CHAPTER III

RESEARCH METHODOLOGY

In this chapter, the writer will presents, time and place of the study, research design, approach, population and sample, data collecting procedure, instrument of the study, instrument try out, data analysis procedure.

A.   Time and Place of the Study

The study conducted in academic year 2014 to collect all the data accurately and briefly. The writer needed the times to do observation and collecting the data in this study for two months, from 5 September 5 October 2014. The writer took the place of the study at MTs Muslimat NU Palangka Raya, because this school got "A" accreditation criteria in academic.

B.   Research Design

In this study, the writer used quasi-experimental design. Because there are many situations in educational research in which it was not possible to conduct a true experiment. Neither full control over the scheduling of experimental conditions nor the ability to randomize can be always realized. Therefore, the writer this design because of permitting the research to reach reasonable conclusions even thought full control is not possible.[1] And to avoid the selection bias that can seriously threaten the internal and external validity such as maturation, instrumentation, and pretesting, the writer occupied the pretest and posttest at the same period of time. It means, the writer held the pretest of the

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[1]Donald Ary, Lucy Cheser Jacobs, Chris Sorensen, *Introduction to Research in Education, eight Edition,* Belmont: Wadsworth, 2010, p. 317

experiment and control group at the same time and after giving all the treatment of the experiment group and teaching the control group, immediately the writer held the post test.

The study was non-randomized control group, pretest-posttest design. Is one of the most widely used quasi-experimental designs in educational research.[2] There are two groups in this model, control group and experiment group. Both of groups are given pre-test to measure the score of the students before the treatment has given. They are symbolized by Y1 and Y1. It meant, the control group has not given the treatment but another conventional strategy as usual and post-test has given for both of groups to measure the difference score of students between control and experiment group after the treatment are symbolized by Y2 and Y2. Moreover, the design can be drawn in the following scheme below:

Table 3.1

The Scheme of Quasi Experimental Design

Nonrandomized Control Group, Pretest-Posttest Design

Subject (Not Randomized)	Sample	Pretest	Treatment	Posttest
E	Class A	Y1	X	Y1
C	Class C	Y2	-	Y2

[2] *Ibid*,. p. 316

Where   :

E   : Experiment Group

C   : Control Group

Y1   : Pre-Test

Y2   : Post-Test

X   : Treatment

-            : Without Treatment

In this experiment, the writer taught the students with the same material. Therefore, the use Total Physical Response Method is applied on experiment group only, and for the control group the writer applyed Direct Method.

C.   Approach

The writer conducted this study by applying quantitative approach, because this approach was appropriate to collect statistical data to answer the problems of the study.

As Fowler in Creswell states,

"A survey design provides a quantitative or numeric description of some fraction of the population – the sample – through the data collection process of asking questions of people. This data collection, in turn, enables a researcher to generalize the finding from sample responses to a population.[3]

D.   Population and Sample

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[3]John W. Creswell, Research Design: *Qualitative and Quantitative Approaches*, London: SAGE Publication, 1994. P.

a. Population

According to Arikunto, The Populationn is the whole of the research subject.[4] The population in this study was all of the seventh Grade students at MTs Muslimat NU Palangka Raya. It consisted of two classes, they were VIII-A and VII-C. Based on the documentation of MTs Muslimat NU Palangka Raya, the number of population of the students could be seen in the table below.

Table 3.2

The Number of the seventh Grade Students in

MTs. Muslimat NU Palangka Raya

No.	Classes	Number of Students
1	VII A	35
2	VII B	35
3	VII C	35
Total Number		**105**

b. Sample

Sampel adalah satuan kelompok terkecil yang diberi perlakuan dan member respon secara mandiri.[5] (Sample is a set of smalled group which is given treatment and give respond as self-supporting). The writer looks all of the population as sample, because the total number of the population was 75 students

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[4]Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendekatan dalam Pendidikan Bahasa*, P. 108
[5]G. Suharto, *Suatu Pengantar Metodologi Penelitian dalam Pendidikan Bahasa*. Jakarta: Departemen Pendidikan dan Kebudayaan, Direktorat Jendral PendidikanTinggi, Proyek PengembanganLembaga Pendidikan Tenaga Kependidikan, 1988, P. 68

from two classes of the seventh Grade Students of MTs Muslimat NU Palangka Raya. So, this research was also determined as the population research. The population sampling was used in this study and based on that case, the writer determined the class of experimental and control group by raffling two classes at the seventh grade students to be experiment or control group classes

