XI IPS 4	31	31
2	Experimental Class	XI IPS 1	31	31
Total				62

3.2.3 Sampling Technique

In this research, the researcher has used purposive sampling technique in deciding the sample. Purposive sampling technique is a technique that is used to take the sample based on the purpose of the researcher.

According to Sugiyono (2012:85) purposive sampling is the techniques to determine sample with some consideration. Based on this opinion, the researcher took 62 students that were involved in this research as sample. The researcher has chose class XI IPS 1 and XI IPS 4 to become the sample of her research, because they have the same subject, have similar ability, English handbooks, same material, and those class are taught by the same teacher and the same time allocation in learning English. The fundamental reason is because the two classes have similar average score than the other class in the English examination. The

score of both classes is similar. In addition, class XI IPS 1 become the experiment group, and class XI IPS 4 become the control group.



Picture 3: Purposive Sampling Process

3.3 Research Instrument

Research instrument is a tool to collect the data. In this research, researcher has used instruments in reading test, to measure students' reading comprehension.

a. Conceptual Definition of Reading Comprehension

Reading comprehension is an act of linking one idea to another and the ability to understand ideas, word, and relationship between ideas of the text. Reading comprehension is an interaction between reader and the text. They use their prior knowledge to get the meaning as efficiently as possible. The conclusion is reading comprehension is an ability that can make students more understand about the text.

b. Operational Definition of Reading Comprehension

Reading comprehension is a process to decode written symbol to get the meaning in form of score in reading comprehension, the researcher took a test that made by the researcher. The test used is multiple choice test. Concept of the text is, the researcher were given students some texts and then the students answer the question which relate to the text that they are reading. The researcher were given multiple choices consist of 30 items with 4 options a, b, c, d. Each item were given a score with some indicators; the correct answer will be given 1 score, incorrect answer will be given 0 score. Then, the number of correct answer will be multiplied by 10 and divided by 3, so the maximum score is 100.

c. Specification of Instrument

The questions were given by the teacher in multiple choice forms. Here are the transformation of the specification table of reading comprehension instrument. Table of the specification of reading comprehension test in tryout test as follow:

TABLE 5
THE SPECIFICATION OF READING COMPREHENSION TEST (TRYOUT)

Aspect	Indicator	Item
Main idea	The students are able to determine the main ideas of the text	1,5,16,20,28,31
Reference	The students are able to Recognize the reference in the text	7,10,15,19,21,41,46
Making Inference, in context (implied detail)	The students are able to Recognize the inference in the text	11,18,22,27,40,43,29
Supporting details	The students are able to determine the detail information and	2,3,6,8,9,13,14,17,23 ,24,30,33,34,35,36, 37,38,39,44,45,49,50

	supporting idea	
Vocabulary in context	The students are able to Use the correct vocabulary or diction.	4,12,25,26,32,42,48, 47

After the instrument was tested and validated using a certain formula, the specifications of instrument changed because some of the items are declared invalid, so the numbers and aspect information is changes. The number of items that valid are : 1,2,5,6,7,8,10,12,17,18,19,20,21,22,23,25,28,29,30,31,32,35,39 ,40,41,42,43,45,48 and 49, the numbers of item that invalid are 3,4,9, 11,13,14,15,16,24,26,27,33,34,36,37,38,44,46,47, and 50.

The following details are the changes of these specifications. Number 1 and 2 are fixed, number 3 is a substitute for number 5, number 4,5,6 is a substitute for number 6,7,8, number 7 is a substitute for number 10, number 8 is a substitute for number 12, number 9, 10,11,12,13,14,15 is a substitute of number 17,18,19,20,21,22,23, number 16 is a substitute of number 25, number 17,18,19,20 21 is a substitute of number 28 , 29,30, 31,32 number 22 is a substitute of number 35, number 23,24,25,26,27 is a substitute of number 39,40,41,42,43, number 28 is a substitute of number 45, number 29.30 is a replacement for number 48 and 49.

