CHAPTER III

RESEARCH METHODOLOGY

Research method which covers research type, research design, place of the study, variable of study, population and sample of the study, Research Instrument, Research Instrument Reliability, Data Collection Procedures, and Data Analysis.

A. Research Type

This study was classified into quantitative research. Quantitative research deals with question of relationship, cause and effect, or current status that writer can answer by gathering and statistically analyzing numeric data. It can be further classified as experimental and non-experimental.[1]

B. Research Design

The design of the study was experimental design used quasi-experimental design. Experimental design is a plan for an experiment that specifies the applied independent variables, the number of levels of each, how subject are assigned to groups, and the dependent variable. The writer used quasi- experimental design since it is not possible to randomly assign subjects to treatment group.

In this study, there were two classes. The first class is control group (CP). The second class is experiment group (EG) group which apply Four Square

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[1] Donald Ary, dkk., *Introduction to Research in Education*, eight edition, Belmont: Wadsworth Cengage Learning, 2010, p. 39

technique. Groups were given pre-test and post-test to measure the result of the students' writing scores.

The treatment is given to the experiment group only. The description of the experiment is in the table below:

Table 3.1 The Description of Quasi-Experiment Design

Group	Pre-test	Treatment	Post-test
EG	Y_1	X	Y_2
CG	Y_1	-	Y_2

Where:

EG   : Experiment Group

CG   : Control Group

X   : Treatment using Four Square Technique

Y1   : Pre-test

Y2   : Post-test

C. Place of the Study

The place of the study at SMP Muhammadiyah of Palangka Raya on Jalan RTA. Milono.

D. Variables of the Study

There were two variables of this study:

1. Independent variable (X) in this research is the Four Square technique.

2. Dependent variable (Y) in this research is the writing achievement scores.

E. Population and Sample of Study

1. Population

Population is the group to which a writer would like to the results of a study to be able to generalize. In the present study, the population of the study was all of the eighth grade students at SMP Muhammadiyah Palangka Raya. Numbers of population were about 113 students. It was classified into five classes.

Table 3.2 Population of study

No	Classes	Number of Students
1	VIII-1	23
2	VIII-2	22
3	VIII-3	23
4	VIII-4	22
5	VIII-5	23
Total Number	113	

2. Sample

Sample is subset of Individuals or case from within a population.[2] According Sugiyono, The sample is part of the number and characteristics possessed by this population.[3] The writer used cluster sampling to take the

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[2]David Nunan, *Research Methods in Language Learning*, New York: Cambride University Press, 1992, p.231

[3]Sugiyono, *Metode Penelitian Kuantitatif Kualitatif dan R&D*, Bandung: Alfabeta, 2008, p.81

sample. Cluster sampling is used if the population does not consist of individuals, but groups or cluster[4]. The writer determined the two classes into two groups. They are class VIII-1 which consists of 23 students as experimental group and class VIII-2 which consists of 22 students as control group. A total of 45 students in the eighth grade students at SMP Muhammadiyah Palangka Raya were chosed to be the sample in this study.

Table 3.3 The Sample of Study

No	Classes	Group	Number of Students
1	VIII-1	Experimental Group	23
2	VIII-2	Control Group	22
Total Number of Students			45

F. Research Instrument

1. Test Type

The type of the test that was used to collect the data was in form of writing test, especially writing Descriptive paragraph using Four Square Technique for experiment class and without using Four Square Technique for control class.

2. Test Construction

The test construction was based on the objective of the study. The study aimed at found out the effect of used Four Square Technique in writing descriptive paragraph. To investigated the effect of using Four Square Technique in writing descriptive paragraph. The subjects were assigning to

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[4]Nurul Zurich, *MetodologiPenelitianSosialdanPendidikan (TeoriAplikasi),* Jakarta: Bumi Aksara, 2006, p. 124.

write Descriptive Paragraph. The result of two test were investigated using statistical analysis and outcomes were compared to see the effect of using Four Square Technique the different level of students' achievement.

To gain the appropriate writing test for the aim of this study, the researcher did some steps: (a). planning the writing test, (b).prepare the writing test, (c) pre-test the test and analyze the result, and (d) carry out the test

3. Research Instrument Validity

Validity is defined as the extent to which an instrument measured what it claimed to measure. The focus of recent views of validity is not on the instrument itself but on the interpretation and meaning of the scores derived from the instrument.

Validity is defined as the extent to which scores on a test enable one to make meaningful and appropriate interpretations.[5]

In this study, the validation of instrument is mainly direct to the content validity. Related to the writing test, the content validity is check by examining and the test use to measure the objectives. The writer used inter-rater method. inter –rater is two raters who score the students' writing to get

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[5]Donald Ary, dkk., *Introduction to Research in Education,* eight edition, Belmont: Wadsworth Cengage Learning, 2010, p.224

the score compositions as possible. The researcher used product moment correlation as the formula to calculate the validity from the result.[6]

$$R_{xy=} \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$$

Where:

R_{xy} = index Correlation Number "r" product moment

N   = Number of Cases

ΣXY = Multiplication result between score X and score Y

ΣX = Total value of score X

ΣY = Total value of score Y

Riduwan in Mayasyarah states the criteria of interpretation the validity:[7]

0.800-1.000= Very high

0.600-0.799= High Validity

0.400-0.599= Fair Validity

0.200-0399= poor validity

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[6] Anas Sudijno, *pengantar Ilmu Statistik Pendidikan*, Jakarta: PT. Raja Grafindo Pustaka, 1997, p. 193.

