

CHAPTER III

RESEARCH METHOD

In this chapter the researcher presents some points related to the method which is used in this study. It covers: (a) research design, population, sample, and sampling, (b) Subject of the study, (c) variable of the study, (d) research instruments, (e) validity and reliability testing, (f) normality and homogeneity testing, (g) data collecting method, and (h) Method of data analysis.

A. Research Design

Research design is a plan on how to collect and process the data which can be implemented to achieve the research objectives. Research design is important in conducting research. According to Porte (2010:64) research design is useful exercise for the critical leader for it will help us to clarify the appropriateness of the procedures carried out so far and out us in a better position to judge the suitability of any subsequent data analysis chosen. It means that the research design is the processes which are include planning and doing the research. In conducting this research, it needs plan of some steps that will take. The researcher has to follow the research design to reach the research successfully.

Considering the research problems and the purposes of the research, this Research conducted in quantitative approach. Since this research determine the relationship between one thing (an independent variable) and another thing (dependent variable) in population.

Quantitative research is research that is guided by a particular hypothesis, which is one of the goals of the research is to test the hypothesis that predetermined. Based on Ary *et al.* (2002:22), quantitative research uses objective measurement and statistical analysis or numeric data to understand and explain phenomena.

The researcher employed quantitative research through experimental design. Ary *et al.* (2002) states that this experimental study has three subdivisions including pre-experimental, quasi-experimental, and true- experimental. In the present research, the researcher decided to take pre-experimental research with one group which given pre-test and post-test. In other words, the researcher uses one class as a single group who get treatment and the group get pre-test and post-test to know the result of treatment. According to Ary (2010, 302), pre-experimental design does not have random assignment of the subjects to groups or other strategies to control extraneous variables. It means the researcher does not have an authority to choose the sample.

The steps of one group pre-test and post-test design can be seen on the diagram below:

Table 3.1
The Diagram One Group Pre-test and Post-test Design

Y1	X	Y1
Pre-test (Dependent variable)	Treatment (Independent variable)	Post-test (Dependent variable)

There are three stages in one group pretest-posttest design:

1. Pretest

The researcher administers a pre-test with purpose measuring vocabulary mastery of seventh grade students of MTs Al Ma'arif Tulungagung before being taught using Hyponymy technique. The pre-test is formulated as Y1. By using the test, the researcher gave twenty-five question in the form of multiple choice, about vocabulary especially in nouns, and adjectives.

2. Treatment

The experimental treatment is formulated as X. The treatment in this study is the students were treated to apply the experimental teaching vocabulary by using Hyponymy as the technique to the subject (student of seventh grade at MTs Al Ma'arif Tulungagung).

The teaching procedure as followed:

- In this teaching procedure there were two types technique that applied to the students. The first the student will be treated in group, and the second they will be treated individually.
- Teacher divided class into six groups, every group consist of 4-5 students.
- Teacher distributed a sheet of paper which had already listed of one topic around descriptive of people, animal, and thing to each student/group.
- Teacher gave times for 1-2 minutes for a round.

- The students wrote the known words related the topic, not look up unknown words.
- After set time, a students passed their paper to the next students/group who then tried to add words not already listed..
- This technique continuously till each student regained their original sheet of paper
- After that, the students asked to come forward and presented their result project
- The teacher stimulated to ask the students about the meaning each word and the student answered the teacher question, the other audience paid attention and gave participation.

3. Post test

After implementing those steps, the researcher administering a post-test that formulated as (Y2) with a purpose of measuring vocabulary mastery of seventh grade students at MTs Al Ma'arif Tulungagung after given a treatment. The ratio of those score was used to compare both the students' score of pre-test and post-test. The researcher wanted to know the effectiveness of using Hyponymy technique in teaching vocabulary by conducting the experimental research. The effectiveness of the technique was known after knowing the significant differences between the students who were taught before and after applying Hyponymy technique.

B. Subject of the Study

This part discuss the subject of the study include population, sample, and technique sampling that are used by the researcher.

a. Population

Population is defined by Seltman (2015:34) as the entire set of actual or potential observational units. In other word, population means all subjects where the data can be gathered. Population is normally taken to mean a collection of human that has some qualities and characteristics that are chosen to be studied. Supported by Creswell (2008:151) population is a group of individuals who have the same characteristics.

In this study, the target population is all the seventh grade students of MTs Al Ma'arif Tulungagung in academic year 2019/2020. The total number of seventh grade consist of 141 students. They are divided into four classes which are class A, class B, class C, and class D. The researcher is challenged to offer a new technique for students to ease them in learning English better, especially in vocabulary.

