

CHAPTER III

RESEARCH METHOD

This chapter covers the Research Design, Population and Sample/ Subject of The Study, Research Instrument, Validity and Reliability Testing, Normality and Homogeneity Testing, Data Collecting Method, Data Analysis.

A. Research Design

Educational research is typically classified into two broad categories: quantitative and qualitative research. Each approach has its own methodology and terminology. Quantitative research uses objective measurement to gather numeric data that are used to answer questions or test predetermined hypotheses. It generally requires a well-controlled setting. Qualitative research, in contrast, focuses on understanding social phenomena from the perspective of the human participants in natural settings. It does not begin with formal hypotheses, but it may result in hypotheses as the study unfolds (Ary *et al*, 2010: 22).

In this research, the writer use quantitative approach by using experimental research design. Ary *et al* (2010: 302) states that experimental designs may also be classified according to how well they provide control of the threats to internal validity: pre experimental, true experimental, and quasi experimental designs. Pre

experimental designs do not have random assignment of subjects to groups or other strategies to control extraneous variables. True experimental designs (also called randomized designs) use randomization and provide maximum control of extraneous variables. Quasi-experimental designs lack randomization but employ other strategies to provide some control over extraneous variables. Here, the writer uses pre experimental research design because only use one group for pre-test and post-test.

According to Ary *et al* (2010: 303), the pre experimental design usually involves three steps: (1) administering a pre-test measuring the dependent variable; (2) applying the experimental treatment X to the subjects; and (3) administering a post-test, again measuring the dependent variable. Differences attributed to application of the experimental treatment are then evaluated by comparing the pre-test and post-test scores. The design of this research can be summarized as follows:

Table 3.1 The Design of the One-Group Pretest-Posttest Design

Y ₁	X	Y ₂
Pre-test	Treatment	Post- test

From the table above, it can be explained that the procedures of conducting experimental research design in this study consist of pre-test (Y₁), treatment, and post-test (Y₂). At the first, the writer conduct pre-test to know how far the students' ability in mastery vocabulary before they receive a treatment with hand puppet. Then,

the writer gives a treatment using hand puppet to the students. The last, the writer conduct post-test to measure the students' vocabulary mastery after they receive a treatment using hand puppet.

B. Population and Sample/ Subject of The Study

1. Population

Ary *et al* (2010: 148) states that population is all members of any well-defined class of people, events, or objects. Besides, Creswell (2012:142) said that a population is a group of individuals who have the same characteristic. Based on explanation can conclude that A population is a group of individuals persons, objects, or items from which samples are taken for measurement for example a population of presidents or professors, books or students.

Based on the title of this study, the population of this research will be fourth grade students of MI Tarbiyatul Athfal Pulotondo. Total of population is about 24 students.

2. Sample

According to Webster (1985) a sample is a finite part of a statistical population whose properties are studied to gain information about the whole. When dealing with people, it can be defined as a set of respondents (people) selected from a

larger population for the purpose of a survey. Mine while Ary (2010: 163) states that sample is a person of a population. The writer takes the fourth grade students of MI Tarbiyatul Athfal Pulotondo in academic year 2015/2016 that consist of 24 students because in this grade the students have difficulty for teaching learning English especially in vocabulary, so the writer wants to help the students to solve the problem in teaching vocabulary with more enjoyable media that is hand puppet.

3. Sampling technique

Sampling is the way to select a sample. Besides, sampling is the process of selecting sample from a population that is going to be studied. For taking sample, the writer uses purposive sampling technique. Purposive sampling is a technique of selecting sample by using certain consideration (Sugiyono, 2014: 85). Moreover, Margono (2004: 128) states that selecting sample in purposive sampling is based on certain characteristics which supposed it is suitable with the characteristics of the population itself. In other word, selected sample is adjusted with the certain criteria and based on the purpose of the research.

4. Research Instrument

Research instrument is a tool for collecting data that should be valid and reliable. For getting the data about the students' achievement, the writer uses the instrument of test. According to Ary (2010:201) 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.

The instrument of the study in this research is tests.

1. Tests

The writer used test in her study as the instrument for collecting data. The tests were pre-test and post-test. The purpose of giving a pre-test was to know the students' ability in mastering English vocabularies before conducting this study. There were 15 multiple-choice questions and 10 checking questions to be tested. There were animals and things in the room. If the students Results of the pre-test were lower than the criterion that have been confirmed by Department of Education and culture. The writer had to change the words if the results of the pre-test were the same or higher than the criterion. She started to treat the students by using a hand puppet as vocabulary instruments.