The aspect of the specification of the instrument changed based on the new number, as follow : main idea in number 1,3,12,17,20,27. Reference in number 5,7,10,11,13,25. Making Inference, in context (implied detail) in number 14,18,24. Supporting details in number 2,4,6,9,15,19,22,23,28,30 the last vocabulary in context in number 8,16,21,26,29. It can show in the table 5:

TABLE 6
THE SPECIFICATION OF READING COMPREHENSION TEST

Aspect	**Indicator**	**Item**
Main idea	The students are able to determine the main ideas of the text	1,3,12,17,20,27
Reference	The students are able to Recognize the reference in the text	5,7,10,11,13,25
Making Inference, in context (implied detail)	The students are able to Recognize the inference in the text	14,18,24
Supporting details	The students are able to determine the detail information and supporting idea	2,4,6,9,15,19,22,23, 28,30
Vocabulary in context	The students are able to Use the correct vocabulary or diction.	8,16,21,26,29

The items of the test on the table were taken from analysis of validity and reliability using validity and reliability test, the researcher conducted a try out test to know the validity and reliability that were given by another school. The researcher measures the reliability and validity of the test; it means that only the valid and reliable test items were in pre-test and post-test.

The instrument that is used to collect the data in this research is test. The researcher used multiple choice tests as the instrument in this research, and the researcher used pretest and post test. The test consisted of 30 items. Pre-test conducted to know the first ability of students in reading comprehension, and post-test were given to know the result of the students' reading ability after the researcher give treatment using PQRST method. After making the test instrument of the research, the next step is to conduct try out to measure the validity and the reliability of the instrument.

3.3.1 Validity of the Test

In order to know whether the instrument that used in the research is suitable with the measurement of instrument or not, it needed validity test. In this research the researcher ask from the expert to validate the instrument, the expert are Mrs. Dewi Sartipa, S.S,. M Pd. B.I. and Mrs. Dewi Sri Kuning, S.Pd., M.Pd.

In addition, Setiyadi (2006:21) stated that, "Validity relates to the use of measurement in a research and relates to reliability of measurement". The validity of the instrument will calculated with formula product moment correlation by Karl Pearson. The formula is as follows:

$$r = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{\{N \sum X^2 - (\sum X)^2\} \{(N \sum y^2) - (\sum Y)^2\}}}$$ (Arifin, 2012:332)

Information:

r : Coefficient correlation.

n : All subjects which involve in test.

X : Score for each question

Y : Total score

The significant level used is a significant level of 5% if r_{count} > r table, then the item is said to be valid.

3.3.2 Reliability of the Test

In every research, it is important to measure the consistency of a test (reliability) also. According to Setiyadi (2006:16), reliability is consistency of measurement. It shows that the instrument can measure the same subject in different times but show the similar result.

To calculate the reliability of instrument the researcher used alpha formula. The formula is as follow.

$$r_{11} = \left(\frac{n}{n-1}\right)\left(1 - \frac{\sum s_i^2}{s_t^2}\right)$$

Annotation:

r_{11} : instrument reliability coefficient

N : number of instrument test

S_i^2 : variation of instrument to-I,I =1,2,…,n

S_t^2 : variation in score obtained by the test subjects

1 : constant number

The result of measuring which has coefficient reliability greater than 0.70 is reliability, it means that instrument can be used for conducting measurement (Budiyono, 2015:55).

3.4 Data Collecting Technique

In this research, the researcher has used the test, the kind of test is reading with the form of multiple choice test, to collect the data from the sample. The test consisted of 30 items from 50 items whereas 20 items is not valid. It will be given in the pre-test and post-test.

3.4.1 Test

In this case, the researcher give two kinds of tests, pretest and post test for the experiment and control class. The test that will be used is reading test. The pre-test measure the students' reading comprehension before the treatment. The post-test measure the students' achievement in reading comprehension test after

the treatment. Kind of test that used in this research is multiple choices. Student is given 2x45 minute to finish the test.

3.4.1.1 Pre Test

Pretest will be conducted in both classes XI IPS 1 and XI IPS 4. Pretest will be conducted before the treatment of PQRST in experiment class. It will be aimed to know how far the students' reading comprehension achievement. In contrast, the control class will not be taught by using PQRST method.

3.4.1.2 Post Test

The post test had used to measure students' achievement in reading comprehension test after given treatment by using PQRST method. Post test had been given after the treatment in the experiment class (XI IPS 1) and after the teaching learning process in the control class (XI IPS 4). From post test result, the researcher knows the students' achievement after taught by using PQRST.

