CHAPTER III

RESEARCH METHODOLOGY

This chapter discusses about research methodology. There are explanations about the research design, samples, data collecting, instrument used to collect the data and also data analyzing. The researcher applied a Quasi Experimental research to solve the problem faced by the students in learning present perfect tense.

A. Research Design

In this research, the researcher used Quasi-Experimental design. Based on Muijs (2004:26), "Quasi-experimental designs are meant to approximate as closely as possible the advantages of true experimental designs where the problems mentioned above occur, such as having to implement a programme in a natural school setting". In this research the researcher only used the post-test control and experimental group design to measure the students' present perfect tense comprehension. According to Cohen, Manion, and Morrison (2007:278) argued "here participants are randomly assigned to a control group and experimental group, but there is no pretest. The experimental group received the intervention and the two groups are given only a post-test". The design as follow as below:

Table 3.1
Posttest Only Design

Experimental group	X	O_1
Control group	-	O_2

Where   :
O_1 =   post-test in experimental group
O_2 =   post-test in control group
X =   treatment
- =   no treatment

Taken from Cohen et al (2007:278)

There are two groups in this research. They are experimental group and control group. In experimental group the researcher used a treatment but in control group there was no treatment, the researcher used conventional teaching in control group. The researcher used students-centered learning (SCL) in control group. According to Attard, Di Iorio, Geven, and Santa (2010:5), "it is characterized by innovative methods of teaching which aim to promote learning in communication with teachers and other learners and which take students seriously as active participants in their own learning, fostering transferable skills such as problem-solving, critical thinking and reflective thinking". In the first until third meetings, the researcher applied peer-teaching in experimental group. Then, post-test are given to the both of groups after the students finished the last meeting.

B. Population

In this research population consists of all the eighth grade students' in SMP ABDI AGAPE Pontianak. There are three class divided into $VIII_a$, $VIII_b$, $VIII_c$. They are as follow:

$VIII_a$ = 38 Students
$VIII_b$ = 38 Students
$VIII_c$ = 37 Students
_____+

TOTAL = 3 classes of VIII   = 113 Students

C. Sample

In this research, the researcher used cluster sampling technique. According to Donald, Jacobs, and Razaiveh (2010:154), "this kind of probability sampling is referred to as cluster sampling because the unit chosen was not an individual; but, rather, a group of individuals who are naturally together". The common way of cluster sampling is the researcher chooses intact classrooms as cluster. In this research the sample was took from the student at SMP ABDI AGAPE in the eighth grade students where VIIIc was the experimental group and VIIIb as the control group.

D. Technique of Collecting Data

To gain the data, the researcher obtained it from result of post-test which is held to control group and experimental group. The researcher began to collect the data based on the following procedure.

1. Choosing Intact Classes by Cluster Sampling

Procedure in taking the sample by using cluster sampling technique is described as bellow:

a. Researcher wrote the name of each class in a piece of paper.

b. Researcher put the name of each class into a glass.

c. Researcher shook the glass until two papers out from the glass, where the first paper out from the glass decided as experimental group

(VIIIc), and the last paper out from the glass decided as control group (VIIIb).

2. Collecting Data from Samples

a. Treatment

The use of peer-teaching as the treatment in learning present perfect tense gave feedback to the experimental group. On the other hand, researcher gave direct feedback to the control group.

b. Post-test

In this research, post-test is the test given to the students in the last meeting of the research. According to Cohen, Manion, and Morrison (2007:272), "in an experiment the post-test measure the dependent variable, and the independent variables are isolated and controlled carefully". The researcher gave twenty items test in multiple-choice form as post-test to the students in experimental group and control group.

E. Instrument of Data Collecting

The Instrument used in this research was multiple-choice test. The test was used to collect the data related to the effect of peer-teaching strategy in teaching present perfect tense. The process of collecting the data was during the treatment and post-test which are held to the experimental group. In the other side, control group data were obtained from the first meeting until the post-test given to the student.

