

CHAPTER III

RESEARCH METHODOLOGY

In the previous chapter, the related studies supporting the study have been briefly explained. For this chapter, the research methodology related to the study will be explained. This chapter covers the research method, research hypothesis, data collection, research procedure, scoring rubric and analysis which covers students' writing task analysis on the pretest and data analysis in posttest (t-test).

3.1 Research Method

In order to get empirical data a Quasi - experimental design has chosen. As Sugiyono (2010 : 107) said that quasi - experimental non-equivalent pre-test post design is used when study wants to see the effect of a treatment where experimental and control group are not choose randomly.

This study was aimed at investigating the effect of picture series in teaching procedural text. Furthermore, decision to use this method is based on the intention to get an in depth understanding by investigating the process that occurred in this type of teaching and learning process.

Since the research design was a quasi experimental, there were two groups taken as investigated groups in this study. The first group was the experimental group, which was treated by using pictures series, while the second group was the control group, which received a single picture. Then, the study used a quasi experimental design which the pretest and posttest non equivalent-groups design was conducted. The design below is adapted from Hatch and Farhady (1982:21)

Table 3.1
Experimental Design

Group	Pretest	Treatment	Posttest
Experimental	T1E	X	T2E
Control	T1C	-	T2C

Where

T1E : Students' writing scores of the experimental group on pretest

T1C : Students' writing scores of the control group on the pretest

X : The treatments using pictures series

T2E : Students' writing scores of the experimental group on posttest

T2C : Students' writing scores of the control group on the posttest

The table above shows that both of groups were given pretest and posttest, but they will receive different treatments. Series of pictures as treatment was only the control group. The purpose of study was to find out whether the students were given treatment by pictures series could achieve a higher score than those students were given a single picture.

There were two variables which were investigated in this Quasi experimental research namely independent and a dependent variable. An independent variable is the variable that will affected by independent variable (coolidge, 2000: 15), Based on the explanation above pictures series will the independent variable which is the major variable to be investigated. Since it is the major variable, it is selected, manipulated, and measured by the researcher. On the other hand, student's procedure text writing ability will be dependent variable (the variable which is observed and measured to determine the effect of independent variable.

3.2 Research Hypothesis

In conducting study, hypothesis is one of the important aspects because hypothesis is defined as prediction or temporary answer of the research problems. According to Hatch and Farhady (1982:85-86), hypothesis can be considered as the tentative statement about the outcome of the research. Then, this study takes

null hypothesis and alternative hypothesis. The null hypothesis states that there is no significant difference between the posttest mean of control and experimental group after the treatment. Then, the alternative hypothesis states that there is significant difference between the posttest mean of control and experimental group after the treatments. The formula stated below.

$$H_0 : \mu \text{ control} = \mu \text{ experiment}$$

$$H_a : \mu \text{ control} \neq \mu \text{ experiment}$$

3.3 Data Collection

As initial steps, the data collection of the study starts by having the seventh graders of 45 junior high school Bandung an achievement test in form of a pretest. The treatment endure by having English writing procedure lessons with series picture which given in five sequences of five meetings. At the end of the learning period, a post- test is given to find out the difference of achievement scores between the pre-test and post test result. Questioner was also distributed to investigate the students towards the use of picture in improving students writing procedure text.

3.3.1 Population

Population is all members of a group about which you want to draw conclusion (Levine and Stephen, 2005: 5). Based on definition, the population of this study was the first grade students of Bandung 45 junior high school. The first grade of 45 junior high school consisted of twelve classes in which the total population was about 430.

The choice of population was based on the consideration that procedure text is taught in first grade in junior high school, especially in the second semester. Besides, the study was conducted in 45 junior high school. The places was chosen because this school was the place where the researcher did PLP program. PLP program is a program for students in Indonesia University of Education to practice teaching in school.

3.3.2 Sample

The number of population was so large that it could not be accessed. In this case, the study was conducted to a part of the whole population. According to Coolidge (2000 : 24), sample is smaller group of scores selected from population of scores. In selecting sample , There are two classes of seventh graders will involve in this study , both of them consist of 35 students (VIIG) and (VII H). The total numbers of participants were 70 students. Two classes which had been chosen based on non- random sampling were labeled into experimental (VII H) and control group (VIIG).

The reason why these two classes were chosen because some considerations including the groups were chosen by teacher which PLP is done, procedural text is taught in seventh grades of junior high school, the two groups have the same number of students (35 students), The groups were chosen by teacher's judgment which explain that both groups are homogenous, and sample has not given any treatment of pictures series in writing procedural text.

