

CHAPTER III

RESEARCH METHODOLOGY

Chapter three elaborates the methodology in conducting this study. This chapter provides four main parts of the investigation which are research design, data collection technique, research procedures, and data analysis technique.

3.1 Research Design

This quantitative research is aimed at investigating whether there is any improvement of students' writing ability in writing a descriptive text by the implementation of Jigsaw technique. Besides, there is an intention to discover the students' responses to the use Jigsaw technique in teaching writing descriptive text. This study used quasi experimental design. According to the statement of National Center for Technology Innovation (2003), quasi-experimental study is typical true experimental research which includes pre-posttest design, the experimental group and the control group but it uses nonrandom study of participants.

This research conducted the project in the experimental and in the control group in which the experimental group was taught using the Jigsaw technique while the control group was taught using the conventional technique. This research employed pretest and posttest, which were given to both the experimental group and the control group. The writer conducted the pretest in order to know the students' writing ability before they got the treatment. After the pretest was conducted, the treatment which was the Jigsaw technique was implemented in teaching a descriptive text to the students in the experimental group. Then, the researcher conducted the posttest, to discover whether or not there was any improvement in students' skill in writing descriptive text after they got the treatment. The research design was represented in the following chart:

EG	T1	X1	X2	X3	X4	T2
CG	T3	-	-	-	-	T4

Description :

EG : Experimental Group

CG : Control Group

T1 : Pretest which aims to discover students' writing ability before the treatments were given.

T2 : Posttest which aims to discover students' writing ability after the treatments were given.

T3 : Pretest which aims to discover students' writing ability in the control group.

T4 : Posttest which aims to discover students' writing ability in the control group.

X (1, 2, 3, 4): The treatments (four times) which used Jigsaw technique in teaching writing descriptive text.

In order to discover the students' responses to the use of Jigsaw technique in teaching writing descriptive text, the implementation of the action was also followed by conducting questionnaire for those students in the experimental group.

3.1.1 Variable

Variable can be defined as an attribute of a person or an object which has its own specific variation. In research, variables can be categorized as dependent and independent variables. The independent variable is the variable which is selected, manipulated, and measured by the researcher. Meanwhile, the dependent variable is the variable which is observed and measured by researcher to

determine the effect of the independent variable (Hatch and Farhady, 1982, pp. 13-15). The independent variable of the research is Jigsaw technique, while the dependent variable is students' writing scores.

3.1.2 Hypothesis

Hypothesis is the proposition which arises from and consistent with the theory, and then it is tested by using experimental research (Coolidge, 2006, p. 9). Furthermore, the hypothesis of this study was in the form of null hypothesis (H_0) and alternative hypothesis (H_A). Therefore, the hypotheses of this study are as follows:

- H_0 = There is no significance difference between students' post-test scores in the experimental group and students' post-test scores in the control group.
- H_A = There is a significance difference between students' post-test scores in the experimental group and students' post-test scores in the control group.

If the result of the test shows that teaching writing a descriptive text using Jigsaw technique does not improve students' writing skill at one Senior High School in West Bandung, it means that H_0 (Null Hypothesis) is accepted. Yet, if the result shows that teaching writing a descriptive text using Jigsaw technique improves students' writing skill at one Senior High School in West Bandung, null hypothesis (H_0) is rejected, and alternative hypothesis (H_A) is accepted.

3.2 Population and Sample

Population, as defined by Best & Khan (1995, p. 13), is a group of people that have one or more characteristics in common that become the researcher's interest to investigate, while samples are a small part of a population that was selected for observation and analysis.

The population of the research was the first grader of one senior high school in West Bandung, whereas the samples were only two classes, those were X IPA 1 as the experimental group and X IPS 3 as the control group.