Table 3.2
Population of Research

No	Class	Gender	
		Male	Female
1	VII A	16	17
2	VII B	21	16
3	VII C	22	14
4	VII D	21	14
Total Students		141	

b. Sample

In order to study the population effectively, the researcher select the sample. Sample is a part that assumed to represent a population which has certain quality and characteristics. Seltman (2015:34) reviews sample as a subset of all of the possible experimental units of the population are actually selected for study. Further, the small group of subject where the data is taken can be defined as sample.

The sample of this study was VII-A class of MTs Al Ma'arif Tulungagung in academic year 2019/2020. The researcher decided to choose that class because the students include into active students and will good to give a treatment for them. The total number of the sample was 33 students.

c. Sampling

Sampling is a process selecting subjects from population. According to Gay (1992:123), sampling is the process of selecting a number of individuals for a studying such a way that the individuals represent the larger group is referred to as a population. Sampling can be defined as the technique of selecting the sample. There were some techniques that can be chosen to determine the sample. The researcher used purposive sampling technique. Purposive sampling technique is a type of non probability sampling where the researcher consciously selects subjects for addition in a study so as to make sure that the elements will have certain characteristics pertinent to the study. In

purposive sampling, which also referred to as judgment sampling, sample elements judge to a typical or representative are chosen from the population (Ary, 2010:156). The researcher only choose one class which can give sufficient information needed and the effectiveness of Hyponymy as a technique can be identified when it is implemented in teaching vocabulary.

C. Variable of the Study

A variable refers to a characteristic or attribute of an individual or an organization that can be measured or observed and that varies among the people or organization being studied (Creswell, 2009:50-51). On the other word, variable is the condition that a researcher manipulates, controls or observes in the study.

There were two main variables of this study; independent variable and dependent variable.

1. Independent variable

An Independent variables are those that (probably) cause, influence, or affect outcomes. They were also called treatment, manipulated or predictor variables. The independent variable in this study was Hyponymy technique in teaching vocabulary.

2. Dependent variable

Dependent variables were those that depend on the independent variables; they were the outcomes or results of the influence of the independent variables. Other names of dependent variables are

criterion, outcome, and effect variables. The dependent variable in this study was the students' vocabulary mastery.

D. Research Instruments

In collecting the data, the researcher needs instruments. Research instrument is a tool to collect a data. Instrument has significant function in conducting research. Therefore, the researcher should choose an instrument in the process of collecting data. The research instrument was applied by the researcher in this study was a test. According to Ary et al (2010:201) test is a set of stimuli presented to an individual in order to elicit responses on the basis of which a numerical can be assigned. Test which was conducted was aimed to measure the achievement of the students before and after being taught using Hyponymy technique.

In this case, the researcher gave the academic vocabulary test to collect the data or information. Vocabulary test as in Chapter 2 there were three languages testing in vocabulary such as multiple choices, completion, and gap-fill. In this present research the researcher prefer to apply multiple choice test. The reason of using multiple choice items is because there were undoubtedly the most commonly used types of item in objective test. This test provides the students with the various answer, however there is only one correct answer of each question.

In this present research the test was conducted twice, there were pre-test and post-test. The pre-test is used to see students' vocabulary achievement before treatment is given and the post-test is used to see

students' vocabulary achievement after given treatment. Both of the test have same content and difficulty. The questions consisted twenty five items in the form of multiple choice about descriptive text with the topic around Animal, People, and Things which should be done for about maximal 45 minute. The blueprint and specification of the test can be seen in *Appendix 1*.

. The scoring technique that applied in the pre-test and post-test were same. There was only one correct answer for each item. The researcher used Arikunto's formula. The ideal highest score is 100. The score of the test will be calculated by using the following formula:

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

In which: S : The score of the test

r : The total of the right answer

n : The total items.

Before the pre-test and post-test is tested on the sample, the test was tried out on 35 students of VIIB class to know the validity and reliability of the instrument. The students of VIIB class is not the class that is used as the sample of the research. The test is tried out on 21st February 2020.

