CHAPTER III

RESEARCH METHOD

In this chapter, the researcher presents research design, population and sample, research variable, research instrument, validity and reliability testing, normality and homogeneity testing, data collecting method, and data analysis.

A. Research Design

In this study, the researcher used quantitative research approach. Quantitative research is methodology to study phenomena by collecting numeric data in the field, then analyze it by using statistic program. According to Perry (2005:75) quantitative mainly comes from psychology field and emphasis by statistic to make generalization from samples of populations.

In this study, the researcher used research design namely Quasi-Experimental design. The researcher took two groups or two classes and used pre-test and post-test to see the result of the treatment. This research method provided the students with pre-test, treatment, and post-test to find out the effectiveness of Semantic Feature Analysis on students' vocabulary acquisition. Since there is no random sampling, the sample in this research is considered as nonequivalent sample which consisted of experimental and control group (Jackson, 2008:323). The design of this research can be seen in the table 3.1 below:

Table 3.1: Two Groups Pre-test Post-test Design

Group	Pre-test	Independent Variable	Post-test
Experimental Class	Y1	X	Y2
Control Class	Y3	-	Y4

Explanation:

Y1:   Students' vocabulary score of experimental class (VIII B) on pre-

Test

Y3:   Students' vocabulary score of control class (VIII A) on pre-test

X: Using Semantic Feature Analysis for the treatment

- :   Not using Semantic Feature Analysis or using conventional

method

Y2:   Students' vocabulary score of experimental class (VIII B) on post-

test

Y4:   Students' vocabulary score of control class (VIII A) on post-test

Based on the table above, there are two groups. The first group is the experimental group, it receive a treatment (X), while the second group is the control group, and it will not receive the treatment. Both experimental and control group will receive pre-test to obtain the first data about students' vocabulary score before the treatment be given. The experimental group is given treatment by using Semantic Feature Analysis (X), while the control group is being taught without using Semantic Feature Analysis or using conventional teaching.

B. **Population and Sample**

1. **Population**

Population is entire subjects where data is collected. Seltman (2015) as cited in Dewi (2017:39) states that population as the entire set of actual or potential observational units. In other word, population is all subjects where the data will be gathered.

In this research, the population of data is all of eighth grade students of MTs Darul Huda in the academic year 2018/2019 which consisted of 98 students. They were divided into three classrooms. Class A, B, and C. It can be seen in the table 3.2 below:

Table 3.2: Population of Research

No.	Class	Gender	
		Male	Female
1.	VIII A	21 students	12 students
2.	VIII B	20 students	10 students
3.	VIII C	16 students	19 students
Total students		98 students	

2. **Sample**

According to Ary (2010:148), sample is the small group that is observed. In this study, the researcher used purposive sampling to take sample. According to Ary (2010:156), purposive sampling technique is a type of non-probability sampling where the researcher consciously selected subjects for addition in a study so as to make sure that the elements will have certain characteristics pertinent to study. In

purposive sampling, which also referred to as judgment sampling, sample elements judge to a typical or representative are chosen from the population. Perry (2005:57) also states that purposive sampling strategy is used to indicate that the sample is chosen to answer the research question as relevant as possible.

Therefore, by using purposive sampling, the researcher considered some suggestions from the English teacher who know well which sample is appropriate to be chosen. According to the English teacher of MTs Darul Huda, eight A and eight B class are recommended to be sample of population. The reason because those classes have the same ability in learning English.

Table 3.3: Research Sample

No.	Class	The Number of Students
1.	VIII A	33
2.	VIII B	30

C. Research Variables

1. Independent Variable

Independent variable is the one affecting another variable. In this research, teaching vocabulary by using Semantic Feature Analysis is an independent variable because it affects the students' vocabulary acquisition.

2. Dependent Variable

Dependent variable is the one affected by another variable. In this research, students' vocabulary acquisition is dependent variable.

D. Research Instrument

Research instrument refers to the instrument or tool to collect the data. To obtain the data, the researcher applied test as a research instrument. According to Ary (2010:210), test is a set of stimuli presented to an individual in order to elicit responses on the basis of which a numerical score can be assigned. In this study, the researcher conducted pre-test and post-test.

1. Pre-test

A pre-test provides a measure on some attributes or characteristics that is assessed for participants in an experiment before receiving a treatment (Creswell, 2008:301). In this study, the pre-test was administered before given treatment by using Semantic Feature Analysis. Pre-test was needed to know the basic competence and their prior knowledge. The researcher gave the test that consisted of 20 items in form of multiple choices.