3.3 Data Collection

3.3.1 Research Instrument

This quasi-experimental research employed two instruments to collect the data. The data were collected to answer research questions of this study. The first instrument was the test which was divided into pretest and posttest. Both pretest and posttest were conducted to get students' writing score that were analyzed to discover whether or not the Jigsaw technique is effective in teaching writing a descriptive text. The pretest was given to both the experimental and the control group which was meant to discover students' writing skill before they got treatment by the implementation of Jigsaw technique.

After conducting the pretest, the experimental group was given the treatment which consisted of four meetings. In every meeting, students had to write a descriptive text based on the discussed topic.

The posttest was given to both experimental and control groups. The posttest was given after the treatments to discover whether or not there was a significant improvement of students' writing skill in writing a descriptive text. Then, the students' score of pretest and posttest were computed by using SPSS 20 and the result was interpreted by the researcher.

The data were also collected through conducting the questionnaire. This section was only conducted in the experimental group in order to discover students' attitude, opinion and perspective about the use of Jigsaw technique in teaching writing descriptive text. Milne (1999) stated that questionnaire is more objective rather than interview because the responses are gathered in standardized way; moreover it is relatively quick to collect information using the questionnaire.

The pretest and posttest were the essential instruments in this study, therefore the validity of those instruments had been ensured. Validity refers to the appropriateness, meaningfulness, and usefulness of the inferences a researcher

makes (Fraenkel & Wallen, 2012). Face validity and content validity are two kinds of validity that should be owned by pretest and posttest items. A test with face validity should contain understandable instructions on how to do the test as expected by the test makers. Content validity is contained in a test when the test accurately measures what is supposed to be measured (Hughes, 2005). In order to check whether or not the two kinds of validity have been possessed by the pretest and posttest items, a pilot test was conducted before the real tests. As cited in Creswell's study (1994) pilot test is important to examine the validity of instrument and then revise it into the correct one. The pilot test was given to some students who have equal English mastery. Those students came from different classes which were not assigned as the experimental and the control groups.

3.3.2 Research Procedure

3.3.2.1 Lesson Planning

Before conducting the treatment, the researcher prepared teaching material related to descriptive text that would be needed during the treatment. The researcher elaborated the topics that were suitable for writing descriptive text. Furthermore, the researcher also managed the teaching procedures by measuring the time allotment, exploring students' condition and checking availability of facility.

3.3.2.2 Testing the Validity of the Pretest and Post-test through the Pilot Test

The pretest and posttest is valid to be tested to the students if the face validity and content validity are possessed by the tests. In order to find out whether or not both pretest and posttest have face and content validity, the test can be checked through administering the pilot test. The pilot test of the study was conducted before giving the pretest. The test was given to five students in the same school. The students were given the test and they were asked to do the test based on the instruction that was provided in the test item. If the students were confused when they were doing the test, it meant that the test was not face valid. Therefore, if this happened, the students should be asked about the confusing instruction part. When the unclear instruction had been fixed, the test item could

be said to have face validity. On the other hand, to check whether or not the test had a content validity, the students' works in the test were examined. If the students' works performed the particular language skills that were expected to be measured in the test, it meant that the test owned the content validity. After the test items were proved to have the two kinds of validity, the items were administered to students in the pretest and posttest.

3.3.2.3 Administering Pretest

The pretest was administered by using the written test. Both the experimental and control groups were asked to compose a descriptive text based on the given theme and instruction. The students' works would be assessed using the scoring rubric that was proposed by Brown (1994).

3.3.2.4 Conducting the Treatment

The treatment was only carried out in the experimental group, while the conventional method was implemented in the control group. Although, the methods were different but the teaching materials were similar. The given treatment was in the form of applying the Jigsaw technique to assist students in writing descriptive text. The treatments were carried out in four times. The design of the lesson plan was based on the standard competence and the basic syllabus of the school which was developed by the teacher.

3.3.2.5 Administering Posttest

The posttest was administered both to the experimental and control group after the treatment process was done to the experimental group. The obtained score of posttest would be used as a final comparison to determine whether or not there was any significant difference between students' achievement in experimental and control groups.