3.3.3 Research Instrument

To obtain the data, an instrument was needed to be involved. According to Fraenkel and Wallen (2007), instrumentation is as the whole process of collecting data in a research. Then, this study employed an instrument to gain data to be analyzed which was writing test. Writing test consisted of pretest and posttest which were given in the form of written test. Pretest was administrated in both group to describe the similarity in terms of writing ability of experiment and control groups before conducting the treatments. Then, in the posttest, the test was carried out to examine whether there was significant difference of students' writing in the two groups' skill after one of the group was given the treatments. The posttest was administrated to find out whether the use of pictures series in teaching writing procedural text was effective or not.

Moreover, the score of students' writing test was used to know the use and the extent of the pictures series in improving students' writing procedural text. They were collected through writing test, pretest and posttest which were

conducted to both experimental and control groups. To assess the students' writing the researcher analyzed by using scoring sheet by rose (2007, as cited in Emilia, 2011) which is presented in appendix.

3.4 Research Procedures

The research was conducted for one month. The researcher arranged some procedures to make the study well organized. The steps of conducting research were as follow. First was a plan for doing pretest, posttest, and lesson plan. Second trying out the instrument to test its validity and reliability. Third, giving pretest to both experimental and control group. fourth, giving the sample treatment, teaching them writing procedure text through pictures series for experimental and single picture for control group. The last, giving posttest to both groups whether both groups got different result or not.

3.4.1 Planning

Planning is one of important works in study because it can be a standard to do in study. In order for study to run well, there were some procedures which were applied in planning. First was preparing the instrument for the pretest and posttest. The written test as instrument for the pretest which are "how to make a cup of coffee", "How to fry an egg", "how to built a tent" and for the posttest "how to make a cup of milk tea", "how to make a special fried rice", "how to make a handmade greeting card" . The reason of choosing those topics because it not too complicated for seventh grade students and it avoided noisy class after student's finished their work.

Second, before conducting pretest and posttest, the instrument was tried to the students' excluding the sample of study. After trying out the instrument, the validity and reliability of instrument were calculated. Then, the result of calculation would be a standard topic to make lesson plan. In order to make a well established experiment, lesson plan was made. The activities in the lesson plan was made based on the Genre - based Approach which includes building knowledge or field, modeling of text, joint construction of text, and independent

construction of the text. For detailed explanation about genre based approach, it can be seen in chapter 2. The example of lesson plan would be shown below and this is simple lesson plan which is adapted from brown (2000). The following is an example of lesson plan in example of lesson plan in experimental and control group.

Table 3.2
Lesson Plan of Experimental and Control Group

Description	Lesson Plan of Experimental Group	Lesson Plan of Control Group
Objective	<ul style="list-style-type: none"> • Students are able to identify structure of procedure text by using series pictures • Students are able to arrange a jumble paragraph based on series pictures. • Students are able to understand what is procedure text 	<ul style="list-style-type: none"> • Students are able to identify structure of procedure text by using series pictures • Students are able to arrange a jumble paragraph based on series pictures. • Students are able to understand what is procedure text
Material and equipments	<ul style="list-style-type: none"> • Example of Procedure text • Worksheet • Pictures series • White board • Textbook 	<ul style="list-style-type: none"> • Example of Procedure text • Worksheet • Pictures series • White board • Textbook
Procedure		
Pre activity	<ul style="list-style-type: none"> • Greeting and praying • Teacher check attendance list • Teacher doing brainstorming activity by sharing some experience about cooking activity with all of students • Teacher Inform the objective of lesson today while connect the objective with students experience. 	<ul style="list-style-type: none"> • Greeting and praying • Teacher check attendance list • Teacher doing brainstorming activity by sharing some experience about cooking activity with all of students • Teacher Inform the objective of lesson today while connect

