

CHAPTER III

METHODOLOGY

This chapter presents research methodology applied in this study. It encompasses research design, hypothesis, population and sample, data collection, and data analysis.

3.1 Research Design

Relevant to the aims of this study, this study is quantitative research which reveals the findings through numbers.

The first method was quasi-experimental design. A quasi-experiment happens if “the researcher does not have power to randomly assigned subjects to groups” (Wiersma & Jurs, 2009, p.165). It often happens in educational research when the researcher will conduct a study to a population. The researcher is unable to choose the sample as his/her please. In this situation, the researcher does not know whether the two groups of sample have similar characteristics. To ensure that, the researcher will conduct pre-test to those groups (Lodico, Spaulding & Voegtle, 2010). Because of that, the type of this quasi-experimental design is pre-test post-test non-equivalent design.

The quasi-experimental design in educational research is represented as:

Groups	Pretest	Treatment	Posttest
Experimental group	T ₁ E	X ₁	T ₂ E
Control group	T ₁ C	X ₂	T ₂ C

In which:

T₁E : The pretest for experimental group

T₂E : The posttest for experimental group

X₁ : The treatments of keeping vocabulary notebook

X₂ : No treatments of keeping vocabulary notebook (conventional method: grammar translation method)

T₁C : The pretest for control group

T₂C : The posttest for control group

Two classes were taken as the investigated classes. One class was the experimental group that was received treatments in teaching vocabulary by keeping vocabulary notebooks by their own, while another class was the control group that did not received keeping vocabulary treatments, instead they learn vocabulary with traditional.

On the other hand, questionnaire was used as instrument to find out young EFL learners' responses toward keeping vocabulary notebook. The findings were analyzed quantitatively by using percentage.

3.2 Hypothesis

Hypothesis is “a tentative statement about the outcome of the research”, (Hatch and Farhady, 1982, p.3). To investigate if keeping vocabulary journal increase young EFL vocabulary mastery, this study states the hypothesis based on assumption.

The hypothesis will be stated:

Null hypothesis: $H_0: \mu_1 = \mu_2$

Alternative hypothesis: $H_A: \mu_1 \neq \mu_2$

The null hypothesis (H_0) in this study is that there is no different significance score between experimental group who keeps vocabulary notebook treatment and control group who receives grammar translation method. Meanwhile, the alternative hypothesis (H_A) in this study is that there is different significance scores between experimental group who received vocabulary notebook treatment and control group who receives grammar translation method.

Out of two hypotheses above, this study will apply null hypothesis. The null hypothesis was chosen because there is no specific research which discusses keeping vocabulary notebook in increasing young learners' vocabulary mastery in Indonesian setting.

On the other hand, by using null hypothesis, every possibility of the findings will be shown. The hypothesis will be accepted if the experiment does not work. Meanwhile, the hypotheses will be rejected if the experiment works. Besides, this study is expected to reject the null hypothesis.

3.3 Population and Sample

Population refers to “the group to whom the writer would like to generalize the result of study, (Franekel & Wallen, 1990, p.68)”. The population in the research was five grade students of public elementary school in Majalengka. However, due to the limited time the population was narrowed into five grade students of public elementary school of Dawuan district in Majalengka. The five grade students were chosen based on the availability of the class that was allowed to conduct the research in by the school procedures at that time.

Moreover, the population was narrowed into sample. According to Franekel & Wallen (1990, p.67), sample refers to the group of population where the data obtained in which the sample data represent the data of population. The sample of this study was two classes of the five grade students of public elementary school in Dawuan, Majalengka.

There were two classes employed as the sample of the research. First was class 5A that consists of 33 students, while, the second was class 5B that consists of 34 students. Moreover, the sample was divided into two groups by throwing a coin. The first class that will be a control group is 5A, while the second class that will be the experimental group is 5B. It means that 5A was a control group that did not receive any treatments, while 5B was an experimental group that was given some treatments. In the beginning, any treatment of keeping vocabulary notebook was not given yet to the sample. Therefore, this study involved 50 students out of 67 students from population because according to Arikunto (2002),

from the population, the researcher can take the sample 10-15% or 20-25 %, or more.