2. Post-test

A post-test is a measure on some attributes or characteristics that is assessed for participants in an experiment after receiving a treatment (Creswell, 2008:301). Post-test was administered to know

the students' vocabulary acquisition between experimental group and control group. The test items of the post-test are exactly same with the pre-test. The researcher also gave the test that consisted of 20 items in form of multiple choices. Both of tests were vocabulary test as the level of students in their grade or level by considering with core competence and basic competence.

E. Validity and Reliability Testing

Validity and reliability of instrument are integral parts in conducting a study since the instrument which will be used must be valid and reliable before using it collect the data. In this research, the researcher ensured that the instrument (test) was valid and reliable by doing validity and reliability testing. The way to make valid and reliable, the instrument can be figure as the table 3.4below:

Table 3.4: Process in making valid and reliable instrument
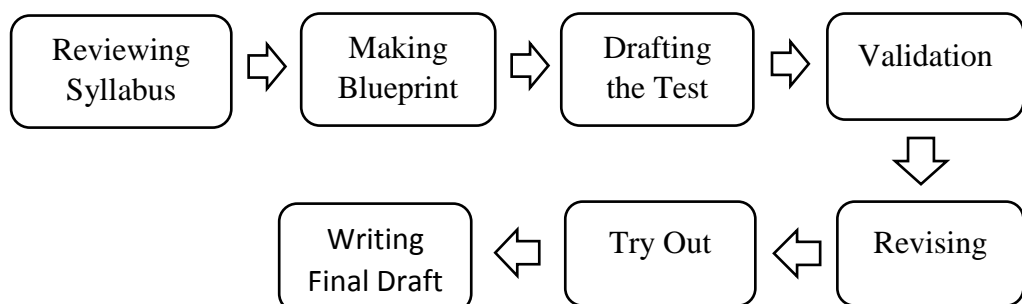
Based on the table 3.4, the first step to get validity and reliability of the instrument is the researcher reviewed the syllabus. Then, making blueprint to draft the test. The blueprint can be seen in the table 3.5 below:

Table 3.5: Blueprint

Construct	Dimension	Variable	Indicators		Item No.
Vocabulary can be defined roughly, such as the words we teach in a foreign language and it has some elements that need to be taught. Ur (1991)	1. Grammar: word classes	1.1 Noun 1.2 Verb 1.3 Adjective 1.4 Pronoun	1.1.1	The students are able to show the appropriate noun of a place, person, or thing.	7, 8, 19
			1.2.1	The students are able to show the appropriate verb to express an action.	4, 11, 15
			1.3.1	The students are able to show the appropriate adjective of comparison.	1, 3, 6, 9, 12
			1.4.1	The students are able to show the appropriate pronoun in a sentence.	13,17,20
	2.Meaning relationship	2.1 Antonym 2.2 Synonym	3.1.1	The students are able to show the opposite meaning of a word.	5, 10, 16,
			3.2.1	The students are able to show the same meaning of a word.	2, 14, 18

After drafting the test (pre-test and post-test), the researcher showed both of tests to expert validator to get feedback by considering with the validation guide. Then, the researcher revised the draft of the tests with the feedback given. Next, the researcher conducted the try-out to the test to students in different class as the sample to get feedback from students. The class is conducted in VIII C. Last, the researcher analyzed the result of Try-out test to get input or feedback. So, the researcher can get final draft to test as sample of population of this research.

1. Validity

   Validity is measuring what it is designed to be measured. In language testing, Brown (2004) states that validity as the extent to which inference made from assessment results are appropriate, meaningful, and useful in terms of the purpose of assessment. Before conducting the research, the researcher will make sure that the instrument had three kinds of validity as follows.

   a. Content Validity

   Content validity is correspondence between curriculum objectives and objectives being assessed. The instrument in this research achieve content validity if the test is designed based on core competence and basic competence. The

researcher will conduct consultation with the expert as the way to validate the test that has been set up.

