CHAPTER III
RESEARCH METHODOLOGY

A. Research Design

In this research, the researcher used experimental research design. According to Ary,*et.al.*, experimental research is the general plan for carrying out a study with an active independent variable.[1] The purpose of experimental research is to investigate causal correlation or influence between free variable with variable tied by comparing result of between experiment group.

The researcher used quasi experimental design. Quasi experimental designs are similar to randomized experimental designs in that they involve manipulation of an independent variable but differ in that subjects are not randomly assigned to treatment groups.[2] The researcher used quasi experimental because in quasi experimental, the subjects were not randomly assigned to the treatments groups. It was appropriate to this research's subject because this research's subject was in groups. The researcher did not randomly assigned the students in the class into some groups because if the researcher makes a new class, it would disturb the other learning process in the school.

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[1] Donald Ary, et.al, *Introduction to Research in Education* , (8th Ed.) (Ottawa: Wardsworth, 2010), p.301

[2] *Ibid*, p.316

The variety of quasi experimental design could be divided into two main categories, they are post-test only control group, and pre-test post-test group design. In this research, the researcher applied quasi experimental pre-test post-test group design. The researcher assigned intact groups the experimental and control, administer a pre-test to both groups, conduct treatment activities with the experimental group only, and then administer a post-test to assess the differences between the two groups.[3] The research design could be presented as follows :

Table 2
Pre-test and Post-test Design

Select Control Group	Pre-Test	No Treatment	Post-Test
Select Experimental Group	Pre-Test	Experimental Treatment	Post-Test

The researcher used two classes as the sample of this research consisting of experimental class and control class. The experimental class was taught by using Hangman game as the treatment, whereas in the control class was taught by using Translation technique. In this research the students were given pre-test to both classes before the treatment to know the students' early achievement in vocabulary mastery. The post-test was given to know their vocabulary mastery after the treatment is done. The pre-test and post-test were conducted for experimental class and control class.

[3]*Ibid*, p.310

B.Variables of the Research

Variable is a quality which can take a number of different values or states. According to Sudjana there are two kinds of variable; they are independent variable and dependent variable. Independent variable is a variable that are easily obtained and can be diversified into free variable, while dependent variable is the effect of independent variable.[4] In this study, the researcher focused on two variables :

1. The independent variable is Hangman game (X).
2. The dependent variable is the students' vocabulary mastery (Y).

C. Operation Definition of Variable

The operational Definitions of variable of the research were:

1. Hangman game

Hangman game is a kind of technique for teaching vocabulary by guessing and spelling word in which one player thinks of a word, phrase or sentence and the other tries to guess it by suggesting letters and involving the gradual drawing of a stick figure hanging from the gallows.

2. The students' vocabulary mastery

The students' vocabulary mastery is their ability to use or understand words that they have learned in certain situation which they really have experienced in their lives,

[4]Sudjana, *Metode Statistika,* (Bandung: Tarsito, 1996) p.310

especially the nouns including : single word, compound word, and complex word, especially vocabulary related to such topics as sports, occupation, and public places.

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] In MTs N 2 Bandar Lampung there are three divisions of classes. There are excellent class, super regular class, and regular class. In excellent class there are 2 classes of each grade and in super regular class there are 3 classes of each grade. Regular class is consisted of 7 classes of grade VII, 5 classes of grade VIII, and 5 classes of grade IX.

Population in this research is the students of the Seventh grade of Regular class of MTs N 2 Bandar Lampung in the academic year of 2016/2017. The researcher chose regular classes because those classes have the same curiculum and time teaching. Table 3 showed the number of the students in detail:

Table 3
The Population of the Students at the Seventh Grade of MTs N 2 Bandar Lampung in the Academic Year of 2016/2017

No.	Class	Gender		Total
		Male	Female	
1	VII D	15	21	36

[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

2	VII E	15	18	33
3	VII F	15	18	33
4	VII G	16	16	32
5	VII H	16	16	32
6	VII I	16	15	31
7	VII J	18	11	29
Total		**111**	**118**	**226**

Source: Archieve of MTs N 2 Bandar Lampung in the Academic Year of 2016/2017

2. Sample of Research

Arikunto stated that sample is part of the population.[6] The number of population, sometimes, is too big and out of reach. As stated by Arikunto that the sample can be selected from a large number and characteristics which identified as the population.[7] In this research, the researcher took two classes as the sample of research. VII G class as the experimental class students were taught by using Hangman game, and VII H class as the control class students were taught by using Translation technique.