1. Multiple-Choice Test

Based on Purpura (2004:117), "a multiple-choice grammar test might be designed to measure one feature of grammatical knowledge. It therefore contains one criterion for correctness. This item could be scored either right or wrong according to an answer key. This right/wrong scoring method is clear and objectives. Correct answers get one point; incorrect ones get none". In this research the researcher chosen multiple choice as a form of the test, which consist of 20 items and each item has four options a, b, c, or d. The students should choose the correct one. The score of correct item is four (4) and incorrect answer is zero (0).

2. Validity Test

According to Cohen, Manion, and Morrison (2007:133), "Validity is thus a requirement for both quantitative and qualitative/naturalistic research…. While earlier versions of validity were based on the view that it was essentially a demonstration that a particular instrument in fact measures what it purports to measure, more recently validity has taken many forms". In this research, the researcher used content validity to make the measurement test in multiple-choice form. According to Muijs (2004:66), "Content validity refers to whether or not the content of the manifest variables (e.g. items of a test or questions of a questionnaire) is right to measure the latent concept (self-esteem, achievement, attitudes,…) that we are trying to measure". In the other hand, Cohen, Manion, and Morrison (2007:137) stated, "To demonstrate this

form of validity the instrument must show that it fairly and comprehensively covers the domain or items that it purports to cover".

The researcher used expert judgment to confirm the item of the test and also the blue print of content validity that made based on theory *(see appendix 2. Blue Print of Posttest).* According to Marczyk, DeMatteo, and Festinger (2005:107), "Content-related validity refers to the relevance of the instrument or measurement strategy to the construct measured". The researcher used SPSS 20 in this research to compute the validity of the test. From 39 items of question, there only 22 items of question were valid after the researcher piloted the test *(see appendix 16. The Result of Validity Test)* and *(appendix 15. The process of validity test).*

3. **Reliability of test**

According to Ary, Jacobs, Sorensen, and Razavieh (Based on Muijs (2004:71), "Reliability then refers to the extent to which test scores are free of measurement error". Internal consistency used in this research as the form of reliability because the number of the test is more than one item. According to Muijs (2004:73), "This form of reliability is only applicable to instrument that have more than one item as it refers to how homogenous the test items of a test are or how well they measure a single construct". The researcher tried out the test in order to measure the reliability of the test. Then the result of the test from the students was computed to know reliability of the test. In this research, researcher applied coefficient alpha in computing the reliability of

test. The process was computed by SPSS *(Statistical Product and Service Solution)* version 20. As the result of reliability test, *p* value of reliability was higher than r_{table}. It was 0.574 > 0.325 and it means that most of the question items were reliable. Below is the table of the result of reliability computation.

Table 3.2
Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.601	.574	39

F. Data Analysis

In analyze quantitative analysis the researcher used students' score from the written test in form of multiple-choice. Total item that used in this research was 20 items. The component can be described as follow:

1. Multiple-Choice Test

The researcher analyzed the students' comprehension in present perfect tense by using the result of post-test in multiple-choice form. There are 20 items of question in multiple-choice form. It used to measure the progress of students' achievement. The data of students' achievement was analyzed from the result of students' score in the test given as bellow:

a. Students' Individual Score

Students' individual score was to know the achievement of present perfect tense in individually (*see appendix 14: Students individual score of*

Posttest). The formula that used and computed to score the students' present perfect tense comprehension is following:

$$\text{Score of student} = \frac{\text{sum of right answer} \times 100}{20}$$

b. Students' Mean Score

The researcher analyzed the students' mean score by using the following formula:

$$M = \frac{\sum X}{n}$$

Where:
M = the students' mean score
$\sum$x = the sum of students' score
n = total of students
Taken from Fraenkel and Wallen (2006:197)

c. Standard Deviation

Based on Muijs (2004:107) stated "The standard deviation (SD) is a measure of the extent to which the values in a distribution cluster around the mean". The calculation of standard deviation was used formula as follows:

$$SD = \sqrt{\frac{\sum (x - \bar{x})^2}{n}}$$

Where:
SD = Standard deviation
$\sum$ = Sum of "……"
x = raw score
$\bar{x}$ = Mean score
n = number of students
Taken from Fraenkel & Wallen (2006:199)