Table 3.6: Content Validity

Core Competence	3.9 Menerapkan fungsi sosial, struktur teks, danunsur kebahasaan teks interaksi transaksionallisan dan tulis yang melibatkan tindakan memberi dan meminta informasi terkait perbandingan jumlah dan sifat orang, binatang, benda, sesuai dengan konteks penggunaannya. (Perhatikan unsur kebahasaan degree of comparison)
Basic Competence	4.9 Menyusun teks interaksi transaksional lisan dan tulis sangat pendek dan sederhana yang melibatkan tindakan memberi dan meminta informasi terkait perbandingan jumlah dan sifat orang, binatang, benda, dengan memperhatikan fungsi sosial, struktur teks, dan unsur kebahasaan yang benar dan sesuai konteks.

b. Construct Validity

Construct validity is validity which show how far tests are suitable with the theory that becomes a foundation on composing those tests. It can be concluded that construct validity is the theory that was used to construct the test should be match what will be tested. In this case, the test items should be appropriate to the vocabulary theory. In this study, the researcher found the theory of vocabulary and the materials which were suitable to the students' need.

c. Face Validity

A test is said to have face validity if it measures what is intended to be measured. According to Ary et al (2010:225), states that face validity refers to the extent which examines believe the instrument is measuring what it is supposed to measure. It could be grasped that the materials which was used to the instruments were appropriate to students' level. The researcher analyzed the students' level by consulting to the expert. The experts here were the advisor, the English teacher, and the material books of eighth grade level. Then, the items which were prepared were matched to Junior High School level, especially eighth grade level.

2. Reliability Testing

According to Ary (2010:237), reliability is concerned with the effect of errors of measurement on the consistency of scores. A test is said reliable if the test is consistent and dependable. It means that whenever the test is administered, it would show the similar or even the same result in any situation of test. In this study, the researcher used SPSS 16.0 for windows to know the reliability of test instrument. The researcher gave try-out to the students in other class in the same grade.

The criteria of reliability instrument can be divided into 5 classes as follow (Ridwan: 2004), those are:

1. If the *alpha cronbach* score 0.00 – 0.20: less reliable.

2. If the *alpha cronbach* score 0.21 – 0.40: rather reliable.

3. If the *alpha cronbach* score 0.41 – 0.60: enough reliable.

4. If the *alpha cronbach* score 0.61 – 0.80: reliable.

5. If the *alpha cronbach* score 0.81 – 1.00: very reliable.

The result of reliability testing by using SPSS 16.0 can be seen from the table:

Table 3.7: The result of reliability

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.850	20

Based on the output of Reliability Statistics from Cronbach's Alpha value $0.850 > 0.81$, it can be concluded that the instrument is reliable, where as a very reliable level of the criteria of reliability.

F. Normality and Homogeneity Testing

Before analyzing the significant difference on students' vocabulary acquisition were taught by using Semantic Feature Analysis and those taught by using conventional method, the data should be normal distribution and homogeneous. To measure the data computation were normal distribution and homogeneous, the researcher conducted normality testing and homogeneity testing. The result as follows:

1. **Normality Testing**

   Normality tests are used to determine whether a data set is well-modeled by a normal distribution or not, or to compute how likely an underlying random variable is to be normally distributed. To know the normality, the researcher used *SPSS 16.0 One-Sample Kolmogorov-Smirnov test* by the value of significance (α) = 0.05. The result can be seen in the table below:

Table 3.8: Normality Testing

One-Sample Kolmogorov-Smirnov Test

		Pretest	Posttest	Unstandardized Residual
N		30	30	30
Normal Parameters[a]	Mean	68.00	77.6667	.0000000
	Std. Deviation	9.879	1.09649	8.07378040
Most Extreme Differences	Absolute	.120	.184	.094
	Positive	.120	.118	.094
	Negative	-.114	-.184	-.078
Kolmogorov-Smirnov Z		.656	1.009	.513
Asymp. Sig. (2-tailed)		.783	.260	.955
a. Test distribution is Normal.				

a. H_0: Data is in normal distribution

b. H_1: Data is not in normal distribution

The standard significant of education is 0.05 (α = 5%). To determine data was normal distribution or not, it can be seen from the result of data normality testing. Based on the output from SPSS above is known that the significance value from pre-test was 0.656 and from post-test was 1.009 Both value from pre-test and post-test were bigger than 0.05.

The sig/p value on pre-test is 0.656 and it is bigger than 0.05 (0.656>0.05) it means that H_0 is accepted and H_1 is rejected. So, the data is in normal distribution. Then, for post-test score value of sig/p is 1.009 and that is bigger than 0.05 (1.009>0.05). It also means that H_0 is accepted and H_1 is rejected and the data is in normal distribution. Thus, it can be

interpreted that both of data (pre-test and post-test score) are in normal distribution.