[7] Mayasyarah, *The Effectiveness of Video Compact Disc as an Audiovisual Medium toward The Students' Listening Comprehension Score of The Tenth Grade Students at Man Model of Palangka Raya,* Unpublished Thesis, p. 18

0.00-0.199= Very Poor Validity

4. Research Instrument Reliability

Reliability refers to the consistency of test score. It means how consistent test scores or other evaluation results are from one measurement to another.[8] In rater reliability, there are inter-rater and intra rater reliability. A simple way to determine the reliability of ratings is to have two or more observers independently rate the same behaviors and then correlate the observers' ratings. The resulting correlation is called the inter-rater.[9] Meanwhile intra-rater reliability referred to consistency of rater in scoring the same paper or two different point of time. It point out and individual accuracy in scoring a particular composition.

In this study, the writer used reliability in the terms of inter-rater reliability. Inter – rater reliability estimates the reliability of two scores which were gained from two testers, the score has high reliability. The first rater writer of this study and the second rater the English teacher at SMP Muhammadiyah of Palangka Raya. To obtain inter-rater reliability; the scores of the two raters were correlated using SPSS 21.0 program. Then the writer got the interpretation of coefficient correlation, whether they belong to high, moderate, or weak positive/negative inter rater reliability category. The obtain

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[8]WilmarTinambunan, *Evaluation of Student Achievement*, Jakarta: Depdiknas,1988. p.4.
[9] Donal Ary, Lucy Cheser Jacob, Chris Sorensen, Asghar Razavieh, *Introduction to Research in Education* 8th *Edition,* P.236

coefficient should indicate that the students writing product both using Four Square Technique and without Four Square Technique. Calculation result of **r** was compare with r_{table} by 5% degree of significance with df=N-2. If r will higher than r $_{table}$ so is it meant reliable and if r will lower than r_{table} so it meant unreliable The researcher used product moment correlation as the formula to calculate the validity from the result.[10]

$$R_{xy=} \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$$

Where:

R_{xy} = index Correlation Number "r" product moment

N   = Number of Cases

ΣXY = Multiplication result between score X and score Y

ΣX = Total value of score X

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H. Data Collection Procedures

In this study, the writer used some procedures to collect the data. the procedures consist of some steps as follows:

1. The writer observed to SMP Muhammadiyah Palangka Raya

2. The writer determined the class into experimental group, control group and try out class.

3. The writer gave the instrument try out the try out class.

4. The writer analyzed the instrument try out to know the quality of the test, such as instrument validity, instrument reliability.

5. The writer gave pre test to the experimental group and control group.

6. The writer taught experimental group using four square technique.

7. The writer gave post-test to the experimental group and control group.

8. The writer gave scores to the data from the experimental group and control group.

9. The writer found the normality and homogeneity of the data.

10. The writer analyzed the data from pre test and post test using t-test.

11. The writer made the interpreted and concluding the result of data analysis.

G. Data Analysis

The data of this study are students' writing score. Therefore, the data were quantitative. The pretest and post-test score were converted into percentages. In order to analyze the data that collected. The mean, standard deviation and standard error of students' score computed for the pretest and post-test scores of the experiment and control groups. The writer used statistical t_{test} to answer the problem of the study. In Order to analyze the data, the writer did some way procedures:

1. Gave and collected the data of students' score both of pre-test and post- test the tests at eighth grade students at SMP Muhammadiyah Palangka Raya.

2. Tabulated the students' score into distribution of frequency in the table, then found the mean of students' score, standard deviation, and standard error of variable X 1 (Experiment Group) and X 2 (Control Group).

3. Normality Test

It is used to know the normality of the data that is going to be analyzed whether both groups have normal distribution or not. Therefore, the writer will use SPSS 21.0 program to measure the normality of the data.

4. Homogeneity Test

It is use to know with experimental group and control group, that were decided, come from population that has relatively same variant or not. the writer used SPSS 21.0 program to measure the homogeneity of the data.

5. Calculated the data by used T-test to test the hypothesis of the study, whether the use four square technique give effect to the students coherence development of descriptive text score or not. To examine the hypothesis, the writer use T-test. T-test is statistical test which is use to examine the truth or falseness of null hypothesizes states that between two of Sample Mean taken randomly from the same population, there is no significant different.[12] T-test is used to measure whether four square technique give effect to the students coherence development of descriptive paragraph score using formula as follows:[13]

$$t_o = \frac{M1 - M2}{SEm1 - SEm2}$$

Where:

M1- M2 : The difference of two means

SEm1 – SEm2 : The standard error of the difference between two means

To know the hypothesis is accepted or rejected using the criterion:

If t-test (the value) $\geq$ t$_{table}$, it means Ha is accepted and Ho is rejected.

