CHAPTER III

RESEARCH METHODOLOGY

A. Research Design

In this research, the writer used experimental design. Experimental design is the general plan to carrying out a study with and active independent variable. The design is important because it determines the study's internal validity, which is the ability to reach valid conclusion about the effect of the experimental treatment on the dependent variable.[1] It means that experimental design is a research design that is used to find the influence of one variable to another.

The writer applied quasi-experimental pre-test and post-test design to know whether using Snake and Ladder game can influence students' present continuous tense mastery or not. Cresswell says that we can apply the pre and post-test design approach to quasi experimental design. The writer assigns intact groups the experimental and control treatments, conducts experimental treatment activities with experimental group only, and then administers a post-test to assess the differences between two groups. A variation in this approach, similar to the true experimental, uses post-test only design.[2] The research design can be presented as follows:

---

[1] Donald Ary, Cheser Jacobs, and Chris Sorensen, *Introduction to Research in Education 8th edition*, (Canada : Wadsworth, 2002) p.301

[2] John W. Creswell, *Educational Research : Planning, Conducting, and Evaluating Quantitative and Qualitative research 4th edition*, (Boston: Pearson Education, 2012), p. 310

Table 2
Post-test Only Design [3]

Select Control Group	No Treatment	Post-test
Select Experimental Group	Experimental Treatment	Post-test

In this research, the writer used post-test only design because the writer got the pre-test data from preliminary research about students' present continuous tense mastery. So, the writer did not need to use pre-test to know students' present continuous tense mastery. Creswell states that a pre-test provides a measure the students' ability before they receive the treatment.[4] In this research, the writer gave the post-test to the students to know their present continuous tense mastery after giving treatment through Snake and Ladder game. The post-test conducted for control and experimental class.

B. Variables of the research

In this research there were two variables, they were:

1. Independent variable is using Snake and Ladder game (X)
2. Dependent variable is students' present continuous tense mastery (Y)

[3] *Ibid*
[4] *Ibid*, p. 297

C. Operational Definition of Variable

The operational definition of variable used to explain the variables which were used in this research to avoid misconception of variables presented in this research. The operational definitions of variables were as follows;

1. Snake and Ladder game in this research is a kind of technique for teaching grammar, especially present continuous tense by asking the students to play the modified Snake and ladder board game by Felicity and Katie where they take turn to make a move based on the number shown on the dice, then to make a sentence in Present Continuous Tense form based on the verb word and picture provided on the board.
2. Students' Present Continuous Tense mastery is someone's mastery to recognize and use Present Continuous Tense in positive, negative, and interrogative from by using the right kind of to be (is, am, were), in accordance with the subject plus V-ing and also using the time signals accurately. It is indicated by the score achieved from a multiple choice.

D. Population, Sample and Sampling Technique

1. Population

Fraenkel and Wallen say that a sample in a research study is the group on which information is obtained. The larger group to which one hopes to apply the

results is called the population.[5] Population of this research was the students at second semester of eighth grade SMP Pangudi Luhur Bandarlampung in the academic year of 2016/2017. The population of this research consisted of 90 students including three classes. Here was the table of the students' number in detail:

Table 3
The situation of the eighth grade of SMP Pangudi Luhur Bandarlampung in the academic year of 2016/2017

No	Class	Genres		Total
		Male	Female	
1	VIII A	19	16	35
2	VIII B	18	17	35
3	VIII C	9	11	20
The total number of students				90

Source : SMP Pangudi Luhur Bandarlampung in the academic year of 2016/2017

2. Sample

The sample of the research were two classes, one class as the experimental class and another as the control class. Because there were three classes of eighth grade at SMP Pangudi Luhur, the writer took two classes. One class as the experimental class and the other one as the control class.

3. Sampling Technique

In getting the sample from population, the writer used cluster random sampling. Fraenkel and Wallen say that the selection of groups, or cluster, of

[5]Jack R. Fraenkel and Norman E. Wallen, *How to Design and Evaluate Research in Education seventh edition,* (New York: McGraw-Hill, 2009), p. 90

subjects rather that individuals is known as cluster random sampling.[6] The steps as follows:

1. The experimental and control class were chosen randomly by using a small piece of paper.
2. The name of each class is written in a small piece of paper and then the papers put in a glass then rolled and shaken.
3. The first paper is an experimental class and the first paper is control class.