3.5 Data Analysis

Data analysis is the analysis which is used to know the differences of point of each classes, the researcher had used quantitative analysis in order to find the influence of using PQRST toward students' reading comprehension. After the data is completely gotten, data will be started to be analyzed.

Firstly, the data had been tested by two tests, normality test and homogeneity test. After the prerequisite tests is fulfilled, the analysis continued by conducting hypotheses test. The formula used is t-test.

3.5.1 Prerequisite Tests

3.5.1.1 Normality Test

The researcher had used normality test to know whether the data are normally distributed or not. According to Sudjana (2005:466) the formula of Lilliefor's is appropriate to measure the normality of the data. The steps are:

a. Verify the row using this formula:

$$Z_i = \frac{x_i - \bar{x}}{S}$$

Notes:

Z_i = Number of row

x_i = The values obtained

$\bar{x}$ = Average

S = Standard Deviation

b. The opportunities each raw numbers with the formula:

$F(Z_i) = P(Z \leq Z_i)$

c. Verify proportion using this formula:

$$S(Zi) = \frac{\text{Numbers } z_1, z_2, \ldots..z_n \text{ are} \leq z_i}{n}$$

d. Calculate the absolute price use formula: $F(Z_i) - S(Z_i)$

e. Verify the largest absolute value, L_o then compare L_o with L_{taable}

f. The normal criteria if $L_o < L_{table}$ so, the group has normal distribution.

3.5.1.2 Homogeneity Test

To analyze the data is findto be normal in distribution, the calculation had been be continued by homogeneity test. In this calculation, it needed to calculate the biggest and the lowest variance to know the homogeneity. According to Irianto (2010:276), the formula to calculate homogeneity is by using Harley test. The formula is as follows:

$$F_{count} = \frac{The\ highest\ variance}{Thelowest\ variance}$$

The steps are:

a. Looking the value of highest and lowest variance
b. Compare the value of F_{count} with F_{table} use the formula:
   - *df* numerator = n-1 (for the biggest variance)
   - *df* denominator = n-1 (for the lowest variance)
   - significant level (α) = 0.5 then look at F_{table} with criteria:
   - if $F_{count} > F_{table}$, it means the data is not homogeny.
   - If $F_{count} \leq F_{table}$, it means the data is homogeny

The hypotheses should be proven are:

H_0 : there is no difference variant of experiment class and control class (homogenous).

Ha : there is difference variant of experiment class with control class (not homogenous).

3.5.2 Hypothesis Test

The data used in hypothesis testing is pre-test data and posttest data. The researcher has used t-test to analyze the data of the research. According to

Setiyadi (2006:168), t-test used to determine the value that we analyze comes from the same population or not. In this research, the researcher compared the control and experiment class. In addition, the researcher will analyze the gain score of pre test and post test both of experiment and control class. The formula that the researcher will use is independent group t-test. According to Sugiyono (2017:138), the formula is as follows:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

Notes:

t = t-test coefficient

$\overline{X_1}$ = average of experiment class

$\overline{X_2}$ = average of control class

n_1 = total number of students in experiment class

n_2 = total number of students in control class

s_1^2 = variant of the experiment class

s_2^2 = variant of control class

The hypothesis that will be proved is:

H_0= There is no significant effect of using PQRST method towards students' reading comprehension achievement at the eleventh grade students of SMAN 4 Kotabumi Academic year 2018/2019.

Ha= There is significant effect of using PQRST method towards students' reading comprehension achievement at the eleventh grade students of SMAN 4 Kotabumi Academic year 2018/2019.

The test criteria of the hypothesis test is as follows :

If : $t_{observed} < t_{table}$, H_0 is accepted.

If : $t_{observed} > t_{table}$, H_0 is rejected.

H_0 is accepted if $t_{observed}$ is smaller than t_{table}. This means that there is no positive and significant effect of using PQRST method towards students' reading comprehension at the eleventh grade students of SMAN 4 Kotabumi academic year 2018/2019. Meanwhile, H_0 is rejected if $t_{observed}$ is greater than or same as t_{table}. As a result H_a is accepted. Which means that there is significant effect of using PQRST method towards students' reading comprehension achievement at the eleventh grade students of SMAN 4 Kotabumi 2018/2019.