The procedure to make an instrument as follows:

1. Reviewing literature from syllabus and text book in Junior High School to draft the instrument related to the material
2. Arranging the blueprint that interrelated to the syllabus and material

3. Arranging specification of the test that appropriate with the material
4. Consulting with the expert such as English Lecturer or teacher about draft to get some feedbacks, suggestion and validation guide
5. Conducting try out to the students of VII-B at MTs Al Ma'arif Tulungagung
6. Determining the validity and reliability of the test
7. Revising the draft of the instrument based on the feedback to get the final draft instrument.
8. Final product

E. Validity and Reliability Testing

Validity and reliability of instrument are integral part in conducting a research, since the instrument which will be used must be valid and reliable before using it to collect the data in this research. The researcher ensured that the instrument was valid and reliable by doing validity and reliability testing as follows:

1. Validity

Validity is measure appropriate what will be measured, and usually established through an in depth review instrument, including an examination of the instrument's items being tested. According to Ary *et al.* (2010:225) validity is the most important consideration in developing and evaluating measuring instrument. It means that validity is the most complex criterion of an effective test and the most important principle of language testing. According to Brown

(2000:388) there are three types of validation: content validity, construct validity, and face validity.

a. Content validity

Content validity is kind of validity which depends on careful analysis of the language being tested and particular test. According to Gay (1992:225), “validity is the degree which a test measures and intended content area”. Content validity is the test that if has a good content is looked from the content of test. Besides, the test is related to the curriculum which obtains in Indonesia that is K-13. The materials of the test were adapted by the researcher from the main competence and basic competence that taken from syllabus and based on course objective on the syllabus which is applied for seventh grade students’ level. Both of main competence and basic competence are presented in the table below:

Table 3.3
Main Competence and Basic Competence in Curriculum 2013

Main Competence	Basic Competence
3. Memahami pengetahuan (faktual, konseptual, dan prosedural) berdasarkan rasa ingin tahunya tentang ilmu pengetahuan, teknologi, seni, budaya terkait fenomena dan kejadian tampak mata.	3.7 Membandingkan fungsi sosial, struktur teks, dan unsur kebahasaan beberapa teks deskriptif lisan dan tulis dengan memberi dan meminta informasi terkait dengan deskripsi orang, binatang, dan benda sangat pendek dan sederhana, sesuai dengan konteks penggunaannya terkait dengan deskripsi orang, binatang, dan benda, sangat pendek dan sederhana, sesuai dengan konteks penggunaannya
4. Mencoba, mengolah, dan menyaji dalam ranah konkret (menggunakan, mengurai, merangkai, memodifikasi, dan membuat) dan ranah abstrak (menulis, membaca, menghitung, menggambar, dan mengarang) sesuai dengan yang dipelajari di sekolah dan sumber lain yang sama dalam sudut pandang/teori.	4.7.1 menangkap makna secara kontekstual terkait fungsi sosial, struktur teks, dan unsur kebahasaan teks deskriptif lisan dan tulis, sangat pendek dan sederhana, terkait orang, binatang, dan benda 4.7.2 menyusun teks deskriptif lisan dan tulis, sangat pendek dan sederhana, terkait orang, binatang, dan benda, dengan memperhatikan fungsi sosial, struktur teks, dan unsur kebahasaan, secara benar dan sesuai konteks.

Moreover, the basic competence mentions that the students are expected be able to composing descriptive text by concerning on the social function, text structure, and language features correctly according to its content. The researcher made a specification before making a test, especially in vocabulary testing. After knowing the standard competence, the researcher made indicator of the test based on the standard competence in syllabus. Therefore this test is valid in term of content validity. The content validity can be seen on the table as follows:

Table 3.4
Content Validity of Pre-test and Post-test

Competence Indicators	Type of Test	No of Test Items
1. Students are able to answer the missing word	Multiple Choice	8, 9, 10, 11, 12, 13, 14
2. Students are able to mention the meaning of word		6, 7, 15
3. Students are able to identify which one as synonym		1, 2, 3
4. Students are able to identify which one as antonym		4, 5
5. Students are able to translate the sentence		20, 22,
6. Students are able to arrange the jumbled words		21, 23,
7. Students are able to mention the part, quality and characteristics of animal, thing, and person		16, 17, 18, 19, 24, 25

From the table above can assume that the test has a content validity because there is appropriateness between the test and the indicator. It is appropriate with course objectives based on syllabus of the first grade of Junior high school.

b. Construct validity

According to Bachman and Palmer (1996:21) construct validity refers to the meaningfulness and appropriateness of the interpretations that we make on the basis of test score. While Heaton (1975:159) state that the construct validity was test which capable for measuring certain characteristic in accordance with a theory of language behavior and learning. Construct validity is used to determine how well a test measures what it is supposed to measure. It refers to whether a test measures the construct

adequately (every aspects in curriculum such as core competence, basic competence and indicator).

