CHAPTER III

RESEARCH METHOD

A. Research Design

The type of this research is Experimental research, testing an idea (or practice or procedure) to determine whether it influences an outcome or dependent variable.[39] In addition, an experiment is the quantitative approach that provides the greatest degree of control over the research procedures.

In this research, the writer used ***quasi-experimental design with nonequivalent control group***. According to Gay, this design since its looks very much like the pre-test -posttest control group design. The only difference is that the nonequivalent control group design involves random assignment of intact groups to treatments, not random assignment of individual.[40]

In conducting this research, the writer took two classes; one class as an experimental class taught by using WARF strategy and another class as a control class taught without using WARF strategy. In the experimental class, the students were administered by giving pre-test at the beginning of the teaching learning in order to know students reading comprehension. Then, there was treatment in the middle and posttest at the end of the teaching learning processes in order to find out

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[39] Jhon. W.Cresswell. *Educational Research: Planning, Conducting, and Evaluating Quantitave and Qualitative Research* .New Jersey: Pearson Education. 2008. p.299.

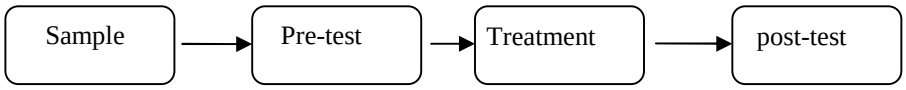
[40] L.R Gay.*Educational Research Competencies for Analysis and Application.* Six Ed. New Jersey: Prentice-Hall. 2000. p.395.

the effect of using WARF strategy on students' reading comprehension. So, the design of this research can be illustrated as follows:

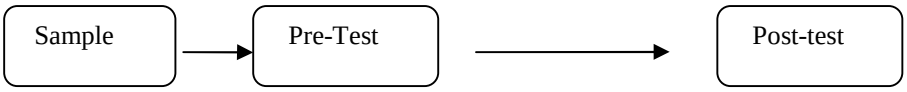
TABEL III.1

THE DIAGRAM OF RESEARCH DESIGN

1. Experimental Class



2. Control Class



B. The Location and the Time of Research

The researcher conducted the research of the eleventh grade students at SMA Muhammadiyah 1 Pekanbaru. This research was started from September 9th, until November 23th, 2013.

C. The Subject and Object of the Research

Subject of the research was the eleventh grade students at SMA Muhammadiyah 1 Pekanbaru.. The object of this research was the effect of using WARF (widen, avoid, read, and flex) strategy and their ability on reading comprehension.

D. The Population and Sample of the Research

1. The Population

The population of this research was the eleventh grade students of SMA Muhammadiyah 1 Pekanbaru in 2013-2014 academic year. The number of the second year students at SMA Muhammadiyah 1 Pekanbaru was 214 students. It can seen as follows:

TABLE III.2
THE POPULATION OF THE SECOND GRADE STUDENTS OF SMA MUHAMMADIYAH 1 PEKANBARU

No	Class/Major	Male	Female	Number of students
1	XI IPA 1	12	12	24
2	XI IPA 2	14	8	24
3	XI IPA 3	10	24	34
4	XI IPA 4	13	23	36
5	XI IPS 1	15	16	31
6	XI IPS 2	21	11	32
7	XI IPS 3	19	14	33
TOTAL				214

From the table above, the population consisted of 7 classes. There were three classes for social department, four classes for natural department.

2. The Sample

In this research, the writer used the cluster sampling as the way to choose the sample of population. In cluster sampling, the writer selected sample randomly.

The writer determined the class to be sample of population by using lottery. The writer prepared rolled papers which were written for each class then the writer shaked them into a bottle. After that, the writer pulled a rolled paper out. Finally, the writer chose 48 students as the sample of population.

E. The Technique of Collecting Data

In this research, the writer gave the test to collect data. Experiment class was given a treatment about WARF (Widen, Avoid, Read, and Flex) strategy to the students. Furthermore, test was used to get the achievement of the test series given.