3.3.2.6 Administering Questionnaire

In order to discover the students' responses to the use of the new method, the questionnaire was given to all students in experimental group. Milne (1999) stated that questionnaire is more objective rather than the interview because the

responses are gathered in standardized way, moreover it is relatively quick to collect information using the questionnaire. The questionnaire was delivered to the students after the posttest in the same day.

3.4 Data Analysis

3.4.1 Scoring Technique

Clear criteria in assessing students' works is needed in order to generate valid scores. Qualifying this need, the scoring rubric that was proposed by Brown (1994) was adapted in this study. The rubric that was used to evaluate students' written works in this study covers some aspects that absolutely must be contained in every written works, such as content, vocabulary, generic structures and language features. The point of each criterion ranges from 1 to 5, in which the maximum score is 20. However, the score range was changed for the sake of the easiness in calculating the obtained score. Each point of each criterion ranges from 1 to 25, in which the maximum score is 100. The criterion of every aspect is elaborated in the following table.

Table 3.1
Scoring Aspects

Aspects	Score	Criteria
Content	1	The content is not relevant with the topic at all.
	2	There are many confusing things; many contents are not relevant with the topics so that the meaning cannot be easily comprehended.
	3	The content that is not relevant still exist but it is understandable and it is not too bad.
	4	There are several words that are used irrelevantly but do not influence the intended meaning.
	5	The topic and the content are very relevant.
Vocabulary	1	Poor and irrelevant words; they do not fit the sentences meaning related to the topic and the situation given.
	2	There are still many words used inappropriately.
	3	The words have already been related with the topic and situation;

		however they do not have any variation yet.
	4	The words are generally relevant with the situation and have enough variation, but sometimes there are inappropriate words which do not change the meaning of the sentence.
	5	The words used are selected and have variation, they are relevant with the situation and condition so the meaning make sense.
Generic structure	1	The generic structure of the content is very bad and it does not consist of orientation and resolution
	2	Many disorderliness are found in the content of writing, but those are not confusing to be read.
	3	The generic structure of the writing is neither too good nor too bad.
	4	The generic structure of the writing is in good order, but this is actually not too principle.
	5	Every part of the writing is in good order, either in orientation, complication or resolution.
Language features	1	There are many irrelevant uses in descriptive languages, many errors in verb, tense and linking words.
	2	There are some irrelevant uses in descriptive languages, some errors in using verb, tense and linking words.
	3	There are a little bit irrelevant uses in descriptive languages, but do not change the whole meaning. Generally, it is still accepted.
	4	Generally accurate in using the descriptive languages, verb, tense, and linking words.
	5	No errors in using the descriptive languages, verb, tense, and linking words.

(Brown, 1994)

3.4.2 Data Analysis on Pilot Test

The pilot test of the study was conducted before giving the pretest. The students were given the test and they were asked to do the test based on the instruction that was provided in the test item. If the students were confused when they were doing the test, it meant that the test had not reached face validity. Therefore, if this happened, the students should be asked about the confusing instruction part. After the unclear instruction had been fixed, the test item was

proved to have face validity. Then, the students' works were examined to figure out whether or not the test possessed content validity. If some students' works performed the particular language skill expected to be measured in the test, it meant that the test owned the content validity. After the test item is proved to have the two kinds of validity, the item was administered to students in the pretest and posttest.

3.4.3 Data Analysis on Pretest and Posttest

After the pretest in experimental group was conducted, the next step was analyzing the result by using the independent t-test. The use of independent t-test in analyzing the pretest result was aimed to prove that both groups were equivalent. Independent t-test is a tool to determine whether or not there is a significant difference between the means of two independent samples (Fraenkel and Wallen, 2012). The equivalence of both groups was the requirement to calculate the independent t-test of both groups' posttest which was aimed to discover the effectiveness of the implementation the new teaching technique. After both groups were proved to be equivalent, the next step was calculating both groups' posttest scores by using the independent t-test which was aimed to find out the effectiveness of the implementation of Jigsaw technique as the new teaching technique.