3. Sampling Technique

To determine the experimental class and the control class, the researcher took the sample from the population of the research by using cluster random sampling technique. As Hadi states that in cluster sample, the samples are not taken individually, but are based on the group of the individuals. And the procedure to use cluster random sampling can be used with lottery, ordinal and randomly.[8]

[6]Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendekatan Praktek*, (Jakarta:RinekaCipta, 2010), p.134

[7]*Ibid*

[8] Sutrisno Hadi, *Metodelogi Riset.* (Yogyakarta: Andi Press, 2004), p.94

Additionally, Setiyadi says that the sample in cluster sample can be determined by using random sample or systematic sample.[9]

The researcher used lottery to determine the sample. There were three procedures to take the classes as sample. Firstly, the researcher wrote all of the classes of the seventh grade on some small piece of paper. Then, the small piece of paper are rolled and put into a cup. Secondly, the cup was shaken and the researcher took one small piece of rolled paper. It was a control class. And the last, the researcher shaked the cup again and took one small piece of rolled paper. It was an experimental class.

E. Data Collecting Technique

In collecting data, the researcher used two tests. The tests is used to measure the students' vocabulary mastery. The tests were:

a. Pre-test

Pre-test was conducted to the students in control class and experimental class in order to found out the students' vocabulay mastery before treatment. The pretest that used by the researcher was an objective test in the form of multiple choices. There were 20 items and each item has four options of answer (A, B, C, D). Time allocation is 40 minutes. The result of pretest was compared with the posttest. The researcher took the students' score to know their vocabulary mastery before giving the treatment.

[9] Ag. Bambang Setiyadi, *Metode Penelitian untuk Pengajaran Bahasa Asing*, (Yogyakarta: Graha Ilmu, 2008) p.42

b. Post-test

Post-test was conducted after the researcher conducted the treatment. It was used to know the influence of using Hangman game towards students' vocabulary after they were given the treatments. The questions in post-test were the same topic as the pre-test. The posttest has 20 items in 40 minutes time allocation. The type of questions in vocabulary is Multiple Choice Test and the scoring system as in the pretest.

F. Instrument of Research

The research instrument is a device used by the researcher during the data collecting by which the work is easier as the data are complete and systematic.[10] In this research the researcher used a test to get the data about vocabulary matery with the single word, compound word, and complex word. The researcher also used themes about close environment and the topics about sports, occupation, and public places. The specification of test for pre-test and post-test items before validity were as follows :

Table 4
The Items of Pre-test and Post-test Before Validity

Topic	Word	Distribution		Total
		Odd	Even	
Sports	Single	1, 19, 37	2, 20	5
	Compound	7, 25	8, 26	4
	Complex	13, 31	14, 32	4
Occupation	Single	3, 21, 39	4, 22	5
	Compound	9, 27	10, 28	4

[10]Suharsimi Arikunto, *Op Cit*, p. 149

	Complex	15, 33	16, 34	4
Public Places	Single	5, 23	6, 24, 38	5
	Compound	11, 29	12, 30	4
	Complex	17, 35	18, 36, 40	5
Total		20	20	40
		40		

Based on the table above, it could be concluded that the instrument of pre-test and post-test before validity were multiple choice test. There were 40 questions with 4 options (a,b,c and d) with the topics about *sports, occupation, and public places*, and with 3 words classification such as single word, compound word, and complex word. The researcher tried out the items by using the validity test. After valid the test, the researcher found the items which is valid. The items test can be seen on the table below:

Table 5
The Test Specification of Pretest after Validity Test

Topic	Word	Distribution		Total
		Odd	Even	
Sports	Single	37	-	1
	Compound	7, 25	8	3
	Complex	-	14	1
Occupation	Single	3, 39	22	3
	Compound	27	10	2
	Complex	15, 33	16, 34	4
Public Places	Single	23	6, 24	3
	Compound	11	12	2
	Complex	-	40	1
Total		10	10	20
		20		

Table 6
The Test Specification of Posttest after Validity Test

Topic	Word	Distribution		Total
		Odd	Even	
Sports	Single	19	-	1
	Compound	7	-	1
	Complex	31	14, 32	3
Occupation	Single	3, 39	22	3
	Compound	9, 27	28	3
	Complex	15, 33	16	3
Public Places	Single	-	38	1
	Compound	11, 29	30	3
	Complex	17	18	2
Total		12	8	20
		20		

Based on the table above, it can be seen that there were 20 questions for pretest and 20 questions for posttest. The specification included the topics about *sports, occupation, and public places,* and with 3 words classification such as single word, compound word, and complex word.