On the other hand, in terms of class characteristics, both of classes have the same character in attentiveness. They are both attentive in different way. 5A is attentive and excited in noisy way, while 5B is attentive and excited in calming way. It happened because the students in 5A are dominated by boys, while students of 5B are dominated by girls. Further than that, both of classes were compromised and took participation actively in learning at classroom.

3.4 Data Collection

In collecting data, the researcher was through some steps such as preparing and organizing research instruments and conducting the experiment.

3.4.1 Research Instruments

In answering the research questions, the researcher needs some research instruments. According to Parahoo (1997, p.52, p.325), a research instrument is “a tool used to collect data. An instrument is a tool designed to measure knowledge attitude and skills.” Various instruments such as pre-test and post-test were used to measure the students’ progress in learning English by using vocabulary notebooks. Moreover, questionnaire was used in investigating students’ responses after learning English by keeping vocabulary notebooks.


3.4.1.1 Pre-test


Pre-test was conducted in the first meeting of the whole six meeting in collecting data. Thirty items of vocabularies that were going to be appeared in four meeting of teaching and learning were given to the students in both control and experimental group to measure students’ prior knowledge before they receive the treatments. As Creswell (2012) noted that pre-test provides a measure on some attributes or characteristics that researcher assess for participants in an experiment

before they receive the treatments, (p.297). The pre-test was conducted in 60 minutes.


These are some questions of pre-test:


Look and Match!

1.  a. **Ten thirty-five**


2.  b. **Twelve forty**

Cross (X) a, b, c, or d!

3.  a. Wake up
b. Cry
c. Stand
d. Sit

4.  a. Play
b. Take a bath
c. Have a breakfast
d. Pray

Arrange the jumble words below!

5.  **T-O-O-T-C-H-A-H-E**


6. **B-L-A-C-K-R-O-A-D-B**


3.4.1.2 Post-test

After conducting four meetings to deliver the lesson of some English vocabulary, post-test was conducted in the six meeting in control and experimental group. Creswell (2012) stated that after the treatment, the researcher could take another reading on the attribute or characteristic, and post test is a measure on some attributes or characteristics that is assessed for participants in an experiment after a treatment (p.297). The post-test was consisted of 30 items of vocabulary that had been given in the meetings. It was given to both control and experimental group in 60 minutes of the last meeting. Unlike pre-test, the purpose of conducting post-test was to know the improvement of students' vocabulary before and after meetings. Besides, post-test was a tool to know the difference of control and experimental group's score with and without treatment.

These are some questions of the post-test:

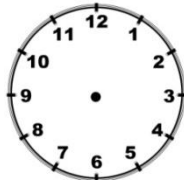
Cross a, b, c, or d.

1.  a. It is eight thirty.
b. It is eight thirteen.
c. It is seven thirty.
d. It is seven thirteen.


2.  a. Pep wakes up in the night.
b. Pep lies on the bed.
c. Pep sleeps on the night.
d. Pep makes the bed.


Draw the clock based on the following sentences.

3. Dona reads book at four o'clock.



Match the pictures with the sentence!

4.  Panji has a fever.





5.  Rangga has a flu.




Fill the blank space with the words in the box.



- | | | |
|----------|----------|---------------|
| a. globe | d. bag | g. eraser |
| b. chair | e. ruler | h. table |
| c. chalk | f. book | i. blackboard |

My Classroom

My name is Lina. I am a fifth grade student of elementary school. I like study in my classroom with my friends.

My classroom has a  (22) in front of classroom.  (23),  (24), and  (25) are hanging on the wall beside blackboard.

There is a  (26) and some  (27) on the teacher's  (28).

Students'  (29) are hanging on the  (30).

My classroom is clear and neat. I really enjoy study in this classroom with my teacher and friends

3.4.1.3 Questionnaire

According to Arikunto (2006), a questionnaire is a written test used to gain the information from the respondent. There are two types of questionnaire, namely open and closed questionnaire. In open questionnaire, the respondents have a freedom to answer the questions based on their own word of opinions. In closed questionnaire, a number of possible answers of questions are provided by the researcher, so that the respondents only choose one of them. The advantage of using questionnaire is that the test can be given to a large of people at the same time. While the disadvantages are the unclear or ambiguous questionnaire cannot be clarified, and the respondents have no chance to expand or react verbally to particular questions (Conoley and Kramer, 1989). The closed questionnaire was

used in order to provide consistency. According to Sudjana (1990, p.68) a close questionnaire provides respondents with alternative answer.