The sample of the study is as shown in the following table

Table 3.3

The Sample of the Study

No	Classes	Groups	Number of Students
1.	Class VIII-A	Experiment Group	35 Students
2.	Class VIII-C	Control Group	35 Students
The Total Number of Sample			**70 Students**

Based on the table above, there were 35 students in class VII-A whom taught using TPR Method, and there were 35 students too in class VII-C whom taught using Direct Method. And total number of students was 70 students.

E. Data Collecting Procedure

In this study, the writer used some procedures to collect the data. The procedures consist of some steps as follow:
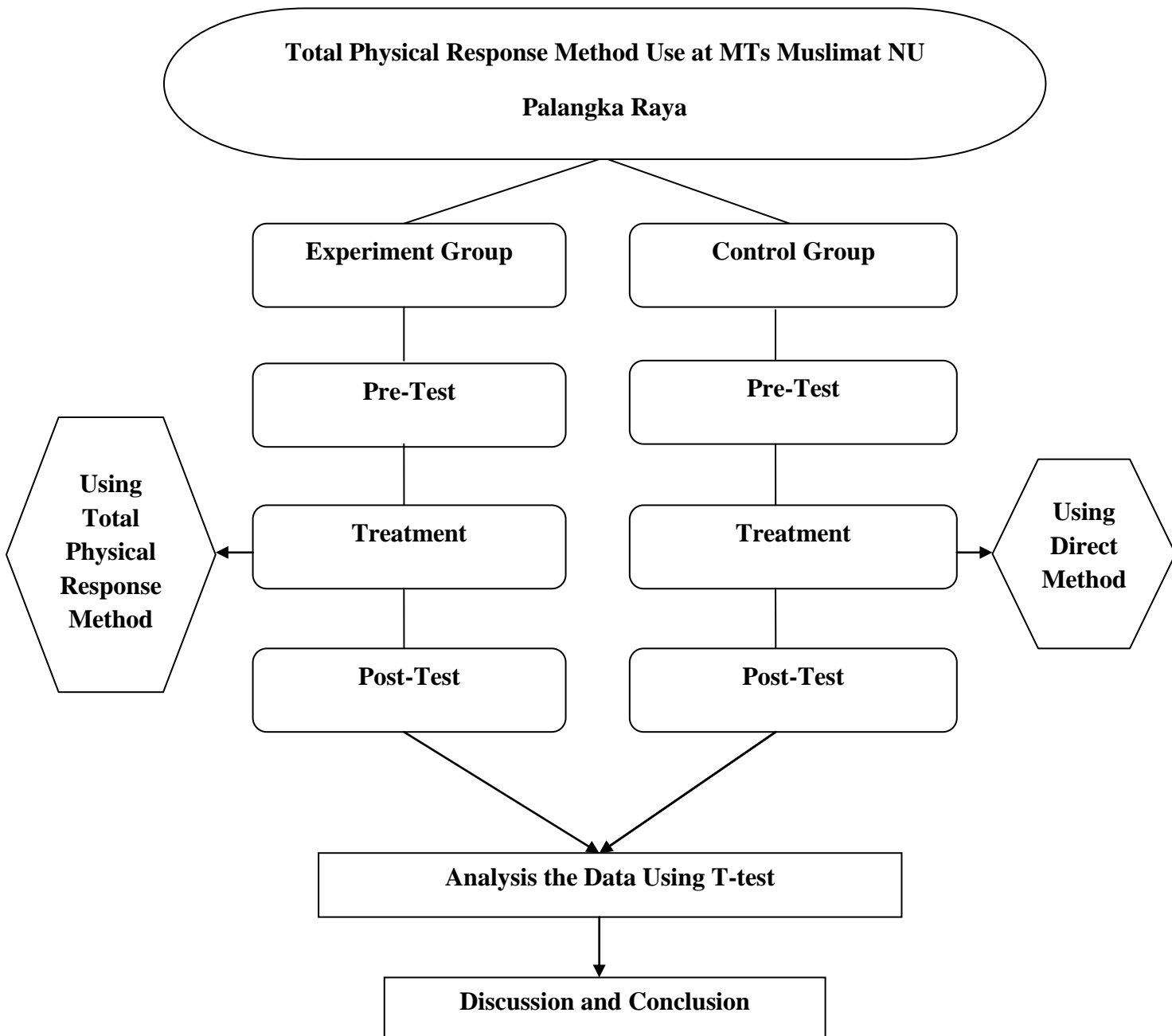
1. Experiment Group

➢ The writer divided the class into experiment group.