G. Research Procedure

There were three steps that were done in this research procedure, they were:

1. Planning

Before the researcher applied the research procedure, the researcher made some plans to run the application well. There were some steps that should be planned by the researcher. The procedure of making planning of this research could be seen as follows:

a. Determining the Subject

The researcher determined the subject, in the phase the researcher chose the first semester of seventh grade at Mts N 2 Bandar Lampung as the subject of the research, one class was as the experimental class and other one was as the control class.

b. Preparing Try Out

The researcher prepared a kind of test (called try out test) that was given to the students. The researcher prepared try out test for pre-test and post-test, the total number of test was 40 items. Then, the researcher evaluated the test items to get good items that would be tested in pre-test and pos-test.

c. Preparing Pre-Test

The researcher prepared a kind of test (called pre-test) that was given to the students. The researcher used the test instrument which was already been in try-out.

d. Determining the Material to be Taught

The treatment was conducted in three meetings. It required 80 minutes for each meeting. The researcher determined the material that was taught to the students with vocabulary that correlated to the materials and syllabus. The vocabulary topics were *sports, occupations, and public places.*

e. Preparing Post-test

The researcher prepared a kind of test (called post test) that was given to the students after treatments. The post-test was given to know the students' vocabulary mastery after being given the treatment.

2. Application

After making the planning, the researcher tried to apply the research procedure that has already been planned. There were some steps in doing this research :

a. In the first meeting, the researcher gave the try-out.

   The researcher asked the English teacher to determine the students that were given the try out. This test is multiple choice consist of 40 items with 4 options (a,b,c and d).

b. In the second meeting, the researcher gave pre-test.

   This test is multiple choice with 4 options (a,b,c and d). The total of the test items was determined by the validity and the reliability analysis of the try-out. It consists of 20 items with 4 options (a,b,c and d).

c. In the third meeting, the researcher conducted the treatment.

   After giving the pre-test to the students, the researcher conducted the treatment by using Hangman game in the experimental class and using Translation technique in the control class.

d. In the last meeting, the researcher gave the post-test

The test is multiple choice with 4 options (a,b,c and d). The total of the test items was determined by the validity and the reliability analysis of the try-out. It consists of 20 items with 4 options (a,b,c and d).

3. Reporting

The last point that the researcher did in this research is reporting. There were three steps which were done in reporting. The steps were as follows:

a. Analyzing the data that were received from tryout test.

b. Analyzing the data that were received from pre-test and post-test.

c. Making the report that was found in the reseaarch.

H. Scoring System

Before getting the score, the researcher determined the procedure that would be used in scoring the students' work. In order to do that, the researcher used Arikunto's formula. The ideal highest score is 100. The score of pre-test and posttest were calculated by using the following formula:

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

Notes:

S : The score of the test

r : The total of the right answer.

n : The total items.[11]

[11]Suharsimi Arikunto, *Op. Cit,* p.271

I . Validity and Reliability

1. Validity of the Test

According to Arikunto, validity is a measurement which shows the levels of validity or the real of the instrument. A valid instrument has a high validity. On the other hand, the instrument which lacks validity has a low validity[12]. While Setiyadi says that generally validity is a measurement to show how far the measurement measures something that must be measured[13]. The criteria of a good test are validity (content validity, construct validity, and internal validity), and reliability.

a) Content Validity

According to Setiyadi content validity associated with all the test items contained in a measuring instrument[14.] To get the content validity, the test was adapted with the students' book, that is the test is suited with the material that to be taught to the students. In other word, the researcher made the test based on the material in 2006 of English curriculum for Junior High School. To know whether the test had a good validity, the items of the test were discussed with the expert. [15] (the English teacher of MTs N 2 Bandar Lampung).

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[12] Suharmi Arikunto, *Op.Cit*, p.211
[13] Ag. Bambang Setiyadi, *Op. Cit*, p.22
[14] Ag. Bambang Setiyadi, *Loc. Cit*
[15] Ag. Bambang Setiyadi, *Op. Cit*, p.23

b) Construct Validity

Construct validity is the extent to which the data collection instrument provides scores that can be used to make inferences about a construct.[16] It means construct validity concerned with whether the test is actually in line with the theory or not. Thus the item should really show whether they have vocabulary that has been taught or not, and should really measure the students' vocabulary mastery. To know whether the test have a good construct validity, the items of the test were consulted to the English teacher of MTs N 2 Bandar Lampung.

c) Item Validity

Item validity is used to measure whether the items of the test are valid or not. In this research, the researcher used *Anatest* to calculate the data which were taken from the try out.