Moreover, the questionnaire was conducted by using Likert scale. Sugiyono (2009, p.93 – p.96) noted that Likert scale is used to measure someone or group of people attitudes, opinions, and their perceptions related to social phenomenon. The research also used the percentile formula to analyze the questionnaire data. Then the data were interpreted based on the frequency of students' answer. Based on Hatch and Farhady (1982, p.46), the percentile formula is formulated as follows:

$$P = 100 \times \frac{F}{N}$$

P = Percentile

F = frequency of students' answer

N = Respondent

On the other hand, the questionnaire was given to experimental group only in which receiving the treatment of keeping vocabulary notebooks. This questionnaire was supposed to reveal the students' responses about keeping vocabulary notebooks in increasing their vocabulary mastery. Moreover, the questionnaire also dug out their response in terms of students' motivation to learn by keeping vocabulary notebooks.

3.4.2 Research Procedures

There were some steps conducted in collecting data:

3.4.2.1 Preparing lesson plans

There were 8 lesson plans for four meetings. Four lesson plans were for experimental group that consisted of treatment of keeping vocabulary notebook.

Meanwhile, the other four lesson plans were for control group that were not consisted of the treatment of keeping vocabulary notebook.

Basically, the lesson plans for control or experimental group consisted of the same topic, vocabulary given, method, technique, and material. The only different was in the learning activities in which there was activity of keeping vocabulary notebook in experimental group, while in control group there was no such activity.

Moreover, the lesson plan covered four topics in four meeting, they are 'My classroom, What time is it?, My daily activities, and Disease'. The detail of lesson plans can be seen in appendix b.

Moreover, the technique in delivering vocabulary lesson in the lesson plan of this study was based on Fisher and Frey's (2008) guideline about some steps in and learning vocabulary through vocabulary notebook in young learners classroom, they are:

1. Explicit instruction and modelling of how to use the term by the teacher . The teacher introduce the new words through telling a story, showing a puppet and telling the puppet story, or singing a song.
2. Guided instruction by the teacher along with students' participation. Teacher invites students to sing along together, follow the gestures of the teacher, repeat the teacher's pronunciation, etc.
3. Collaboration between students. The teacher invite the students to play vocabulary game together, or make a sentence of each words in a group.
4. Independent practice. The teacher gives the students worksheet or homework to test their understanding of the lesson, or ask them to write the vocabulary given to their own vocabulary notebook.

The detail teaching program and its technique, can be seen in lesson plan of this study in appendix b.

3.4.2.2 Choosing groups

Group of control and experimental were chosen based on flipping coins without knowing students' ability beforehand. It was done in order to make the research as fair as possible. Besides, it was expected to avoid the researcher to take a bias of one between the two groups.

3.4.2.3 Administering try out test

A try out test was given out to 25 participants out of the population of this study. They have been chosen based on the teacher's recommendation of the school that the students have the similar ability which can be considered as the same level of English proficiency as the students in control and experimental group.

On the other hand, according to Arikunto (2002), try out was employed to reveal the difficulty index, validity, and reliability of the test items for pre-test and post-test. Sixty four multiple choices questions were given to measure students' initial vocabulary mastery.

3.4.2.4 Administering pre-test

Pre-test was conducting as soon as acquiring the valid and reliable questions from try-out test. Pre-test was held in two group of experimental and control group consisting of 50 students in total. Students of both groups were asked to answer 30 questions about vocabulary in 60 minutes meeting. After that, the score of experimental and control group were analyzed.

3.4.2.5 Carrying out treatment

Following the pre-test, the treatment of keeping vocabulary notebook as a media in teaching vocabulary was conducted. “In an experiment, the researcher physically manipulates with interventions in one or more conditions so that individuals experience something different in the experimental conditions than in the control conditions” (Creswell, 2012, p.301). In the research, the researcher acted as a teacher and also a facilitator of the teaching and learning.