		the objective with students experience
Main activity BKOF MOT	<ul style="list-style-type: none"> • Teacher shows a jumbled series of picture about how to make a cup of coffee, then teacher ask some students to put it in correct order with some help from other students. • Teacher asking some question based from the pictures series. For example “Look at the picture! Can you guess what we need to make a cup of coffee?.” • Teachers write down students answer on the whiteboard • Teacher gives students example of procedure text that the picture has been shown before and students are asked to read again. • Teacher explains about the generic structure and imperative sentences of procedure text by using pictures series 	<ul style="list-style-type: none"> • Teachers show a single picture a cup of coffee. Then teacher asks some question. For example, “Look at the picture! Can you guess what we need to make a cup of coffee • Teachers write down students answer on the whiteboard. • Teacher gives students example of procedure text that the picture has been shown before and students are asked to read again. • Teacher explains about the generic structure and imperative sentences of procedure text by using pictures series
JCT	<ul style="list-style-type: none"> • Teachers ask students to work in groups of 6 persons and then teacher gives worksheet which contains different pictures series to each group. Students asked to do the assignment based on the worksheet with their group. • After students finished their works teachers invite a member of the group to represent what they have done. • Teacher and students discuss what a representation has written 	<ul style="list-style-type: none"> • Teachers ask students to work in groups of 6 persons and then teacher gives worksheet which contains different pictures series to each group. Students asked to do the assignment based on the worksheet with their group. • After students finished their works teachers invite a member of the group to represent what they have done.

		<ul style="list-style-type: none"> • Teacher and students discuss what a representation has written
Post-activity	<ul style="list-style-type: none"> • Teachers checking students understating through the material by concluding what they have learnt today. • Teacher gives students opportunity to ask some question. • Teacher gives the assignment for the next meeting. • Closing and praying 	<ul style="list-style-type: none"> • Teachers checking students understating through the material by concluding what they have learnt today. • Teacher gives students opportunity to ask some question. • Teacher gives the assignment for the next meeting. • Closing and praying
Evaluation	Written test	Written test

3.4.2 Administrating Pilot Test

Pilot test is a good item to measure validity and reliability of the instrument before it was used in study. Before administrating pilot test to students, the instrument was consulted to the supervisor and teachers of one of junior high schools where the study was conducted to know the appropriateness of the instrument with students' background knowledge. There were two kinds of validity and reliability, pilot test was administrated to students excluding the experimental and control group. It was also conducted on Wednesday, January 11th 2014.

3.4.3 Administrating Pretest

After calculating result of pilot test and finding validity and reliability of the instrument, the pretest was conducted on January 13th 2014. It was administrated to the experimental and control groups which each groups consist of 35 students. The aim of pretest was to measure students' prior writing skills.

3.4.4 Conducting Treatment

After researcher got the result of pretest and found out that there was no significant different score mean between experimental and control groups the researcher gave the treatments to sample of study. The treatments were conducted five meetings for each group in which meeting lasted for 2x40 minutes.

The first meeting was carried out on January 15th 2014 for both groups. The first topic given was how to make a cup of milk tea. The main activity focused on discussing what procedure text was. The teacher explained procedure text as a text type and characteristics. The other activities were giving examples of procedure texts and discussing them with the students. Some students raised several question dealing with procedure text and its differences between procedure text and descriptive.

The second meeting was conducted on January 16th 2014 for both groups. The activity of second meeting focused on discussing present tense information and imperative sentences. Many students made mistakes in using verb in the sentences for instance, "I thirsty" instead of "I am thirsty".

The third meeting was carried out on January 22th 2014 for both groups. The topic discussed was how to fried an egg. The main activity is focused on the way to organize sentences into a good procedure text paragraph. The teacher also explained temporal connectives and the plural noun as the main discussion of the third meeting.

The fourth meeting was conducted on January 23th 2014 for both groups. The theme discussed was how to built a tent. The main activity in this meeting was discussing simple present tense and imperative sentences, discussing incorrect sentences that students made, and correcting students' mistakes in making sentences.

The fifth meeting was carried out on January 28th 2014 for both groups this was the last meeting before the posttest was given in which the teacher reviewed the whole four meetings before. The activity on this meeting was dominated by the teacher to ask the students everything they had not clear yet about procedure text, present tense, imperative sentences, temporal connectives,

and the difficulties that the students faced after they were treated four meeting. The teacher also gave more procedure text as a examples to be discussed again lead them to reach a conclusion the procedure text.

Moreover, all cycle of writing process by harmer (2005) including preparation, drafting, and editing appear in each meeting of teaching and learning process. Limitation of time and approval of study is the reasons why all cycle of writing is integrated in each meeting. For example, the teacher prepared students to make draft by giving vocabulary and making sentences. After that the students make a text based on the sentences based on the sentences that they have written. Finally the teacher and students discussed it to know the mistakes. Besides, the only difference between two groups was media given to students. The treatment using pictures series as medium was given in the experimental group, while a single picture was given to control group. Moreover, the researcher employed four stages in teaching as proposed in GBA the researcher discussed in chapter 2. The steps were building of knowledge, modeling of text, joint construction of text, and independent construction text.

