CHAPTER III
METHODOLOGY

This chapter will discuss the method that the researcher uses in conducting the study. It involves the research design, population and sample, data collection, and data analysis.

3.1 Research Design

Experimental research is the design of this study. Miller (1984:4) explained that experimental design is a process to collect the research data to know the effect of variable and the other variable. Quasi experimental research design is chosen for this study concerning with the purpose of the study. Latief (2010) states that quasi experiment is an empirical study to estimate the causal impact of an intervention on target population without random assignment. Quasi experimental research is the research which takes from two different classes in the same grades which has similarity. The purpose of this study is to examine the MALL (mobile-assisted language learning) based scientific approach to improve students' vocabulary for the eighth grade at Public Junior High School 4 Babat. This study uses quasi experiment to predict the cause and effect of the relationship between dependent and independent variable. The researcher uses quasi experiment because this design is more generally and the school does not allow the researcher to do randomization and do true experiment at Public Junior High School 4 Babat. It is because the classification of the class at Public Junior High School 4 Babat had been determined by the school. It means that the researcher cannot change the classification of the group. So that, the researcher does not have accesses to full control the target.

In this study, there are two variables. They are student's vocabulary enhancement as dependent variable, MALL (mobile-assisted language learning) based using scientific approach as independent variables. There will be two groups; those are experimental group which will be given the treatment by the teacher's

media that is “MALL (mobile-assisted language learning)” and scientific approach strategy and control group which will be given a treatment by using “scientific approach without MALL”. The researcher gives pre-test and post-test to collect the data in order to find out the result between the students of experimental group and control group in pre-test and post-test and also to see the effect of using MALL (mobile-assisted language learning) based scientific approach to improve students vocabulary for the eighth grade at Public Junior High School 4 Babat.

The design of the chart can be seen in figure below:

Group	**Pre-test**	**Treatment**	**Treatment Post-test**
Experimental	X	V	Y
Control	X	-	Y

Table (a) Quosi Experimental design

Where:

X: The Pre-test which is administered before the treatment

V: The Treatment

Y: Post-test which is administered after the treatment

In this case, the researcher will conduct with the two group from two classes. They are experimental group and control group. The researcher will give the same pre-test and post-test for two group. The experiment group will be given treatment by using MALL (Mobile assisted language learning) based scientific approach to improve students vocabulary but for the control group is without giving treatment. Before applying the research, researcher will give the same pre-test for both to know or to measure the student’s vocabulary ability before the treatment. Then the researcher will give treatment to the experimental for three time. After giving the treatment to the experimental group, post-test will be given to the experimental group

and control group then the result of pre-test and post-test will be analyzed to compare both the experimental group with treatment and control group without treatment by using t-test formula.

3.2 Population and Sample

3.2.1 Population

Population is whole of subject in the research. According to Jobson (1999:12), population is one group of individuals where each can be assigned a characteristic value. Population is all data that is targeted in the specified time and scope (Margono, 2005: 118). On the other hand, Ary et al (2010:148) said that a population is defined as all member of any well-defined class of people, event, or objects. The population of current study is consisting of all male and female students from public Junior High School 4 Babat who are in the eighth grade. There are 4 classes with 95 students as the total of subjects.

3.2.2 Sample

Sample is a part of population (Sugiono, 2009 in Hanglopo, 2013). According to Lehman and Perry (2005:55) a sample is the source from which data are drawn to answer the research question and to test any hypothesis that might to make. In this research the technique is cluster sampling. Ary (1990), argued that cluster sampling is choosing a group already together not an individual. The researcher uses technique of cluster sampling because the school has been determining the classification of the class. In the eighth grade of public Junior High School 4 Babat, the number of student is 24 students of 8A as an experiment group and 24 students of 8B as a control group so the total number of group is 48 students, they are male and female students as the participant.

The sample choose by English teacher at SMPN 4 Babat. The teacher choose that sample because the students more calm.

3.3 Data Collection

3.3.1 Instrument

Research instrument is an important role in doing the research. In this study, the researcher uses tests as an instrument. The instrument is vocabulary test that adopt from Teresa López-Mezquita Molina Granada (2005) and Meara (1996). It is very important to measure the validity of the test to make sure that the tests are valid. Research instrument is a tool, which is used by the researcher to collect the data. The instrument is created whether the research success or not.

3.3.2 Test

There are the two test in this study, they are pre-test and post-test. Pre-test will be given to the students before the treatment. It is to gain the data of the student's entry in mastering writing ability. Besides, the post-test will be given to the students after giving the treatment. The test checks the content validity. The content of item is adopted from Teresa López-Mezquita Molina Granada (2005) and Meara (1996). There are 20 questions for active vocabulary and 20 question for passive vocabulary.