Based on the calculation by using *Anatest*, 20 items of the 40 try out items for pre test were valid. They were item number 3, 6, 7, 8, 10, 11, 12, 14, 15, 16, 22, 23, 24, 25, 27, 33, 34, 37, 39, and 40 (appendix 5). While for the items for post test, there were 20 items of the 40 try out items for post test were valid. They were item number 3, 7, 9, 11, 14, 15, 16, 17, 18, 19, 22, 27, 28, 29, 30, 31, 32, 33, 38, and 39 (appendix 6).

[16] James Schreiber & Kimberly Asner-Self, *Educational Research*, (New York: John Wiley & Sons, Inc, 2011),p.114

2. Reliability of the Test

Reliability means that sores from an instrument are stable and consistent.[17] A test is reliable if the test is able to give constant result eventhough the test is given repeatedly to the same individuals or sample. Reliability test consistent and dependable. The issue of reliability of a test may best be addressed by considering a numbers of factors that may contribute to the unreliability of a test. Consider the the following possibilities fluctuations in the students, in scoring, in test administration and in the test itself.[18] In this research, the researcher used *Anatest* to calculate the reliability of the test.

Below are the criteria of reliability test:

0.800 – 1000	: Very high
0.600 – 0.800	: High
0.400 – 0.600	: Medium
0.200 – 0.400	: Low
0.00 – 0.200	: Very low[19]

The reliability of the pre test was 0.60. It means that the reliability of the pre test was high. The reliability of the post test was 0.80. It means that the reliability of the post test was very high.

[17]Creswell, *Op.Cit*,p. 159

[18]Doughlas Brown, *Language Assesment Principles and Classroom Practices*,(San Fransisco: Longman, 2003), p.20-21

[19]*Ibid* p.75

J. Data Analysis

To analyze the data, the researcher used parametric statistics, and independent sample t-test. In parametric statistic, there are assumptions which must be fulfilled, there are normality and homogienity test.

1. Fulfillment of the Assumption

Parametric statistical significance tests, such as analysis of variance and least squares regression are widely used by researcher in many diciplines, including statistic parametric tests to produce accurate result, the assumptions underlying them such as normality and homogienity test mut be satisfied.

a. Normality Test

The researcher used normality test to know whether the data have a normal distribution or not.[20] When the data have been collected, the normality test was applied. In this research, the researcher used statistical computation by using *Statistical Package for Social Science* (SPSS) for normality test.

The hypotheses for normality test were formulated below:

H_o : the data are normally distributed

H_a : the data are not normally distributed

[20] Ag. Bambang Setiyadi, *Op.Cit.*, p.169

While the criteria acceptance or rejection of normality test were:

H_o is accepted if Sig (p_{value}) ≥ α = 0.05

H_a is accepted if Sig (p_{value}) < α = 0.05 [21]

b. Homogeneity Test

After the normality test, the researcher determined the homogeneity of the test. This test is intended to test whether the data obtained from the sample homogeneus or not. In this research, the researcher used statistical computation by using *Statistical Package for Social Science* (SPSS) for homogeneity of the test.

The hypotheses for the homogeneity test were formulated as follows:

H_o : The variance of the data is homogenous

H_a : The variance of the data is not homogenous

While the criteria acceptance or rejection of homogeneity test were:

H_o is accepted if Sig (p_{value}) ≥ α = 0.05

H_a is accepted if Sig (p_{value}) < α = 0.05 [22]

2. Hypothetical Test

The data of this research is statistically analyzed. The researcher used group pre-test post-test design where there were two groups (control and experimental), so the data of the research is statistically analyzed with independent sample test to compare the

[21] Margono, *Metodologi Penelitian Pendidikan* (Jakarta: PT Rineka Cipta, 2007), p. 194
[22] *Ibid.*

mean of two different data from different groups.[23] In this case, the researcher used statistical computation by using *Statistical Package for Social Science* (SPSS).

The hypotheses were :

H_a : There is a significant influence of using Hangman game towards students' vocabulary mastery at the second semester of the seventh grade of MTs N 2 Bandar Lampung in the academic year of 2016/2017.

H_o : There is no a significant influence of using Hangman game towards students' vocabulary mastery at the second semester of the seventh grade of MTs N 2 Bandar Lampung in the academic year of 2016/2017.

While the criteria of the hypothetical test were:

H_a is accepted if Sig (p_{value}) $\leq$ $\alpha = 0.05$

H_o is accepted if Sig (p_{value}) $> \alpha = 0.05$[24]

[23] Ag. Bambang Setiyadi, *Loc.Cit.*
[24] Margono, *Loc. Cit.*