Based of result of sampling technique VIII A as a control class and VIII B as a experimental class.

E. Research Procedure

In conducting this research, the writer applied some procedures as follows;

1. Finding the subject of research

The writer choosed the students of eighth grade of SMP Pangudi Luhur Bandarlampung as a subject of the research. There were two classes be subject of the research. One class was experimental class and another was control class.

2. Designing the instruments of the research

The instrument of this research is test. The students got the same instrument for both classes.

[6]Ibid, p.95

3. Trying out the test

Try out conducts to identify how accurate and effective the test before they use to collect the data of the research and identified whether the test can be administrated or not. The writer did the try out to the students of eighth grade of SMP Pangudi Luhur Bandarlampung.

4. Conducting treatment

Treatment given in three meetings. In the treatment, the writer as the teacher taught the students using Snake and Ladder game. The students were given the activity about Snake and Ladder game that there were verbs and pictures each square. Each square provides verb 1 and pictures that appropriate verb. Then the students have to change which place their pawns stop.

5. Administering the post test

Post-test conducted after the treatments. This test aimed to know the students' present continuous tense mastery after having the treatment. In this test, the students gave about present continuous tense questions.

6. Analyzing the result of post-test

In analyzing the result, the writer compared the result of post-test between experimental and control class to see whether the post-test's score of experimental is higher than control or not.

F. Data Collecting Technique

In conducting this research, the writer needed technique to collect the data. In this research, the writer used the data which come from test. The test was done to know the students' present continuous tense mastery after they were taught using Snake and Ladder game. Every student had to done the questions that were provided by the writer. In this research, the control and experimental class had same test. The result of the test written in the scoring column on the paper.

G. Research Instrument

In this research, the instrument was post-test. The post test was multiple choices with four choices. The post test was in the form. This post-test aimed at measuring the students' present continuous tense mastery. The instrument of post-test was a test to comprehend present continuous tense form and its function.

Table 4

Specification of Post-test before valildity

No	Aspects	Item Number		Total
		odd	even	
1	Positive form	1,5,7,9,13	2,4,6,8,28	10
2	Negative form	11,15, 37,39,17	10,12,32,18,30	10
3	Interrogative form	3,23,25,35,31	20,22,24, 26,38	10
4	Time Signal	19,21, 27, 29,33	34,36, 14,16,40	10
Total		20	20	40

Based on table above there were 40 questions. There were four aspects in specification of post-test. The aspects consist ten questions each aspect. The aspects were positive form, negative form, interrogative form, and time signal.

Table 5

Specification of Post-test after validity

No	Aspects	Item Number		Total
		odd	even	
1	Positive form	1,5	2,4,6	5
2	Negative form	7,19	16	3
3	Interrogative form	3, 11,13, 15,	10, 12,14,18	8
4	Time Signal	17,9	8,20	4
Total		10	10	20

Based on table above there were 20 questions. There were four aspects in specification of post-test. The aspects were positive form, negative form, interrogative form, and time signal.

H. Scoring Scale for Evaluating Students' Present Continuous Tense Mastery

The data of this study analyzed using quantitative methods. The quantitative method used to analyze the scores of the data. Before getting the score, the writer determined the procedure to be used in scoring the students' work. In order to do

that, the writer used Arikunto's formula.[7] The ideal highest score is 100, because each right items got score 2.5 and 2.5 for post-test. The score of pre-test and post-test calculated by using the following formula:

$$S = \frac{r}{n} x\ 100$$

S: The score of the test

r : The total of the right answer

n: The total items

I. Validity and Reliability of the Test.

1. Validity of Test

A good test was the test that has validity. The validity test was conducted to check whether the test measures what is intended to be measured.[8] Best and Kahn say that a test is valid if it is measures what it claims to measure.[9] It means that a good test must have validity so the test can measure the aspects that measured. To measure whether the test has good validity or not, the writer used the content and construct validity.