3.3.2.1 Pre-test

The pre-test will be given before gives treatment to the students. It is form vocabulary test to measure student's vocabulary enhancement. The researcher asks the students to choose the best answer from every questions. From the result of the pre-test, the researcher will get the student's vocabulary skill.

3.3.2.2 Post-test

Posttest is to find out whether the students make progress in their vocabulary in reading skill or not. Post-test will be given after the students get the treatment which is MALL (mobile-assisted language learning) based scientific approach for experimental group and scientific approach for control group.

3.3.3 Validity

The instrument test for pretest and post test was valid because the researcher adopted the instrument for previos study. The content of item is adopted from the Teresa López-Mezquita Molina Granada (2005) about active vocabulary and Meara (1996) the instrument about passive vocabulary.

3.4 The Procedure of Collecting the Data

The researcher uses the procedures to collect the data: the first step is the researcher makes English vocabulary test for pre-test and post-test the test adopted the Teresa López-Mezquita Molina Granada (2005) about active vocabulary and Meara (1996) the instrument about passive vocabulary.The second step is the researcher divides the subjects into two groups, they are experimental group and control group. The third step is the researcher gives the treatment toward the experimental group with using MALL (mobile-assisted language learning) based scientific approach as the strategy while in the control group the teacher gives treatment by using traditional method. The treatment will be implemented for four meetings. In the first and second meeting the researcher will give the topic about "Giving and Responding to Instructions and Prohibition", the third and fourth meetings the researcher will give the topic about "invitation" and in every meeting, the researcher will give the evaluation. In the evaluation process, the researcher will talk to discuss with the English teacher about the meeting. After that, the researcher gives the post-test for experimental group and control group. The next step is analyzing the data from pre-test and post-test by using SPSS 16.00 version.

The description of procedure implementation is as follow:

Stage	MALL (Mobile assisted language learning) based Scientific Approach	Scientific Approach
Introduction	➢ The teacher explained the use of MALL (Mobile assisted language learning) based Scientific Approach ➢ Pre test	➢ The teacher gave explanation the purpose of she come to their class ➢ Pre test
Learning material	➢ The researcher gave videos were introduce to the students about the material. They consisted of 1. Invitation 2. Giving and responding to instructions 3. Giving and responding to prohibition 4. Greeting card	➢ The researcher gave videos were introduce to the students about the material. They consisted of 1. Invitation 2. Giving and responding to prohibition 3. Giving and responding to prohibition 4. Greeting card
Implementation (Week 1-4)	Out class (MALL) : Observing ➢ Each week a day before the meeting the teacher sent the video about the material in the WA group ➢ The students were listening and watching the video ➢ The students understood the video Questioning ➢ The teacher gave opportunity to the students to discuss and ask questions about the video. ➢ The teacher gave 3 kind of questions There were : synonyms,	Out class : - In class : Observing ➢ Each week in the class the teacher showed the video about the material ➢ The student listening and watching the video ➢ The students understood the video Questioning ➢ The teacher gave opportunity to the students to discuss and ask questions about the video. ➢ The teacher gave 3 kind of questions There were : synonyms,

	antonyms and fill in the blank questions Experimenting ➢ The students answered the questions and submit their individual task to the teacher through WhatsApp ➢ The teacher corrected the task In class: Associating ➢ The teacher and the students discussed about the answer of questions Communicating ➢ The teacher gave feedback to the students by asking they to interpret, read, pronounce and write the vocabulary task in from of the class	antonyms and fill in the blank questions Experimenting ➢ The students answered the questions and submit their task Associating ➢ The teacher and the students discussed about the answer of questions Communicating ➢ The teacher gave feedback to the students by asking they to interpret, read, pronounce and write the vocabulary task in from of the class
Assessment	Post test	Post test

Table (b) the procedure of implementation

3.5 Scoring Guide

No	Aspect	Indicator	Score
1	Interpret vocabulary	Students can interpret the vocabulary well	20
		Students have not been able to interpret the vocabulary well	10
2	Read vocabulary	Students can read the vocabulary well	20
		Students have not been able to read the vocabulary well	10
3	Pronounce vocabulary	Students can pronounce the vocabulary well	20
		Students have not been able to pronounce the vocabulary well	10
4	Write vocabulary	Students can write the vocabulary well	20
		Students have not been able to write the vocabulary well	10
5	Use vocabulary in learning	Students can use vocabulary in learning	20
		Students have not been able to use vocabulary in learning	10

Table (c) Scoring rubric

3.6 Data Analysis

After collecting the data, the researcher will analyze the data. Analyzing the data is very important in a research because it is answer the research problem which is taken from pre-test and post-test. The researcher analyzes the data using SPSS

program which is independent sample t-test. Moreover, the samples are small and the groups are independent, t-test for independent samples is carried out to determine whether there is any significant effect between experimental and control group. The assumption for independent t-test where: (1) Independence: observations within each sample must be independent, (2) Normal Distribution: the two population must be normally distributed. This study is included in parametric research which divides into two kinds of the data; ration and interval. The data of this study is ratio because zero has value or absolute zero. Ratio data is defining homogeny and normal distribution. The last, (3) Homogeneity of Variance: the two populations must have equal variance.