➢ The Writer gave pretest to experiment group.

➢ The writer taught the experiment group or gives treatment by using TPR.

➢ The writer gave posttest both of the groups and gives score.

➢ The writer started to analyzes by using statistical analysis the data.

➢ The writer tested the hypothesis.

➢ The writer interpreted the data.

➢ The writer concluded the result of the study of the effect of using Total Physical Response (TPR).

2. **Control Group**

➢ The writer divided the class into control group.

➢ The Writer gave pretest to control group and give score.

➢ The writer taught control group or give treatment without using TPR.

➢ The writer gave posttest both of the groups and gives score.

➢ The writer started to analyzes by using statistical analysis the data.

➢ The writer tested the hypothesis.

➢ The writer interpreted the data.

Figure 3.4

Data Collection Procedure

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          ┌─────────────────────────────────────────────────┐
          │  Total Physical Response Method Use at MTs       │
          │  Muslimat NU                                     │
          │                                                  │
          │  Palangka Raya                                   │
          └─────────────────────────────────────────────────┘
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Experiment Group	Control Group

Pre-Test	Pre-Test

Using Total Physical Response Method ← | Treatment | Treatment | → **Using Direct Method**

Post-Test	Post-Test

Analysis the Data Using T-test

Discussion and Conclusion

F.   **Instrument Of the Study**

To collect the data, the writer needs some instrument that support in collecting the data. The data is very important to support and prove the study itself. The data can be helped the writer to find the aims of the study, they are to measure the effect of using Total Physical Response on vocabulary size at the eighth grade students of MTs Muslimat NU Palangka Raya. To know the interpretation of calculated result, finally, there is one technique to get it.

1. Test

   According to Donal Ary:

   "*Tes adalah serentetan pertanyaan atau latihan serta alat lain yang digunakan untuk mengukur keterampilan, pengetahuan, intelegensi, kemampuan atau bakat yang dimiliki oleh individu atau kelompok*".[6] (Test is a set of questions or exercises, and other instrument that is used to measure skill, knowledge, intelligence, ability or talent of individual or group). In this case the writer will be using multiple choice tests.

   In this study the multiple choice test will be used to measure the student's vocabulary size. Every student needs minimal five minutes to answer one of the questions. For posttest, the experiment group will be giving the same test with the control group according the material in syllabus.

   The mayor data in this study are the student's vocabulary size score those were taken from pretest and posttest. The pretest was used to measure the student's vocabulary size each group before the treatment is applied by the writer.

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[6]Suharsimi Arikunto, *Prosedur Penelitian: Suatu Pendekatan Praktek* (Edisi Revisi VI), Jakarta: Rineka Cipta, 2006, p.150

The treatment was applied in experiment group. Furthermore, the posttest was the last test will be given to each group of control group and experiment group.

2. Documentation

Documentation was purpose to get data from the location of the study directly, consist of activity report, photos, and the relevant data in the study. The document were needed such as the students name list, source of book which the teacher used, and English syllabus. All those data was collected from the documents available at MTs Muslimat Nu of Palangka Raya.

G. Instrument Try Out

The instrument try out is important because the result of try out is used to analyze and to measure the instrument whether the test has some criteria of qualified test or not. The writer tried out the test instrument before applying to the real sample in the study. The test given at class VII B in the seems school and teacher. From the measurement of validity of the try out that was contained 30 items were known that there were 26 valid items and 4 invalid items.

1. Test Type

In this study, the writer used multiple-choice to check the students' vocabulary size. As Madsen's suggestion that a good vocabulary test type for students who can read in the foreign language is multiple-choice completion because it makes the students depend on the context clues and sentences

meaning.[7] The writer use multiple-choice that consists of 30 items. All the questions will adapted from internet and the book used at MTs Muslimat NU Palangka Raya where the study will be conduct.