The writer used the test to collect the data. The test was given by two ways such as;

a. Pre-test

The pre-test was used to determine the students reading comprehension.

b. Post-test

Post-test was used to find out the data of students' reading comprehension thaught by using WARF strategy.

F. The Validity and Reliability of the Test.

1) The Validity of the Test.

A test is said to have content validity if its content constitutes a representative sample of the language skill.[41] Validity refers to the degree in which our test or other measuring device is truly measuring what we intended to measure.[42] It means that our test is concerned what we want to measure. It determines whether the test results have validity or not.

According to Arikunto, level of difficulty is one aspect to consider analyzing whether atestis good or not. The good test is a test that is not too easy and not too difficult.[43] The formula that can be used in measuring the validity of the test items is as follows:[44]

$$p = \frac{Nb}{N}$$

[41] Arthur Hughes, *Testing for Language Teachers*, (United Kingdom: Cambridge University Press, 2003).pp. 26.

[42] Validity and Reliablity. Retrieved on April 5th, 2013. http://allpsych.com/researchmethods/validityreliability. html

[43] Suharsimi Arikunto, *Dasar-Dasar Evaluasi Pendidikan*, (Jakarta: BumiAksara, 1996). p.207

[44] Ibid. p. 208

Where : p : Difficulty Index

Nb : number of students who answered correctly

N : The number of students

The difficulty index can be classified as follow:[45]

The item with p 1,00-0,30 is difficult
The item with p 0,30-0,70 is medium
The item with p 0,70-1,00 is easy

Based on the description above, Arikunto also argues that the good item is supposed to be medium. It is not too difficult and not too easy.

Students are able to identify the idea

Variable	identify the idea					N
Item no	1	6	11	16	21	31
Total of Correct Item	18	13	13	20	13	
P	0.58	0.42	0.42	0.65	0.42	

Students are able to identify the meaning of vocabulary in text

Variable	identify the meaning of vocabulary					N
Item no	2	7	12	17	22	31
Total of Correct Item	14	14	20	11	14	
P	0.45	0.45	0.65	0.35	0.45	

[45] Ibid. p.210

Students are able to identify the generic structure

Variable	identify the generic structure					N
Item no	3	8	13	18	23	31
Total of Correct Item	12	19	16	19	18	
P	0.39	0.61	0.52	0.61	0.58	

Students are able to identify purpose of the writer

Variable	identify purpose of the writer					N
Item no	4	9	14	19	24	31
Total of Correct Item	18	19	13	21	15	
P	0.58	0.61	0.42	0.68	0.48	

Students are able to make proportional informational inferences, answering question beginning with who, when, and what

Variable	proposional informational inferences					N
Item no	5	10	15	20	25	31
Total of Correct Item	11	19	17	13	11	
P	0.35	0.61	0.55	0.42	0.35	

Based on the table above, the standard difficulty index of test is "p" $\geq$ 0, 30 and $\leq$ 0, 70. It is pointed out that item difficulty in average of each item number.

In analyzing the validity and reliability of the test, the researcher used correlation product moment formula by dividing items into odd and even (split-half method), the formulations are as follows[46];

$$r_{XY} = \frac{N\sum XY - (\sum X)(\sum Y)}{N\sum X^2 - \sum X^2 \; N\sum Y^2 - \sum Y^2}$$

r_{XY} : Correlated Confession between X and Y

X : Odd Items (1,3,5,6,7,9,11,13,15,17,19,21,23,25)

Y : Even Items (2,4,6,8,10,12,14,16,18,20,22,24)

N : Respondents

It was calculated as follows:

$$r_{XY} = \frac{31(1304) - (195)(197)}{31(1331) - 195^2 \; 31(1379 - 197^2}$$

$$r_{XY} = \frac{40424 - 38415}{41261 - 38025 \;\; 42749 - 38809}$$

$$r_{XY} = \frac{2009}{3236 \;\; 3940}$$

$$r_{XY} = \frac{2009}{\sqrt{12749840}}$$

$$r_{XY} = \frac{2009}{3570.69}$$

$$r_{XY} = 0.56$$

[46] Suharsimi Arikunto. *Dasar- Dasar Evaluasi Pendidikan*. Jakarta: BumiAksara, (2008). p. 72