If t-test (the value) $\leq$ t$_{table}$, it means Ha is rejected and Ho is accepted.

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[12]Anas Sudijono, *Pengantar Statistik Pendidikan*, Jakarta: Raja Grafindo Persada, 1987, p.278
[13]*Ibid,* p. 284.

6. Interpreted the result of t-test. Previously, the writer counts the degrees of freedom (df) with the formula:[14]

df = (N$_1$ + N$_2$ − 2)

Note:

df   : degrees of freedom

N$_1$: Number of subject group 1

N$_2$: Number of subject group 2

2   : Number of variables

After that, the value of t_{test} is consulted on the t_{table} at the level of significance 1% and 5%. In this research, the writer used the level of significance at 5%. If the result or t-test is higher than t_{table}, it means Ha is accepted.

7. The writer made the conclusion of data analysis obtained.

8. In addition, the writer used SPSS 21.0 program to compare the data.

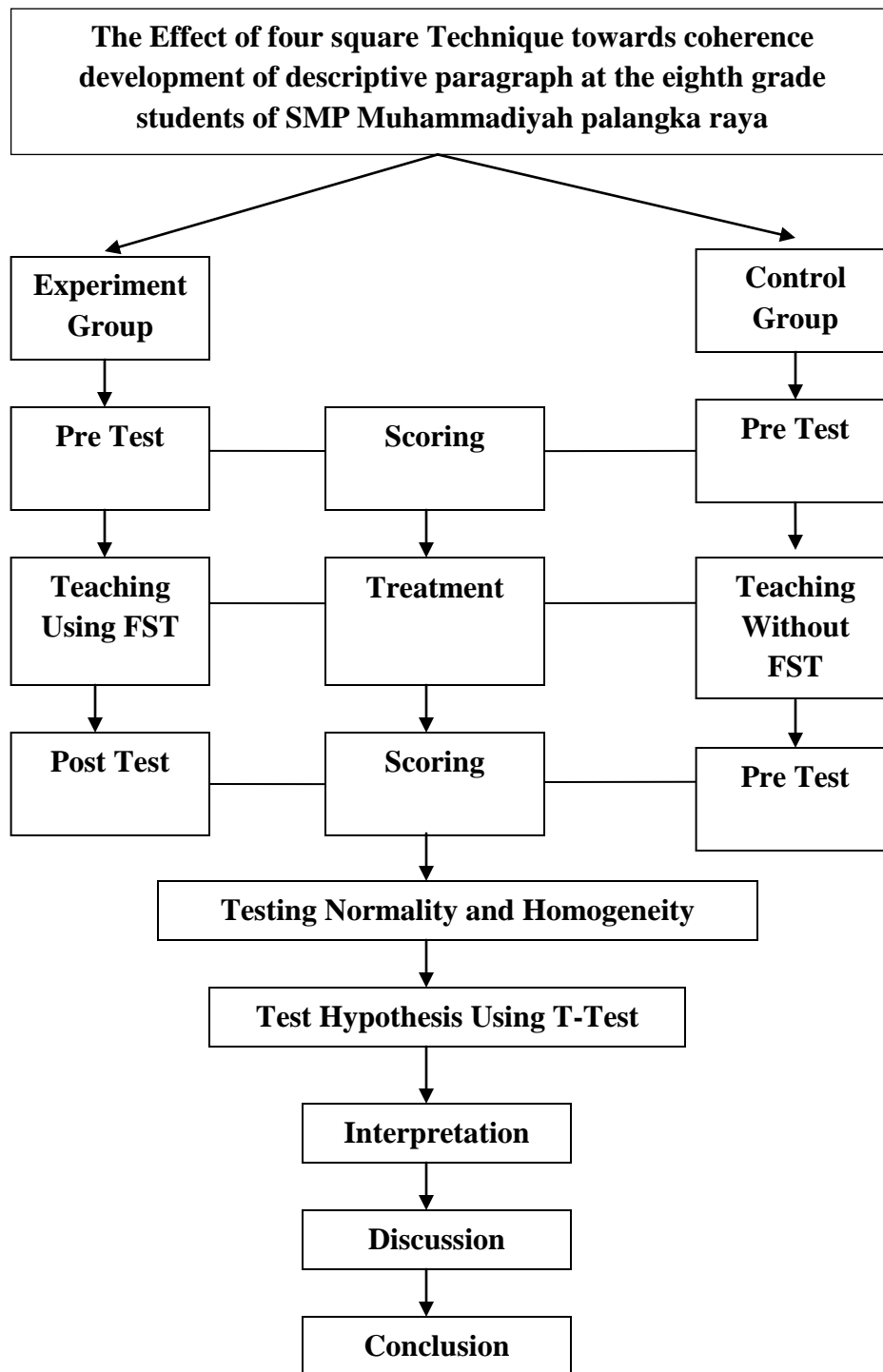9. Discussed and conclude the result of data analysis.

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[14]*Ibid,* p. 285

Figure 3.1 Steps in Collecting and Analyzing Data