3.6.1 Normality Distribution Test

To analyze to normal distribution, this study uses Kolmogorov Smirnov Sample Test in SPSS version 16.0. It is aim to find whether or not the distributions of pre-test score in two groups are normally distributed. In this case, the result of the normality distribution is also used to find out whether or not the hypothesis that has determined is accepted. The first step in calculating the normality distribution test state that the hypothesis: H0: the score of experimental and control group are normally distributed.

The second step is calculating the normality distribution test tried to compare the Sig. with the level of significance for testing the hypothesis. If the Sig, is more than level significance (0, 05) the null hypothesis is accepted; the score normally distributed. On the other hand, if the sig. is less than the level of significance (0, 05) the null hypothesis is rejected.

3.6.2 Homogeneity Test of Variance

Homogeneity test of variance uses to know whether two groups are in the same position. For homogeneity test, the researcher uses one Levine's test of homogeneity test in SPSS 16.0 version. The purpose of this test is to analyze the variances of the observation in Experimental and Control Group are equal. Because

the researcher cannot random the students, so homogeneity test is necessary to make sure the students in both of the class have the same ability in writing or not and the researcher can conduct the treatment. The test of Levene's test or Pvalue defined as follow (Brown: 1974):

$$W = \frac{(N-k)}{(k-1)} \cdot \frac{\sum_{i=1}^{k} N_i (Z_{i\cdot} - Z_{\cdot\cdot})^2}{\sum_{i=1}^{k} \sum_{j-1}^{N_i} (Z_{ij} - Z_{i\cdot})^2},$$

The symbol defined as follow:

W: the result of the test

K: the number of different of different groups which the sample belong

N: the total number of sample in all groups

Ni: the number of sample i group

Yij : the value of the sample the case from its group

$$Z_{ij} = \begin{cases} |Y_{ij} - \bar{Y}_{i\cdot}|, & \bar{Y}_{i\cdot} \text{ is a mear of the } i\text{-th group,} \\ |Y_{ij} - \tilde{Y}_{i\cdot}|, & \tilde{Y}_{i\cdot} \text{ is a median of the } i\text{-th group.} \end{cases}$$

The significance of W is tested against F (α,k – 1 , N – k) where F is a quintile of the test distribution, with k – 1 and N – k it is degrees of freedom, and α is the chosen level of significance (0,05). To analyze the homogeneity, the researcher uses SPSS 16.0 version. The homogeneity will be checked in SPSS by Lavene's test with the following procedure. The first step is inserting the pre-test score of both groups using data view. The second is going to the analyze menu, selecting compare means and the choosing independent simple t-test. The last procedure is interpreting the homogeneity test output, the researcher looks (sig.) at the Levene's test columns to know whether the quality of variance in group of scores was homogeneity or not. If the sig. > α (0, 05), two populations of variance were homogenous or equal but if sig. < α (0, 05) two populations of variance were not homogenous or not equal.

3.6.3 Hypothesis Testing

Independent t-test is used to find out the significant difference of MALL (mobile-assisted language learning) based scientific approach to improve students' vocabulary between experimental and control group. The steps of t-test calculation are: First, test the hypothesis of the research and the setting α (alpha) level at 0, 05 (two tailed test), the hypothesis in this research could be formulated as follow:

H0: There is no significant difference of using of MALL (mobile-assisted language learning) in student's vocabulary enhancement between experimental and control group.

H1: There is significance difference of using of MALL (mobile-assisted language learning) based scientific approach to improve students' vocabulary between experimental and control group.

The second step is finding t-value using Independent sample t-test and comparing the probability with the level of significance for testing the hypothesis. After the scores computed in SPSS 16.0 version, then to see the output of Independent sample t-test and interpret the output that if sig. (2-tailed) > α (0,05), the researcher should accept the H0, but if sig. (2-tailed) < α (0,05), the researcher can be rejected the H0, it means H1 is accepted.

In calculating t-test, the researcher uses SPSS 16.0 version. The first steps, the reseacher input the data of post-test in SPSS program between experimental and control group, then click Analyze then Compare Mean then Independent Sample T-Test. In Independent Sample T-Test, input the score variable into Test Variable column, and group Variable Grouping Variable column, then clicks Define Group, Choose group 1 (for experimental) and group 2 (for control), then click OK.