2) The Reliability of the Test

A reliable test is consistent and dependable.[47] It means that the test has to get the similar result in two different occasion to the same students or sample. In this research, the writer used Spearman-Brown formula to measure the reliability of all items in test as follows:[48]

The formulation of reliability:

$$r_{11} = \frac{2\, r_{1/2\,1/2}}{1 + r_{1/21/2}}$$

It was calculated as follows:

$$r_{11} = \frac{2 \times 0.56}{1 + 0.56}$$

$$r_{11} = \frac{1.12}{1.56}$$

$$r_{11} = 0.717$$

Based on the analysis of validity and reliability above, it can be seen that the r_{value} of validity was 0.560 and r_{value} of reliability was 0.717. According to Arikunto, the value of correlation coefficients as follow:[49]

1. Between 0.800 to 1.00 = Very High
2. Between 0.600 to 0.800 = High
3. Between 0.400 to 0.600 = Enough
4. Between 0.200 to 0.400 = Low
5. Between 0.00 to 0.200 = Very Low

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[47] H. Doughlas Brown. *Language Assessment Principle and Classroom Practices*. New York: Logman. (2007).pp. 20

[48] Suharsimi Arikunto. *Dasar- Dasar Evaluasi Pendidikan*. Jakarta: BumiAksara. (2008). pp. 93

[49] *Ibid*. p. 75

In conclusion, validity of the test was included into enough category while reliability of the test was categorized into high category .

G. The Technique of Data Analysis

There were 25 questions for the pre-test and post-test. Each question was valued 4. The students score is based on the number their correct answer divided by the number of items and multiplied by 100.[50]

$P = X. \frac{100}{N}$

Where : P : Individual Score

X : the number of correct answer

N : the number of respondent

Both of pre-test and post-test given to students have the same material but in a different time.

In order to find out whether or not there is a significant effect in improving students' comprehension by using Widen, Avoid, Read and Flex Strategy of the two classes. The data were taken from students' scores in final test. Before applying t-test, it is necessary to find out several scores as follows:[51]

[50] Fitri Wulandari, *The Effect of SQ4R Method in Comprehending Reading Text of the second Year Students at SLTP N 4 Siak Hulu*.A Thesis.UR. pp. 28

[51] Suharsimi Arikunto. *Dasar- Dasar Evaluasi Pendidikan*. Jakarta: BumiAksara. (2008). pp. 70-93

1. The first formula was used to find the means or average of each group. It was calculated by using formula:

$$Mx = \frac{\sum fX}{N}$$

Where: Mx = the average score

$\sum fX$ = sum of the row score

N = the number of students

2. The second formula was used to find out the result of the standard deviation of each group. It shows the spread of scores. It measures the degree to which group of score deviates from the mean.

$$SDx = \sqrt{\frac{\sum fX^2}{N}}$$

Where: SDx = Standard Deviation of Variable X

$\sum fX^2$ = Sigma of individual score quadrate of students score

$\sum fX$ = Sigma of individual score of students score

N = The number of students

3. The third formula is used to calculate the value.

$$to = \frac{Mx - My}{\sqrt{\left(\frac{SDx}{\sqrt{N-1}}\right)^2 + \left(\frac{SDy}{\sqrt{N-1}}\right)^2}}$$

Where: to = The valuable of t obtain/table

Mx = Mean score of post-test experiment class

My = Mean score of post-test control class

SDx = Standard deviation of post-test experiment class

SDy = Standard deviation of post-test control class

N = Number of students

4. The final step is to find out the t-score that aims at figuring out the degree of freedom of two groups. It is used to determine whether the t-score is a significant value or not. To find the degree of freedom, the following formula is used:

$$df = Nx + Ny - 2$$

If the value of t-calculation is bigger than value of t-table, it means that alternative hypothesis is accepted. Conversely, if the value of t-calculation is smaller than value of t-table, it means that null hypothesis is accepted.