5. Validity and Reliability Testing

1. Validity Test

Validity is an important thing in developing and evaluating measuring an instrument. Ary et.al (2010: 225) defines validity as the extent to which an instrument measured what it claimed to measure. In other words, validity can be defined as the instrument that measured what the writer wants to measure. In this research, the writer used content validity.

a) Content Validity

The test in this research includes in content validity, if the test relevant with the purpose with the content. In this research, the content of the test refer to KTSP.

In this research the content of the test is about spell and duplicate the sample word. This content suitable use to fourth grade of elementary school. The standard competence and basic competence of KTSP curriculum shows in the table follows:

Table 3.2 Standard and basic competence of KTSP

Standar Kompetensi	Kompetensi Dasar
Mengeja dan menyalin tulisan bahasa inggris sederhana.	Mengeja ujaran bahasa inggris sangat sederhana seara tepat dan berterima dengan tanda baa yang benar yang melibatkan kata, frasa, dan kalimat sederhana.

2. Reliability Test

Reliability also defined as the degree of the consistency with which an instrument measures whatever it is measuring (Ary *et al*, 2010: 236). Brown (2004: 20) states that a reliable test is consistent and dependable, if the students are given the same test on two different occasions, the test should yield similar results. It is necessary characteristic of any good test for it to be valid at all. Reliability of a test can be derived from reliability coefficient. The range of reliability coefficient is 0 – 1.

0 means not reliable, while 1 means perfectly reliable and the closer reliability coefficient to 1, the more reliable the test is.

In this research, the writers give the test to the some students in the class. The try out used to know the reliability. Here, the students consist of 10 students in that class who join in course. The reliability can be calculated by using Kuder Richardson formula (KR-20) adapted from Arikunto (2009:100). As follows:

KR-20 Formula

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

Where:

r_{11} = Reliability test

n = the sum of items

S_t^2 = standard deviation

p_1 = the subject proportion that answer the item correctly

q_1 = the subject proportion that answer the item wrongly

The writer asks the students to answer the questions in the try out.

Table the result as follow:

Table 3.3 The Preparatory to Compute the Standard Deviation

No	Name	X_t	X_t^2
1	TQ	16	256
2	TS	18	324
3	FR	25	625

4	HY	25	625
5	WN	15	225
6	BS	15	225
7	HM	22	484
8	RY	20	400
9	FI	25	625
10	SA	25	625
		$\Sigma X_t =$ 183	$\Sigma X_t = 4414$

$$S_t^2 = \frac{\Sigma x_t^2}{n}$$

To know ΣX_t^2 the formula below was used:

$$\Sigma X_t^2 = \Sigma X_t^2 - \left(\frac{\Sigma x_t^2}{n}\right)$$

$$= 4414 - \left(\frac{183}{10}\right)^2$$

$$= 4414 - 334.89$$

$$= 4079.11$$

Therefore, the standard deviation is

$$\sqrt{S_{t^2}} = \sqrt{\frac{4079.11}{10}}$$

$$= \sqrt{407.911} = 20.1968066783$$

After finding the result of standard deviation, the reliability can be computed using Kuder Richardson formula (KR-20). The table reliability by using KR-20 as follow:

Table 3.4 to Compute the Reliability by Using Kuder Richardson Formula

(KR-20)

Item	Np	p₁	Nq	q₁	p₁q₁
1	9	0.9	1	0.1	0.09
2	10	0	0	0	0
3	7	0,7	3	0,3	0,21
4	8	0.8	2	0.2	0.16
5	7	0.7	3	0.3	0.21
6	6	0.6	4	0.4	0.24
7	10	0	0	0	0
8	8	0.8	2	0.2	0.16
9	9	0.9	1	0.1	0.09
10	8	0.8	2	0.2	0.16
11	9	0.9	1	0.1	0.09
12	9	0,9	1	0,1	0,09
13	10	0	0	0	0
14	9	0.9	1	0.1	0.09
15	10	0	0	0	0
16	9	0.9	1	0.1	0.09
17	10	0	0	0	0
18	10	0	0	0	0
19	5	0,5	5	0,5	0,25
20	10	0	0	0	0
21	5	0.5	5	0.5	0.25