2. Pre-Analyzing

Before the researcher analyze the data to know the effectiveness of peer teaching toward the students' comprehension in present perfect tense by comparing both of group posttest, there are several ways to decide which kind of analyzing form used between parametric and non-parametric test. Below are the procedure in deciding between parametric test and non-parametric test:

a. Normality Data Distribution

Normality data distribution is the general possibility that frequently occurring continuity. Normality data distribution tells that the probability in any real observation will fall between any two real limits or real numbers. It is commonly shown as a curve approaches zero on either side or it also called normal curve.

> John and Kahn (1998:353) stated:
> "One way to think of the normal curve (or the nonnormal curves described shortly) is to view it "as a solid geometric figure made up of all the subjects and their different scores" (Heirnan, 1996, p. 53). That is, the curve is a smoothed, curved version of a bar graph that represents each possible score and the number of persons who got that score"

The researcher calculated the normality data distribution of the test from control group and experiment group by using students' score of test (*see appendix 14: Students' individual score of test, and also see appendix 15: Students' individual score of posttest*). The statistical calculation of normality test used Kolmogorov-Smirnov formula by using SPSS 20, which the result was normal distributed.

b. Homogeneity

Samples in this research are divided in two groups, where the first group is experimental group (VIIIC), and the second one is a compare group or control group (VIIIB). According to Fraenkel & Wallen (2009:236) stated "when researchers desire to find out whether there are significant differences between the means of more than two groups, they commonly use a technique called analysis of variance (ANOVA), which is actually a more general form of the t-test that appropriate to use with three or more groups (it can also be used with two groups)". In this research, the researcher used SPPS version 20 to check the homogeneity. The students' individual score of test used to check the homogeneity (*see appendix 14. Students' individual score of test*).

3. T-test

T-test used when the researcher decided to compare mean differences between two groups. According to Marczyck, DeMatteo, and Festinger (2005:220), "T-test are used to test mean differences between two groups. In general they require a single dichotomous independent variable (e.g., an experimental group and a control group) and a single continuous dependent variable". T-test is one of statistical parametric form because the data computed in interval scale and ratio. Based on the computation result of homogeneity and normality data distribution, the researcher used parametric test because the data are homogeny and in normal distribution. Here, the

researcher used t-test in order to compare both of group means in posttest. This is an appropriate formula that used in order to know the effectiveness of peer-teaching in experimental group by comparing both of group means. In this research, t-test was calculated by the computation in SPSS 20. This computation is to know the compare the experimental group and control group based on the students' mean score in their posttest. The function of this computation is to know the effectiveness of peer-teaching in experimental group by comparing the posttest score of both groups (*see appendix 15: Students' individual score of posttest*).

4. **Hypotheses Testing**

There are two hypotheses on this research. First, (H_0) there is no significant difference of the students' comprehension in present perfect tense between the student who taught by using peer-teaching and the student who taught without using peer-teaching. Second, (H_a) there is significant difference of the students' comprehension in present perfect tense between the student who taught by using peer-teaching and the student who taught without using peer-teaching. Below is the way to know which one of hypotheses (H_0 or H_a) accepted in this research:

1) Based on the comparison of p_{value} and alpha ($\alpha = 0.05$) : If p_{value} in t-test computation is lower than α, H_0 accepted. The other way if p_{value} is higher than α, H_0 is rejected.

2) Seen from the comparison of t_{table}: Table = t (0.05/2;n-2) = t (0.05/2;70-2) = t (0.025;68) = 1.995. It can be seen from the table, if t_{value} is lower than t_{table} it means H_0 is accepted. If t_{value} is higher than t_{table} it means H_0 is rejected.

3) Based on the students' mean score in posttest, where the mean score of the students' in experimental group (65.00) is lower than the mean score of the students in control group (66.14).

4) Based on the value of Standard Deviation (SD). If, SD of experimental group is higher than SD of control group it means the data of experimental is more varied than the data of control group. It is good if the SD is approaching to 0.