3.4.5 Administrating Posttest

Posttest was conducted after whole treatments had been given to both groups. It was conducted on January 29th 2014 for experimental and control groups where each groups consisted of 35 students. The text in posttest was same as the pretest and posttest was conducted to measure the students' writing skill after the treatment.

Table 3.3
Schedule of Study

No	Experimental Group (Using pictures series)		Control group (Using Single pictures)	
	Date	Material	Date	Material
Pilot test				
1	January 13th 2014	Pretest	January 13th 2014	Pretest
2	January 15th 2014	Topic : how to make a cup o f milk tea	January 15th 2014	Topic : how to make a cup o f milk tea

3	January 16th 2014	Topic : How to fry an egg	January 16th 2014	Topic : How to fry an egg
4	January 22th 2014	Topic : How to build a tent	January 22th 2014	Topic : How to serve an instant noodle
5	January 23th 2014	How to make a handmade greeting card	January 23th 2014	How to make a handmade greeting card
6	January 28th 2014	Review : Materials have been taught	January 28th 2014	Review : Materials have been taught
7	January 29th 2014	Posttest	January 29th 2014	Posttest

3.5 Scoring Rubrics

In this study, the collected data from pretest and posttest would be analyzed by scoring sheet because test were in form of written test document. The criteria of scoring sheet in this study were developed by Rose (2007, as cited by Emilia, 2011, p.151) to measure the results of pretest and posttest. The adapted scoring sheet consist of five aspects ; those were genre, register, discourse, grammar and graphic features. for further detail, it can be seen in appendix.

3.6 Data Analysis

The data collected by the means of the test instrument was analyzed based on specific purposes. In this case, there were three kinds of analyses was carried out. First is instrument analysis. It was used to know the validity and reliability of the instrument. Second, pretest and posttest analysis which was used to measure the normality distribution, homogeneity of variance and t-test. Third, index gain which was used to know the improvement of the experimental group. From the detailed explanation it can be seen below.

3.6.1 Test Instrument Analysis

3.6.1.1 Validity

The data obtained in pilot test were analyzed to investigate face validity and content validity. In the pilot test, the instruction contained in the pretest and posttest items was found to be understandable and clear enough. Therefore, it was proven that the test items had face validity. After the pilot test, the students' works were examined to check whether or not the content validity had been possessed.

3.6.1.2 Reliability

Furthermore, it is also important to investigate the reliability of the test instrument. Hatch and Farhady (1982:224) define reliability as the extent to which a test procedures consistent result when administrated under similar condition. A test can be accepted as reliable test if it can be a consistent test to obtain scores. Finally, Cronbach's Alpha formula in SPSS 16.0 for windows program is used to compute reliability of instruments. The criteria for the reliability test can be seen in the following table

Table 3.4
Coefficient Reliability

Coefficient reliability	Interpretation
0.00-0.19	Very low
0.20-0.39	Low
0.40-0.59	Moderate
0.60-0.79	High
0.80-1.0	Very high

(Arikunto, 2006:276)

3.6.2 Pretest and Posttest Data Analysis

After the pretest on both group were held, the next was analyzing the output data. According to Fraenken and Wallen (2007), the output data were analyzed using independent t-test to determine whether there was a significant difference between the means of two independent samples. Before performing in t-test, the output data of pretest should fulfill the criteria underlying t-test as stated in Coolidge (2000) as follows.

1. The data should have a normal distribution.
2. The variance of the two groups must be homogenous.

3. The participant must be different in each group

For the reason, normality distribution test, variance homogeneity test, and independent t-test were performed before calculating the data by using t-test formula. Moreover, if the data do not fulfill the criteria above. the data is not normal distribution. So, the Mann-Whitney test will be operated to test the hypothesis.

3.6.2.1 Normality Distribution Test

One-sample-Kolmogorov-Sminov test in SPSS version 16.0 used to analyze the normally distributed. In this case, the result of the normality distribution was also used to find out whether or not the hypothesis that had been determined was accepted.

The first step in calculating the normality distribution test stated that hypothesis :

H_0 : the scores of the experimental and the control groups are normally distributed.

H_1 : the scores of the experimental and the control groups are not normally distributed.