22	6	0.6	4	0.4	0.24
23	7	0.7	3	0.3	0.27
24	10	0	0	0	0
25	8	0.8	2	0.2	0.16
					$\Sigma p_1 q_1 = 2.85$

Therefore, the reliability is:

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

$$r_{11} = \left[\frac{25}{25-1} \right] \left[\frac{S_t^2 - \Sigma p_1 q_1}{s_t^2} \right]$$

$$= \left[\frac{25}{24} \right] \left[\frac{20.1968066783 - 2.85}{20.1968066783} \right]$$

$$= [1.0416666667] [0.8588885834]$$

$$= 0.8946756077$$

The result shows that the test was reliable with the reliability coefficient of 0.89 or 89%, it means that the reliability of test is high.

6. Normality

1. Normality Testing

Normality testing is conducted to know whether the gotten data is normal or not. Normal here means if the data has a normal distribution. To test the normality of the data, the writer uses the *One Sample Kolmogorov-Smirnov* test with the provision that if $Asymp\ Sig > 0.05$, the data were normality distributed. If the value is smaller

than 0.05, the data are not normal. If the value is higher than 0.05, the data are vividly normal. In this case, the writer uses SPSS (Statistical Product and Service Solution) 16.0 for windows.

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		24
Normal Parameters ^a	Mean	.0000000
	Std. Deviation	3.87873346
Most Extreme Absolute Differences	Positive	.107
	Negative	-.107
		.077
Kolmogorov-Smirnov Z		.524
Asymp. Sig. (2-tailed)		.946
a. Test distribution is Normal.		

Based on the output from SPSS 16.0 by using One-Sample Kolmogorov-Smirnov test above show that the subject is 24 students. Based on the output of the above, it was known that the significant value is 0.94. While, to fulfill the provision of normal distribution is if the significance value or probability > 0.05 . In fact, the result of normality testing is 0.05 ($0.946 > 0.05$). So, it can be concluded the data has been tested has normal distribution. Therefore t-test as one of parametric testing was chosen for the data analysis.

7. Data Collecting Method

Data collection method is the way that is used by the writer to collect the data. The aim of the data collecting is to get material that need by the writer. The technique of collecting data was summarized as follows:

a. Pre-Test

Pre-test is provided by the writer in an experimental study before the students receive a treatment. At the first meeting, the writer is going to give a pre-test to the students to know their score in vocabulary mastery. It also to know how far the students' ability in vocabulary.

The procedures of pre-test as follows:

- 1) The writer distributes the test to the students
- 2) The writer explain to the student how to work out the test
- 3) The student do the test in 30 minutes
- 4) The writer collects the test.

b. Treatment

After having pre-test, the writer gives the treatment to the students. The writer is going to apply the technique or treatment using Hand Puppet. The treatment will be conducted in two meetings.

The procedures of treatment as follows:

- 1) The writer asks the students about the topic.

- 2) The writer begins to introduce about hand puppet to the students.
- 3) The writer gives stimulation to the students by giving some vocabulary picture. Then, the students ask to guess and discuss together with the writer about the suitable meaning based on the picture.
- 4) In discussing the question, the writer tries use hand puppet as enjoyable way to guess the meaning of vocabulary.
- 5) The writer give a question again to the students and give chance for the students to answer the question by themselves without writer's guidance.

c. Post-test

Post-test is conducted after the treatments are done. Post-test is conducted to measure the students' ability after they receive a treatment. The score of post-test will be compared with score of pre-test. Then, the writer can find out the differences between before being taught by using hand puppet and after being taught by using hand puppet on the teaching vocabulary. The procedures of post-test as follows:

- 1) The writer distributes the test to the students
- 2) The writer explain to the student how to work out the test
- 3) The student do the test in 30 minutes
- 4) The writer collects the test.

8. Data Analysis

The data are obtained from this research will be in the form of scores and the data is going to analyze quantitatively by using statistical analysis. This technique will be used to find the significant difference on the students' vocabulary mastery using hand puppet.

The design of this research is an experimental research design by using dependent or correlated samples. It means that in applying this design, the writer is going to use the same group in different treatment. From this case, the writer is going to use t-test in analyzing data.