The treatment was given in every meeting of four meeting to the experimental group only. Moreover, before the day of the treatment hold, the students were asked to make their own vocabulary notebooks at home. After that, in every meeting, the students were asked to fill it by writing and drawing the vocabulary given in the lesson, and also making the sentence of each word. The process of keeping vocabulary notebook that consisted of not only writing down the words and meanings, but also drawing pictures and making sentences is expected that vocabulary they had learned were stored in long term memory. It is in accordance with Schmitt and Schmitt (1995) stated that “the deeper the mental processing used when learning a word, the more likely that a student will remember it”.

The following table is the teaching programs of experimental group during the research.

Table 3.1
Teaching program of Eksperimental group

Date	Activity	Topic	Treatment
November 15th, 2013	Pre-test	-	-
November 16th, 2013	Teaching and learning	My classroom	Keeping vocabulary notebook (see appendix b)
November 23th, 2013	Teaching and learning	What time is it?	Keeping vocabulary notebook (see appendix b)
November 30th, 2013	Teaching and learning	My daily activities	Keeping vocabulary notebook (see appendix b)
December 6th, 2013	Teaching and learning	Disease	Keeping vocabulary notebook (see appendix b)
December 7th 2013	Post-test	-	-

The following is a format of vocabulary notebooks given:

WORD
PICTURE
SENTENCE

The following picture is the example of student's vocabulary notebook.



Moreover, while the experimental group conducted the treatment, the control group did not receive keeping vocabulary notebook treatment. Instead, they learned English vocabulary by conventional teaching and learning method which is grammar translation method. In the grammar translation method, vocabulary is presented mainly through direct translation from the native language and memorization, using bilingual word list (Shejbalová, 2006, p.5). In other words, the conventional method used in this study that applied to the control group was that students in control group took notes of the teacher's explanation of vocabularies given including the word definition and sentence examples in the first language in their own notebook instead of organizing the vocabularies given in the vocabulary notebook. Despite of that, the control group still got the same curriculum as experimental group. They were exposed to the same lessons, learning materials, teaching approaches and techniques, and also the target vocabulary they have to know as the experimental group. The difference was only they did not get vocabulary notebooks as teaching and learning media.

The following table is the teaching program of control group.

Table 3.2
Teaching program of control group

Date	Activity	Topic	Treatment
November 15th, 2013	Pre-test	-	-
November 16th, 2013	Teaching and learning	My classroom	Grammar translation method
November 23th, 2013	Teaching and learning	What time is it?	Grammar translation method
November 30th, 2013	Teaching and learning	My daily activities	Grammar translation method
December 6th, 2013	Teaching and learning	Disease	Grammar translation method
December 7th 2013	Post-test	-	-

In addition, the vocabulary notebooks here did not replace the usual vocabulary instruction in the experimental group, but rather supplemented it.

3.4.2.6 Administering post-test

In the post-test, the students of both class got 35 questions about vocabulary that had been learned in the four meeting of teaching and learning beforehand. Either control or experimental group had the same questions which consist of the same vocabulary, same items, and same format because the aim of the post-test was to know students' improvement of English vocabulary after the lesson given. Besides, it was also to know how significant the difference between

control and experimental group that can lead to the conclusion whether keeping vocabulary notebooks effective or not to be applied in the teaching vocabulary in young learners' class.

3.4.2.7 Analyzing pre-test and post-test's score

In order to know the result, the data of pre-test and post-test were analyzed. It would be compared by using the t-test calculation in order to reveal the effectiveness of keeping vocabulary notebooks in this study.

3.4.2.8 Distributing questionnaire

In order to know the students' responses toward keeping vocabulary notebook of English during the lesson, the questionnaire was given to the experimental group who received the treatment of keeping vocabulary notebook.

The closed-ended questionnaire that consisted of 10 questions provided "Yes" or "No" answer. Moreover, the questions were written in Bahasa Indonesia so that easier to get students opinion. The questionnaire's questions can be seen in appendix a.

3.5 Data Analysis

3.5.1 Scoring system

The tests used in this study were multiple choices, matching, jumble words and fill in the blank test. According to Arikunto (2002), two types of formula can be used to process the multiple choice item data; the formula with or without punishment. Moreover, this study used the formula without punishment for either multiple choices or other test type. The formula stated as follows:

$$S = R$$

Where:

S = score,

R = right answer.