They were 5 items about verbs, 5 items about noun, 10 items about command word, and the last 10 items about negative command. (See details in appendix 4).

2. Instrument Validity

The validity of a test is the extent to which it measure what it is supposed to measure and nothing else.[8] Simply, it can be said that a test will be valid, if it measures accurately what is intended to measure. Therefore, related to study, the test is aim to measure the student's vocabulary size. Validity has three distinct aspects, all of which are important. They are: content validity, face validity, and construct validity.[9]

a.   Content Validity

A test is said to have content validity if its content constitutes a representative sample.[10] It refers to the extent to which the instrument represents the content of interest. In the other words, it is concerned with the questions how well does the content of the instrument represent the entire universe of content

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[7]Harold S. Madsen, *technique in testing,* New York: Oxford University Press, 1983, p.16

[8]Harold S. Madsen, *technique in testing,* New York: Oxford University Press, 1983, p.16

[9]Arthur Hughes, *Testing For Language Learners*, Great Britain: Cambridge University press, 1989, p. 22.

[10]Ibid, p.22

which might be measured.[11] Specifically, in this study, the test must be makeup of items testing knowledge or control of vocabulary. It will provide the test constructor with the basis for making the principle selection of elements for inclusion in the test.

b.   Face Validity

The test is said to have face validity if it looks as if it measures what is supposed to measure.[12] A test pretended to measure vocabulary size in order to apply Total Physically Response Method.

c.   Construct Validity

This type of validity assumes the existence of certain learning theories or constructs underlying the acquisition of abilities and skills.[13] It is concerned with the extent to which a test measures a specific trait or construct. Specifically, the construct validity measure vocabulary size.[14] It is type of validity that is essential for tests that are used to individuals on certain abilities.

To measure the validity of the test measurement in multiple choice and writing test, the researcher use the formulation Product Moment by Pearson as follows:

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

[11]Donald Ary, *Introduction to research in Education*; third edition,…. 1985, p 214
[12] Ibid,. p. 27
[13] J.B Heaton, *Language Testing*, 1974, p. 154
[14] Donald Ary, *Introduction to research in Education*; third edition,…. 1985, p 218

Notes:

r_{xy} : The coefficient of correlation

$\sum X$: Sum of score in X distribution

$\sum Y$: sum of score in Y distribution

$\sum X^2$: sum of squared score in X distribution

$\sum Y^2$: sum of squared score in Y distribution

$\sum XY$: sum of product of paired X and Y score

N : Number of paired X and Y score[15]

After the value of coefficient correlation ($r_{xy)}$ had found, then it was calculated using the measurement of Test-t with formula:

$$T_{observed} = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$

Where:

t = the value of $t_{observed}$

r = the coefficient correlation of the result of $r_{observed}$

n = the total number of students

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[15] Riduwan, *Metode & Teknik Menyusun Tesis*, Bandung: Alfabeta, 2010, p. 136.

The distribution of (t_{table}) at alpha 5 % and the degree of freedom (n-2) with the measurement of validity using these criteria :

$$t_{observed} > t_{table} = \text{Valid}$$

$$t_{observed} < t_{table} = \text{Invalid}$$

To know the validity level of the instrument, the result of the test was interpreted to the criteria correlation index (r) as follow:

The criteria of interpretation for the validity:

0.800 – 1.000 = Very High Validity

0.600 – 0.799 = High Validity

0.400 – 0.599 = Fair Validity

0.200 – 0.399 = Poor Validity

0.00 - 0.199 = Very Poor Validity [16]

The result of validity measurement of tesst instrument based on the criteria as follows:

(a) If the value of $t_{observed}$ is greater than t_{table} , it means that the test item is valid and it can be used as the instrument of the study.

(b) If the value of $t_{observed}$ is lower than t_{table} , it means that the test item is invalid and it cannot be used as the instrument of the study.

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[16] *Ibid*, p. 136.

From the measurement of validity of the try out that was contained 30 items were known that there were 26 valid items and 4 invalid items. For the detail explanation, it can be seen at appendix 7.