[7] Suharsimi Arikunto, *Dasar-Dasar Evaluasi Pendidikan*, (Jakarta:Bina Aksara, 1989), p.271

[8] Hughes Arthur, *Testing for Language Teacher First Edition*, (Cambridge :Cambridge University Press, 2003) , P.26

[9] John W. Best and James V. Kahn, *Research in Education 7th edition*, (New Delhi : Prentice-Hall, 1995), p. 218

1. Content Validity

Best and Kahn say that content validity refers to the degree to which the test actually measures, or is specifically related to, the traits for which it was design, content validity is based upon the careful examination of course textbooks, syllabi, objectives, and the judgments of subject matter specialists.[10] It means that the content validity is based on the material, and the material is agreement with the objectives of learning. Based on standard of content school based on curriculum K13 Then to make the test is valid, the writer gave it related to the students' material in their school. To know whether the test had good validity or not, the items of the test consult to the expert. In this case, the writer consulted to the English teacher of SMP Pangudi Luhur Bandarlampung, Mrs. Yustina S.Pd., to make sure that the instruments were valid.

2. Construct Validity

Best and Kahn say that construct validity is the degree to which scores on a test can be accounted for by the explanatory constructs of a sound theory.[11] It means that construct validity is focused on the aspects of the test which can measure the mastery especially for present continuous tense mastery.

[10]Ibid, p.219
[11] *Ibid*

Construct validity focuses on the kind of the test that is used to measure the students' present continuous tense mastery. To obtain the construct validity of experiment, the writer consulted the test to an English teacher named Mrs. Yustina, S.Pd. In consulting the test, the writer wanted to saw whether the aspects, indicators and items number had been fixed, and she said that the instruments have construct validity and can be used to collect the data.

3. Internal Validity

Trochim and Donnelly say that internal validity is the approximate truth about inferences regarding cause effect or causal relationships. Thus, internal validity is only relevant in studies that try to establish a causal relationship.[12] It means that the writer have evidence that what the writer does in the caused what the writer observes to happen. It didn't tell whether the writer does for the program is what the writer wants to do or whether what the writer observes is what the writer want to observes.

To know the validity, the writer used *Anate*s to calculate internal validity as correlation of the test. Based on the result of *Anates* the score of correlation

[12] W. Trochim and Donnelly, *The Research Methods Knowledge Base*, (New York : Atomic Dog, 2006) p.172

for the instrument has high because it amounts to 0,74. It means that correlation of the test in the research was valid. (See Appendices 12)

2. Reliability of the Test

Fraenkel and Wallen say that reliability refers to the consistency of the scores obtained-how consistent they were for each individual from one administration of an instrument to another and from one set of items to another.[13] A good test must have high reliability besides having high validity. To get the reliability of the test, the writer used *Anates* to calculate the reliability of the test.

The criteria of reliability test were :

0.80-1.000 = Very high reliability
0.60-0.799 = High reliability
0.40-0.599 = Medium reliability
0.20-0.399 = Low reliability
0.00-0.199 = Very low reliability.[14]

From the criteria of reliability above, it can be drawn a conclusion that the result of reliability for post-test has a very high reliability because it amounts to 0.85. It means that reliability of the test in the research are reliable. (See Appendices 12)

[13] Jack R. Fraenkel and Norman E. Wallen, *Op. Cit*, p. 154
[14] *Ibid.* p. 184.