In this study, the researcher created the test based on vocabulary mastery theory. The material about descriptive text in the form of multiple-choices which was suitable to the students at the seventh grade of MTs Al Ma'arif Tulungagung. In the multiple-choice items the students answered the questions from the selection answer. The researcher constructed 25 instrument items. Because it will be eliminated after checking validity and reliability, the researcher gave extract 50% items question, so totally was 40 items. After the instrument was constructed, the test was tried out and then the researcher used SPSS 25.0 of Pearson Correlation to count the validity test per items are follows:

1. If the score of $r_{hitung} > r_{table}$ in score signification 5%, then the test items is valid
2. If the score of $r_{hitung} < r_{table}$ in score signification 5%, then the test items is invalid

The analysis of validity testing can be seen on item analysis in *Appendix 3*, by using SPSS 25.0 version for windows found that from the 40 questions of multiple choices which had been tried out, there were only 25 questions valid. The result of validity is presented in *Appendix 4*, and the result showed those 25 items

were valid and it is mean that test item can be tested on students of experimental group.

c. Face validity

Face validity refers to the extent to which the test instrument is measuring what it is supposed to measure. Its means the test should look clear or the instruction must be understandable for the students. To achieve face validity, the researcher analysed the students' level by consulting the instrument to the expert. The expert here were the advisor, English lecturer of IAIN Tulungagung and English Teacher of the seventh grade at MTs Al Ma'arif Tulungagung.

In this test, there are some aspects that are consideration from this test to make a good test based on the validity, they are:

- a. To check that the instructions must be clear and understandable for the students.
- b. The test is suitable with syllabus and their level.
- c. Time allocation must be given clearly.

2. Reliability

After checking the validity of instrument, the next step is checking the reliability. According to Gay (1992:161) "Reliability is the degree to which a test consistently measures whatever it measures". While Harrison in Johnson (2001) say that the reliability of a test is its consistency. Thus, reliability is a measure of accuracy, consistency,

dependability or fairness of scores resulting from administration of particular examination. Reliability is used to know whether the test is consistent and reliable. If the students are given the same test on two different occasion, the test should have similar results. It can be grasped reliability is an instrument can be trust and can be used as tool to get the data because the instrument is good. The reliable instrument will produce reliable result.

In this case the researcher used KR-20 Formula to measure the test to be reliable, most of them used this formula because not crucial and requires test administration only once Fraenkel and Wallen (2005:156). By using KR20 formula the researcher only takes once in trying out the instrument. This happened because of the test which was used to either pre-test or post-test was same.

The researcher used KR20 Formula by calculating the data by using Microsoft Excel. If the test item was correct is given one point and if the test item was incorrect is given zero point. It was appropriate to measure the reliability of the test in the form of multiple-choice test. (the items analysis is available in Appendix 3)

KR20 Formula

$$r_{11} = \left(\frac{n}{n-1} \right) \left(\frac{s_t^2 - s^2 \sum p_1 q_1}{s^2} \right)$$

Where

r_{11} = Reliability coefficient

n = Number of test items

s_t^2 = Standar deviation

p_1 = Proportion of passing the test item

q_1 = Proportion of failing the test item

$\sum p_1 q_1$ = sum of passing the test items times to failing the test item

After calculating the reliability of the test items the researcher classified the reliability coefficient which taken from according to Ridwan (2004:136), the criteria of reliability instrument can be divided into 5 classes, those are very reliable, reliable, enough reliable, rather reliable, and less reliable. The criteria of reliability can be showed as follow:

Table 3.6
Criteria of reliability

Interval coefficient	Correlation
0.81 – 1.00	Very reliable
0.61 – 0.80	Reliable
0.41 – 0.60	Quite reliable
0.21 – 0.40	Rather reliable
0.00 – 0.20	Less reliable

In Try out, the researcher asked students to answer the question in the test instrument. The result as follows:

$$\begin{aligned}
\Sigma Xs_t^2 &= \Sigma X_t^2 \left(\frac{\Sigma X_t}{N} \right)^2 \\
&= 7092 - \left(\frac{472}{35} \right)^2 \\
&= 7092 - 6365 \\
&= 727
\end{aligned}$$

Therefore, the standard deviation is:

$$\sqrt{s_t^2} = \sqrt{\frac{727}{35}} = 21$$

After finding the result of standard deviation, the reliability can be computed by using Kuder Richardson formula (KR-20)

Therefore, the reliability is

$$r_{11} = \left[\frac{n}{n-1} \right] \left[\frac{s_t^2 - \Sigma p_1 q_1}{s_t^2} \right]$$

$$r_{11} = \left[\frac{35}{35-1} \right] \left[\frac{21-5,27}{21} \right]$$

$$r_{11} = \left[\frac{35}{34} \right] \left[\frac{15,73}{21} \right]$$

$$r_{11} = [1,03][0,74]$$

$$r_{11} = 0,771$$

From the note above, the result shows that the test was reliable with the reliability coefficient 0.77 or 77%, it is mean the test item can be tested on students of experimental group.