3.5.2 Data Analysis on Try-out Test

The purpose of administering try-out test was to check the validity, reliability, and difficulty index of the instrument. Sixty four items were tested to the students out of sample. If the respondents have the ability to understand the instruction of the instruments and are able to give appropriate responses, it can be concluded that the instruments can be used as the pre-test and post-test.

On the other hand, the discrimination test of the instruments was also analyzed. It supposed to analyze the discrimination between the higher ability respondents and the lower ability respondents.

The following is the analysis of the instruments:

3.5.2.1 Validity

Validity is measurements which show the validity level or quality level of an instrument (Arikunto, 2002). Moreover, she added Pearson Product moment correlation that can be used to determine the validity of each instruments item.

The data was calculated by using SPSS. After r coefficient correlation value has been calculated, it was interpreted to the category based on table. It refers to the results' degree of the test, such as high validity, moderate validity, and low validity. After that, it was comparing the r value to the r product moment. Moreover, the r table product moment at significant level 0.05 for N=25 is 0.396.

Therefore, if the $r_{obt} > r_{crit}$ it means the item is valid, while if the $r_{obt} < r_{crit}$, the item is not valid.

The criteria of validity shown in the following table:

Table 3.3
Category of Coefficient Correlation of Validity
(taken from Arikunto, 2002)

r Value	Interpretation
0.81 – 1.00	Very high
0.61 – 0.80	High
0.41 – 0.60	Satisfactory
0.21 – 0.40	Low
0.00 – 0.20	Very low

3.5.2.2 Reliability

“Reliability is the precise level of an instrument”, (Nazir, 2005, p.134). Moreover, in order to reveal the item’s reliability, this study used Cronbach’s Alpha formula through SPSS 20 for windows. It was used to assure whether or not the test item was reliable to be used in pre-test and post-test. The criteria of reliability are shown in the following table:

Table 3.4
Category of Coefficient Correlation of Reliability
 (taken from Arikunto, 2002)

Coefficient Correlation	Interpretation
0.00 – 0.20	Low
0.21 – 0.40	Moderate
0.41 – 0.70	High
Above 0.70	Very high

3.5.2.3 Difficulty Index

Difficulty index of an item illustrates how easy or difficult the certain item constructing the test. It is because a good test item should not too easy or too difficult (Arikunto, 2002).

The formula of the difficulty index is:

$$P = \frac{B}{JS}$$

Where,

P: Difficulty Index

B: Number of subject who answered the item
 correctly

JS: Number of all subjects

It is based on the following criteria:

Table 3.5
Criteria of Difficulty Index
 (taken from Arikunto, 2002)

Difficulty Index	Interpretation
0.00 – 0.30	Difficult
0.31 – 0.70	Moderate
0.71 – 1.00	Easy

3.5.2.4 Discrimination Power

Discrimination power is used to indicate how far a single test item can differentiate the upper group from the lower group of the class, (Arikunto, 2002).

According to Heaton (1955, p.178 cited in Sistiawan, 2007), the procedures to find the discrimination power are:

1. Arranging the students' total scores and dividing the scores into two groups of equal size (the top half and the bottom half).
2. Counting the number of the students in the upper group who answer each item correctly, then counting the number of lower group students who answer the item correctly.
3. Subtracting the number of correct answer in the upper group to find the difference in the proportion passing in the upper group and the proportion passing the lower group, and
4. Dividing the difference by the total number of students in one group.

The following formula is used to calculate the discrimination index of an item:

$$D = \frac{\text{Correct U} - \text{Correct L}}{n}$$

Where,

D = Discrimination Index

U = Upper half

L = Lower half

n = Number of the students in one group; $n = \frac{1}{2}$

Table 3.6

Criteria of Discrimination Power

(taken from Arikunto, 2002)

Discrimination Index	Interpretation
00.00 – 00.20	Poor
00.00 – 00.40	Moderate
00.40 – 00.70	Good
00.70 – 1.00	Excellent

3.5.3 Pre-test and Post-test

The pre-test consisted of vocabulary which were given to students in two groups was administered in the first meeting. The data obtained from pre-test were analyzed statistically by using SPSS that covers normality distribution, homogeneity, and t-test.