The second step in calculating the normality distribution test is to determine the significance level in the level $\alpha=0.05$. The level significance criterion for normality distribution states that if the probability > 0.05 , H_0 is accepted. Whereas if the probability < 0.05 , H_0 is rejected (Hatch & Farhady, 1982:88). As a result, if the probability is more than the level of significance (0.05), the null hypothesis is accepted and the score are normally distributed.

3.6.2.2 Variance Homogeneity Test

After knowing that the pretest and posttest were normally distributed, the next step was to analyze its homogeneity. To examine whether the data are homogenous or not, test of homogeneity of variance using Levene's test for equality of variance in SPSS version 16.0 was used.

The first step is calculating the variance homogeneity test stated that hypothesis:

H₀: the scores of both experimental and control group are homogenous.

H₁: the scores of both experimental and control group are not homogenous.

The second step is to determine the significance level in the level $\alpha=0.05$. The level of significance criterion for homogeneity test states that if the probability > 0.05 , then H₀ is accepted. Whereas if the probability < 0.05 , H₀ is rejected (Hatch & Farhady, 1982:88).

Moreover, if the data do not have normal distribution, the Mann-Whitney test be operated to test the hypothesis. The writer also used SPSS 16.0 to calculate the result.

3.6.2.3 T-test Computation

3.6.2.3.1 Independent t-test

Independent t-test is used to analyze a causative relationship between the variable (treatment) and the dependent variable that measure on both groups (Coolidge, 2000).

Therefore, after the data had been proven as a normal distribution, the data were calculated using independent t-test. The independent t-test was analyzed using SPSS version 16.0 for windows. According to Kranzler & Moursound (1994 : 94), the level of significance used in independent t-test is 0.05. The criterion stated to determine t-test is if t_{obt} is lower than t_{crit} , h_0 is accepted and there is no significance difference between both of groups in the pretest mean. Whereas, if t_{obt} is higher than t_{crit} , the result is statistically significant difference in the pretest means of two group and h_0 is rejected.

3.6.2.3.2 Dependent t-test

Dependent t-test was calculated certify that there is significance difference between the pretest and posttest scores in each groups. According to Coolidge (2000), dependent t-test is used to analyzed the difference between two groups

means in experimental design where in both groups are related to each other in some way.

In this study, the dependent sample test was analyzed using computation with SPSS 16.0 for windows by comparing the significance value with the level of significance to the test hypothesis. If the significance value is more than or equal to the level of significance (0.05), the null hypothesis is accepted and it will be concluded that there is no significant differences between the two means. On the other hand, if the significance value is less than the level of significance (0.05), the null hypothesis is rejected and it will be concluded that the mean is significantly different from the other mean.

3.6.2.4 The Calculation of Effect Size

The effect size refers to the effect of independence variable upon the dependent variable (Coolidge, 2000:151). The calculation of effect size was conducted to measure how well the treatment worked. For instance, if the difference between two groups' means is large, there is said to be a large effect size; if the difference between two groups' mean is small, there is said to be small effect size.

In order to determine the effect size in the independent t-test, a correlation coefficient of effect size can be derived as follows:

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

Where:

r = effect size

t = t_{obt} or t_{value} from the calculation of independent t-test (post-test score)

df = degree of freedom

To interpret the computational result, the following scale was use as guidance in determining the effect size on dependent variable.

Table 3.5

The Effect Size Scale

Effect size	r value
Small	.100
Medium	.243

Large	.371
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(Coolidge, 2000)

3.6.2.5 The Calculation of Index Gain

Index gain was calculated to answer the second research question in this study as to what extent picture series improves students' writing abilities in the experimental group. It is also used to investigate the improvement of students' writing score between pretest and posttest. In addition, the gain of each aspect of writing skills were calculated with the formula below:

$$g = \frac{\text{posttest score} - \text{pretest score}}{\text{maximum score} - \text{pretest score}}$$

(Hake, 1999)

Then, the index gain was interpreted by using the following criteria:

<p>Index gain < 0.3 = low-gain.</p> <p>0.7 > Index gain > 0.3 = medium-gain.</p> <p>index gain > 0.7 = high gain.</p>

(Hake, 1999)

Having calculated index gain, there were two examples of students' hand writing from experimental and control group. In this part, analysis of texts was conducted to answer the second research question. The analysis of texts was based on scoring technique by rose (2007, cited in Emilia, 2011). There were some aspects of scoring in this text analysis which are genre, register, and discourse, grammar aspect. By using those aspects, student's hand writing texts were analyzed whether those text contained all aspects in scoring technique of writing.