3.4.3.1 Normal Distribution Test

Kolmogrov-Smirnov's formula was used to investigate the normality distribution through SPSS 20 for Windows. There are three steps in conducting the normal distribution test, those are setting the null hypothesis (H_0) at the alpha level, analyzing the normality distribution by using Kolmogrov-Smirnov's formula, and interpreting the result. In this case, the alpha level was set at 0.05 (two-tailed test). Interpreting the result means testing the hypothesis, therefore if the significance level > 0.05 , then the null hypothesis (H_0) is accepted. It can be said that the distribution of data is normal. In contrast, if significance level < 0.05 , then the null hypothesis (H_0) is rejected which means that the distribution of the data is not normal.

3.4.3.2 Homogeneity of Variance

In order to find out the homogeneity of variance, this study used Levene's formula from SPSS 20 for Windows. There are three steps that are covered in this formula. First is setting the null hypothesis (H_0) at the alpha level. The alpha level was set at 0.05. The next step is analyzing the homogeneity variance by using Levene's formula in SPSS 20 for Windows. And the last step is comparing the result with alpha level. If the Levene's score > 0.05 , then the null hypothesis (H_0) is accepted which means the score of both groups (experimental and control group) are homogeneous or approximately equal. In contrast, if the Levene's score < 0.05 , the null hypothesis (H_0) is rejected which means the score of both groups (experimental and control group) are not homogeneous or not equal.

3.4.3.3 Independent t-test

The independent group t-test is used to analyze a causative relationship between the independent variable which is treatment and the dependent variable that is measured on both groups (Coolidge, 2006). Independent t-test was also used to investigate and compare the difference of mean between the experimental and control group. There are three steps in conducting independent t-test. First is setting the null hypothesis (H_0) at the alpha level. The alpha level was set at 0.05. Second is analyzing and calculating the independent t-test by using SPSS 20 for windows. The last step is comparing the result with the significance level. If the result > 0.05 , then the null hypothesis (H_0) is accepted which means there is no significant difference of mean between experimental and control group. In contrast, if the result < 0.05 , then the null hypothesis (H_0) is rejected which means there is a significant difference of mean between experimental and control group.

3.4.3.4 Dependent t-test

The dependent t-test was used to analyze the difference between two groups' means in experimental group in which the participants in both groups are related to each other in some ways. The dependent variable is assumed to have normal distribution. It can be said that the variance of the two groups must be homogenous.

In this study, the dependent sample test was analyzed by using computation SPSS 20 by comparing the significance value with the level of significance to test the hypothesis. If the result is more than the level of significance, then the null hypothesis (H_0) is accepted. It means that there is no significant difference between pretest and post-test in experimental and control group. Otherwise, if the result is less than the level of significance the null hypothesis is rejected. It can be concluded that there is significance difference between the two mean of experimental and control groups.

3.4.3.5 The Calculation of Effect Size

In this research, the effect size was also used in order to find out how far independent variable affects the dependent variable (Coolidge, 2006). After calculating the effect size, then its value is compared and analyzed by using the table scale. The scale is as follow:

Table 3.2

The Scale of Effect Size

Effect Size	r value
Small	0.100
Medium	0.243
Large	0.371

(Coolidge, 2006)

3.4.3.5 Data Analysis on the Questionnaire

In order to analyze the data were obtained from the questionnaire session, the data were analyzed by using Likert's scale. Likert's scale is a psychometric scale primarily used to obtain participant's preferences with a statement or set of statements. The participants are instructed to specify their level of agreement with a given statement by employing an ordinal scale. The writer used the formula percentage to analyze the questionnaire data. Then, the data are interpreted based on the frequency of students' answer.