In addition, after doing all of treatments, the vocabulary pot-test was conducted to both groups. Moreover, the procedures of data analysis in the post-test were exactly similar with the data analysis on the pre-test.

3.5.3.1 Normality Distribution

Kolmogorov-Smirnov in SPSS was used in this study to analyze the normal distribution of the data collected. The purpose of this analysis is to investigate whether the distribution of either pre-test or post-test score in both experimental or control group were normally distributed.

On the other hand, here are the calculation steps:

1. Setting the level of significance at 0.05 and establishing the hypotheses as follow H_0 : the variances of experimental and control group are normally distributed.
2. Analyzing the normality distribution with Kolmogrov-Smirnov test.
3. Comparing the asymp.sig. If the asymp.sig > 0.05 , the null hypotheses was accepted. It means that the data distribution is normal. However, if asymp.sig < 0.05 , it means the data is not normally distributed.

3.5.3.2 Homogeneity of Variance

Levene's formula in SPSS was used to analyze the variance of homogeneity. The steps are:

1. Setting the level of significance at 0.05 and establishing the hypotheses as follow H_0 : the variances of experimental and control group are homogenous.
2. Analyzing the homogeneity with Kolmogorov-Smirnov test.
3. Comparing the asymp.sig with the level significance to test the hypotheses. If the asymp.sig > 0.05 , the null hypotheses was accepted that means the variance of data are homogeneous. However, if asymp.sig < 0.05 , the null hypotheses is rejected. It clarifies that the variance are significantly different.

3.5.3.3 Independent t-test

The use of independent t-test in this data analysis is to discover the null hypotheses (H_0) whether or not any difference between the control and the experimental group in terms of students' vocabulary. A hypothesis was stated with the alpha level of 0.05. Hatch and Farhady (1982) states that there are three assumptions underlying t-test:

1. The subject is given to one group in experiment;
2. The variance's score are equal and normally distributed;
3. The score on the independent variable are continuous.

These are the procedures in calculating the independent t-test of pre-test and post-test data:

1. Setting the level of significance at 0.05 and establishing the hypotheses as follow:

H_0 : there is no significant difference between the means in experimental and control group.

2. Analyzing the independent t-test by using SPSS
3. Comparing the t_{obt} and t_{crit} at $p = 0.05$ and $df = 48$ to examine the hypothesis. If the $t_{obt} > t_{crit}$, the null hypothesis is rejected. It clarifies that there is a different mean between experimental and control group. Meanwhile, if the $t_{obt} < t_{crit}$, the null hypothesis is accepted. It clarifies that there is no difference of means between control and experimental group.

3.5.3.4 Paired t-test

Paired t-test was used to find the differences between pre-test and post-test scores in each sample group. In this study, the independent sample was calculated by using the computation of SPSS 20 that the steps are:

1. Setting the hypothesis, $H_0 =$ there is no significant difference between the students' vocabulary scores in pre-test and post-test.
2. Setting the level of significance (p) at 0.05 with two-tailed of significance.
3. Calculating t-test scores using SPSS 20.
4. Comparing t_{obt} and t_{crit} . If $t_{obt} > t_{crit}$, there is a significant difference between the scores before and after treatment. It means that the null hypothesis is rejected. Otherwise, if $t_{obt} < t_{crit}$, there is no significant difference between treatment score before and after treatment. It means that the null hypothesis is accepted.

3.5.3.5 The calculation of effect size

The effect size calculation is used to determine the strength of independent variable. Moreover, effect size has positive correlation to its value. The larger effect size value, the larger impact of treatment will be (Coolidge, 2000).

The formula is stated in the pattern:

$$r = \sqrt{\frac{t^2}{t^2 - df}}$$

Where:

r = effect size

t = independent test value

df = degree of freedom (df = N1 + N2 – 2)

The following scale is used to interpret the effect size:

Table 3.7
Correlation Coefficient of the Effect Size Scale
(taken from Coolidge, 2000, p.151)

Effect Size	r Value
Small	0.00
Medium	0.243
Large	0.371

3.5.4 Questionnaire

The data from the questionnaire were in the form of calculation of students' percentage in answering each question. It revealed students' responses on keeping vocabulary notebook in learning English.

All of the methods and the procedure above were used and done by the researcher in order to collect actual data and reveal relevant finding.