F. Normality and Homogeneity Testing

1. Normality Testing

Normality Testing is needed to find out whether the data is in normal distribution or not. The data is assumed in a normal distribution if the significant value was higher than 0.05. Normality testing determined whether the data parametric or non-parametric test. Since the data was normal, T-test was chosen for the data analysis. In this research the data which is used to test the normality is pre-test and post-test score of experimental class. To measure the normality, the researcher used SPSS 25.0 One-Sample Kolmogorov-Smirnov Test with significance value (α) = 0.05. The ways to know the data is normal or not as follows:

- a) H_0 : If the significance value (α) > 0.05, the data has normal distribution
- b) H_1 : If the significance value (α) < 0.05, the data hasn't normal distribution.

When the analysis data distribution is normal, the next analysis is homogeneity testing. This formula would be applied in chapter 4.

2. Homogeneity Testing

Homogeneity testing is conducted to make sure whether the data has homogeneous or having the same variance or not. The data which is used to test the homogeneity is the pre-test and post-test score of experimental class. The homogeneity testing in this research using

statistic computation SPSS 25.0 that is test of *Homogeneity of Variances* by the value of significance (α)=0.05. The hypotheses of testing homogeneity as follow:

- a. H_0 : If the significance value (α) $>$ 0.05, means the data is homogeneous.
- b. H_1 : If the value of significance (α) $<$ 0.05, means the data is not homogeneous.

.Meanwhile, the data will be not homogeneous if the significant value is more less that 0.05 ($\alpha < 0.05$). In other word, if the data is not homogeneous, it would be heterogeneous data.

G. Data Collecting Method

Data collecting method is the way the researcher to collect the data. Fraenkel and Wallen (2009:293) state that Data collection is all process to collecting data in the research. While, data collection is done by observing a situation, setting or interaction using constructed instrument Muijs (2004:56). To find out the data, the researcher used the instrument that were pre-test and post-test in the form of written test which consisted of vocabulary test. The researcher collected the data from students' score of pre-test and post-test. The researcher gave students pre-test to know students' vocabulary mastery before teaching by using Hyponymy technique and gave post-test after teaching by Hyponymy technique. The procedure of collecting data in this research as follows:

1. Pre-test

Pre-test is given to students to know on the students' vocabulary mastery. It was conducted to know how far the students' score in vocabulary mastery of descriptive text before before being taught by using Hyponymy technique as the treatment in this study. The researcher administered pre-test to the students at first meeting on Wednesday, February 26th 2020. The researcher came to the class, and explained the material also told the students what they had to do. The researcher asked the students to answer the question includes 25 test items in the form of multiple choice question with the time allocation for 45 minutes.

2. Post-test

Post-test was given in the last meeting after the students get all treatment. The researcher gave post-test to investigate and measure their achievements in vocabulary mastery after being taught by using Hyponymy technique. The test type instruction was similar to the pre-test. This section, the students were asked to answer 25 questions and given 45 minutes to finish the post-test. Then the researcher compared the result of both pre-test and post-test. If there any difference score, it showed that treatment was successful and if there was no differences score, it showed that treatment was not successful. The students' pre-test score can be seen in *Appendix 8*. The post-test was administered on March, 11th 2020.

The schedule of researcher as follows:

Table 3.7
The Schedule of the Research

Meeting	Date	Activity
I	Wednesday, February 26th 2020	Pre-test
II	Tuesday, March 3 rd 2020	Treatment by Hyponymy technique
III	Wednesday, March 4 th 2020	
IV	Tuesday, March 10 th 2020	
V	Wednesday, March 11 th 2020	Post-test

H. Method of Data Analysis

Method of Data analysis is the process to evaluate the data by using analytical and logical reasoning to examine the data provided. After collecting the data of the students, the researcher will review the data. In this research the researcher use quantitative data analysis it means the result of data is served in numeral form. The researcher analysed data through comparing students' pre-test and post-test score. It was purposed to know whether there was significant improvement on students before and after being taught by Hyponymy Technique toward students' vocabulary mastery of the seventh grade students in MTs Al Ma'arif Tulungagung. If the result of post-test is higher than score of pre-test, it means that teaching vocabulary by Hyponymy technique is effective. To get the achievement of vocabulary mastery test, the researcher gave the student a test after got treatment by Hyponymy technique. All the data collected were accounted by using SPSS 25.0 for windows, in this case was Paired sample T-test.