3. Instruments of Reliability

Reliability is necessary characteristic of any good test: for it to be valid at all, a test must first be reliable as a measuring instrument.[17] To measure the reliability test , the researcher will use two formulations for multiple choice and writing test or essay. The formulation for multiple choice, the researcher applied KR-21 formulation as explained below:

$$r_{11} = \frac{k}{k-1} \left(1 - \frac{M\,(k-M)}{K.V_t}\right)$$

Where:

r_{11} = reliability of instrument

K   = the total number of test items

M   = mean of score

V.t   = the total varians.[18]

The last decision was comparing the value of r_{11} and r_t :

$r_{11} > r_t$ = reliable

$r_{11} < r_t$ = not reliable

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[17]J.B Heaton, Language *testing*, 1974, p. 155.
[18] Riduwan, *Metode & Teknik*,......p. 120.

From the measurement of first instrument try out reliability was found that the r_{11} value = 0.831 was greater than r_{table} = 0.369 or 0.831 > 0.369. It meant the whole numbers of test items were reliable and it was determined as high reliability. For measurement of try out of writing test reliability, the researcher used inter-rater reliability. Inter-rater is two raters to score the students writing to get the score composition as fairly and consistently as possible. The first rater was Nor Halisah, a friend of the researcher who also conducted an experiment in writing and error analysis and the second rater was the researcher of the study. In order to find concurrent reliability used Product Moment Correlation. For the detail explanation of the instrument reliability calculation could be seen in the appendix.

4.   **Index of Difficulty**

According to Heaton the index of difficulty or facility value is the fraction or percentages of the students who answered the item correctly.[19] It is used to show how easy or difficult the particular item proved in the test. Furthermore, this analysis provides insight into the instruction as well as evaluating the test item themselves. It is calculated by using the formula: [20]

$$F.V = \frac{R}{N}$$

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[19] J.B Heaton, *Language testing*, 1974, p. 172.
[20] *Ibid*,.p. 172

Where:

F.V   = facility value

R   = represent the number of correct answer

N   = the number of students taking the test

To interpret, Thondike and Elizabeth in sodijono give the rule of interpretation as following:[21]

F.V < 0, 30   : Difficult

0, 30-0, 70   : Fair

F.V > 0, 70   : Easy

5.   **Test of Normality**

Normality is used for estimating parametic or non parametic test will be used to analyze the data obtained. Normality is a test normal to whether or not the distribution of research data. Therefore, the writer used SPSS 16 program to measure the normality of the data.

6.   **Homogeneity**

Homogeneity test aims to test the equality (homogeneity) some samples**.**[22] The writer used SPSS 16 program to measure the homogeneity of the data.

H.   **Data Analysis Procedure**

The writer analyzed the data by applying some procedure in the following:

a.   Collecting the data of the students' tests result.

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[21] Anas sudijono, *Pengantar Evaluasi Pendidikan*, Jakarta :PT. Raja Grafindo Persada, 2007, p.320.
[22] Ibid, p. 136

b. Giving score to the students' test result by using the formula:

Score: $\frac{B}{N}$ x 100%

B : frequency of the correct answers

N : number of test item.

c. Tabulating the students' score into distribution of frequency in the table, then find out the mean of students' score, standard deviation, and standard error of variable X1 (Experimental group) and X2 (Control group).

d. Calculating the data by using t-test to test the hypothesis of the study, whether the uses total physical response method (TPR) Gave effect to the students' score or not. To examine the hypothesis, the writer used *t-test*. Test "t" or "t" Test is statistical test which is used to examine the truth or falseness of null hypotheses states that between two of Sample Mean taken randomly from the same population, there is no significant different. [23] "t test" is used to measure whether total physical response method (TPR) give effect to students' english score using the formula as follows: [24]

$$t_o = \frac{M_1 - M_2}{SEm_1 - m_2}$$

Note:

$M_1 - M_2$: The difference of two means

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

$SEm_1 - m_2$: 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) $< t_{table}$, it means Ha is rejected and Ho is accepted.

e. Interpreting the result of t-test. Previously, the writer counted the degrees of freedom (df) with the formula: [25]

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} was 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.

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

g. In addition, the writer used SPSS 16 program to compare the data.

h. Discussing and concluding the result of data analysis.

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[25] Ibid, p. 285.