2. Homogeneity Testing

Homogeneity testing is intended to make sure that the collected manipulation data in analysis truly taken from population which is too different each other. In other word, homogeneity testing is conducted to know whether the gained data has a homogeneous variance or not. To know the homogeneity, the researcher used *Test of Homogeneity of Variances* with SPSS 16.0 by the value of significance (α) = 0.05. The result can be seen in the table below:

Table 3.9: Homogeneity Testing

Test of Homogeneity of Variances

Pretest

Levene Statistic	df1	df2	Sig.
1.147	5	21	.367

a. H_0 : Data is homogeny

b. H_1: Data is not homogeny

The standard significant of education is 0.05 (α = 5%). Based on the output from SPSS above is known that the test called homogeny if the significant score more than 0.05. According to the table above,

the test is homogen because 0,367> 0.05 and it means that H_0 is accepted and H_1 is rejected. Thus, it can be concluded that students of VIII B has homogeny of variances.

G. Data Collecting Method

The data collecting method serves the way how the researcher get the data which is needed. To measure the effectiveness of Semantic Feature Analysis on students' vocabulary acquisition, the researcher uses instruments. The instruments are pre-test and post-test. The final score is calculated: <u>students' correct answer</u> x 100

the number of item

1. Pre-test

Pre-test is given to the students to know their vocabulary acquisition before being taught by using Semantic Feature Analysis. Pre-test has done on February, 25th 2019 at eight A as control class and it has done on February 27th 2019 at eight B as experimental class. In those days, the researcher asked the students to do the test. The form of pre-test is multiple choices which consist 20 items. The students answered the questions of pre-test is about 30 minutes. After finishing the test, the researcher calculated the score of pre-test. The aim of calculating is to know the result of pre-test before doing the treatment.

2. Treatment

After administering the pre-test, the researcher gave the students treatment. The treatment was conducted after the administration of the pre-test. The treatment consists of 3 meetings. The treatment in experimental class (VIII B) was taught by using Semantic Feature Analysis.

In the first meeting, the researcher introduced Semantic Feature Analysis to the students. Then, the researcher gave the students Semantic Feature Analysis grid or matrix. To make students easy to understand, the Semantic Feature Analysis grid includes on category selection that familiar to the students. In this case, the researcher used features or characteristics of mammals. In the grid's left column are words that relate to the concept. In its top row are features of the concept. The grid displays the features that are applicable to the words by using a plus sign (+) to indicate that the feature is present or a minus sign (-) to indicate that the feature is not present. For example, a bear is an example of a mammal. The features of a bear are marked by a plus sign if the bear has that feature or by a minus sign if a bear does not have that feature. Later, the students will continue by themselves.

In the second and third meeting, the researcher conducted the treatment that was the same as before, but in

different topic. Before teaching vocabulary by using Semantic Feature Analysis, the researcher reviewed the material about adjective, verb, noun, antonym, synonym, and pronoun to know students' prior knowledge. After that, the teacher gave Semantic Feature Analysis grid to the students. In this case, the researcher used the topic about games and transportation. The teacher guides students to identify the characteristics of category with plus (+) if the category has features and use minus (-) if the category is not typical of them based look on the matrix. Then, the students will use plus/minus (+/-) to indicate feature possession.

3. **Post-test**

Post-test is given to the students to investigate and measure the development their vocabulary acquisition after being taught by using Semantic Feature Analysis. Post-test has done on March, 18th 2019 at eight A as control class and it has done on March, 22nd 2019 at eight B as experimental class. The test item in post-test was different with the pre-test, but both of them had same indicators and the test was almost same in level of difficulties. This test is to measure students' vocabulary acquisition after treatment applied. The form of post-test was also multiple choices which consist of 20 items. It was given to

know the final score and the students' difference acquisition
before and after they got treatment.

Table 3.10: The Schedule of the Research

No.	Group	Date	Activity
1.	Try out class (VIII C)	Thursday, February 21st 2019	Try out the test
2.	Control class (VIII A)	Monday, February 25th 2019	Pre-test
3.	Experimental class (VIII B)	Wednesday, February 27th 2019	Pre-test and treatment 1
4.	Experimental class (VIII B)	Monday, March 4th 2019	Treatment 2
5.	Experimental class (VIII B)	Friday, March 8th 2019	Treatment 3
6.	Control class (VIII A)	Monday, March 18th 2019	Post-test
7.	Experimental class (VIII B)	Friday, March 22nd 2019	Post-test

H. Data Analysis

In this study, the researcher used quantitative data analysis. The
collected data were analyzed to know the effectiveness of Semantic
Feature Analysis on students' vocabulary acquisition. The researcher
divided the test result into two groups, they were the test result from the
experimental group and the test result of control group. The data were
obtained from post-test, both of experimental class and control class would
be analyzed statistically using *Independent-Sample T-Test* through SPSS
16.0 for windows. The researcher used t-test to know the significant value
was higher or smaller than 0.05.