J. Data Analysis

After collecting the data, the writer analyzed the data by using t-test. There were two tests that must be done before analyzing the data by using t-test. The tests consist of:

1. Fulfillment of the Assumptions

Parametric statistical significance tests, such as analysis of variance and least squares regression, were widely used by researchers in many disciplines, including, statistics parametric tests to produce accurate results, the assumptions underlying them such as normality and homogeneity test must be satisfied.[15]

a. Normality Test

The Normality is used to know whether the data, in experimental and control class, has the normal distribution or not. To measure the normality test, in manual uses the Lilliefors test as follows:

a. For $x_1, x_2, x_3, \ldots\ldots x_n$ was assumed as number $z_1, z_2, z_3, \ldots\ldots, z_n$ by using the formula: $z_i = x_i - \bar{x}$ ($\bar{x}$ and s were the averages and the sample' standard deviation).

b. For each this absolute number was arranged in the normal distribution, then it was calculated $F(z_i) = P(z < z_i)$

[15]M. Erceg-Hurn, *Modern Robust Statistical Method.* (Crawley: American Psychological Association, 2008) , p. 591

c. Then, the writer calculate the proportion z_1, z_2, z_3,....., z_n that can be smaller or just the same as z_1. If the proportion is represented by S(zi),

Therefore, $S(zi) = \frac{z_1, z_2, z_3, ..., z_n}{n}$

So that the writer calculate $F(z_i) - S(z_i)$ to the absolute number.

d. Next, the writer calculated the biggest number among those absolute numbers and called the number as $L_{observed}$. So, it can be concluded that

$L_{observed} = \max F(z_i) - S(z_i)$.

The test criteria:

$L_{observed} > L_{critical}$, it means that the population is not in the normal distribution.

$L_{observed} < L_{critical}$, it means that the population is in the normal distribution.

With ά = 5%

In this research, the writer used statistical computation by using *SPSS (Statistical Package for Social Science)*. While the criteria of acceptance or rejection of normality test were as follows:

H_o is accepted if sig > α = 0.05

H_a is accepted if sig < α = 0.05

The hypothesizes for the normality test were formulated as follows:

H_o : the data were normally distributed

H_a : the data were not normally distributed.

b. Homogeneity Test

After the writer got the conclusion of normality test, the writer did the homogeneity test in order to know whether the data is homogenous or not. In manual, F-test or two variances be used to know the homogeneity of the test. The formula is as follows:

$F = \frac{S_1^2}{S_2^2}$, where $\frac{n\sum x^2 - (\sum x)^2}{n(n-1)}$

F : Homogeneity

S_1^2 : The highest variance

S_2^2 : The lowest variance

The criteria for the homogeneity test were as follows:

Ho is accepted if *Fobserved* < *Fcritical* Ho = the data is homogenous

Ha is refused if *Fobserved* > *Fcritical* Ha = the the data is not heterogeneous

In this research, the writer used statistical computation by using *SPSS (Statistical Package for Social Science).* The test of homogeneity employing Levene's Test.

While the criteria of acceptance or rejection of homogeneity test were as follow:

H_o is accepted if sig > α = 0.05

H_a is accepted if sig < α = 0.05

The hypotheses for the homogeneity test were formulated as follows:

H_o = the variances of the data were homogenous

H_a = the variances of the data were not homogenous

2. Hypothetical test

After the writer knows that the data is normal and homogeneous, the data analyzed by using T-test in order to know the significance of the treatment effect.

The hypotheses were verified in manual by using the following formula:

$$t_{test} = \frac{Mx - My}{\sqrt{\left[\frac{\sum x^2 + \sum y^2}{Nx + Ny - 2}\right]\left[\frac{1}{Nx} + \frac{1}{Ny}\right]}}$$

Where:

Mx = Mean of control class

My = Mean of experimental class

$\sum X^2$ = Average deviation in control class

$\sum Y^2$ = Average deviation in experimental class

N = Subject in sample

The writer used *SPSS (Statistical Package for Social Science)* to process the data in normality test, homogeneity test, and t-test.

While the criteria acceptance or rejections of hypothesis test were:

H_a is accepted if sig < α = 0.05

H_o is accepted if sig > α = 0.05

The hypotheses were:

H_o : There is no significant influence of using Snake and Ladder game toward students' present continuous tense mastery at second semester of eighth grade of SMP Pangudi Luhur Bandarlampung in the academic year of 2016/2017.

H_a : There is a significant influence of using Snake and Ladder game toward students' present continuous tense mastery at second semester of eighth grade of SMP Pangudi Luhur Bandarlampung in the academic year of 2016/2017.