

CHAPTER III

RESEARCH METHODOLOGY

Introduction

This chapter provides a discussion of the methodology employed in conducting the research. The description below involves: research design, research variables, research hypothesis, data collection, research procedures and data analysis.

3.1 Research Design

The purposes of this study were to find out the effectiveness and student's responses of Jigsaw technique on the reading comprehension. Therefore, this study used a quasi-experimental design. According to Hatch and Farhady (1982, p.24), a quasi-experimental design is a practical that compromises between true experimentation and the nature of human language behavior which we wish to investigate.

The study involved two groups; an experimental group and a control group. The experimental group received small group discussion method treatments while the control received conventional method. According to Jackson (2008, p. 318), the quasi experimental was used for this method did not require random sampling. This research method provided the students with pre-test, treatments, and post-test in order to find out the effects of Jigsaw technique on the student's reading comprehension.

In this research, two classes were taken as the sample classes; those were labeled as the experimental group and control group. The first group (e1), the experimental group, was given a pre-test (X1), treated by using Jigsaw technique (T), and then given a post-test (X2). The second group (c1), the control group, was given a pre-test (X1), treated by using conventional teaching (O), and given a post-test (X2) (Hatch and Farhady 1982:21).

Table 3.1

Group	Pre-test	Treatment	Post-test
Experimental	Xe 1	T	Xe 2
Control	Xc 1	O	Xc 2

Xe 1 : students' reading scores of experimental group on pre-test

Xc 1 : students' reading scores of control group on pre-test

T : Jigsaw treatment

O : Non-Jigsaw treatment

Xe 2 : students' reading scores of experimental group on post-test

Xc 2 : students' reading scores of control group on post-test

The table shows the different treatment given to each investigated class. In the experimental group, Jigsaw technique was given to the students in the learning process. On the other hand, a conventional teaching was implemented in the control group as the treatment in learning reading comprehension. Furthermore, the post-test was administered in order to investigate the result of the treatment.

3.1.1 Variables

The independent variable of the study was the use of jigsaw technique. Meanwhile, the dependent variable was students' reading comprehension scores observed and measured in order to determine the effects of the independent variable (jigsaw technique). The design was adopted from Cresswell (2009, p. 50).

3.1.2 Research Hypothesis

This research began with null hypothesis (Ho), as follow:

$$H_o: m \text{ experimental} = m \text{ control}$$

According to Kranzel and Moursund (1999), the null hypothesis (H_0) means that there is no difference between the experimental group and the control group in the mean of adjustment level. Furthermore, Kranzel and Moursund (1999) state that the second hypothesis was alternative hypothesis (H_a) stating that there was significant difference in total mean score between experimental and control groups. The notation of alternative hypothesis is as follows:

$$H_a : m_{\text{experimental}} \neq m_{\text{control}}$$

If the result of the test showed that teaching reading by using jigsaw technique did not improve students' reading skill at one of Junior High Schools in Bandung, it meant that H_0 (Null Hypothesis) was accepted. Otherwise, if the result showed that teaching reading using Jigsaw technique improves students' reading skill at one of Junior High School in Bandung, null hypothesis was rejected, and alternative hypothesis (H_a) was accepted.

3.1.3. Population and Sample

Population is all members of a group about which you want to draw a conclusion (Levine and Stephen, 2005, p. 5). The population of this study was the first-grade students of SMP in Bandung. The choice of the population was based on the consideration that descriptive text is taught in first grade in junior high school, especially in second semester.

The number population was so large because the first grader of one of SMP in Bandung consisted of eight classes in which the total population was about 250. According to Coolidge (2000, p. 24), sample is a smaller group of scores selected from the population of score. In selecting sample, two classes were used in this study. The first class consisted of 30 students which acted as experimental group who received experimental treatment and the other class, consisted of 30 students which did not receive any experimental treatment.

3.2 Data Collection

According to Fraenkel and Wallen (2017), “data” refers to the types information from the researcher obtains on the subject of the research. The data collection in this study included research instruments, data collection and data analysis. The materials taught were the descriptive texts available for the seventh graders.

3.2.1 Research Instruments

In this research, observations and a pre-test were used to gain the information about the prior reading proficiency of the students from both groups. The post test and a set of questionnaire were distributed to obtain more information about the students’ responses toward the use of jigsaw technique in improving their reading comprehension.

3.2.2 Pilot Test

A pilot test was conducted to test the instruments before the instruments were used in the study. The pilot test was done in another class to investigate and get the validity and reliability of the instruments. The try-out test consisted of one questions related to the syllabus and materials that were being taught at the school. The test materials were adapted from the internet and other sources. The pilot test was conducted to other students in the same school who were not sample on April, 2016 before the experimental teaching began.

3.2.3 Pretest

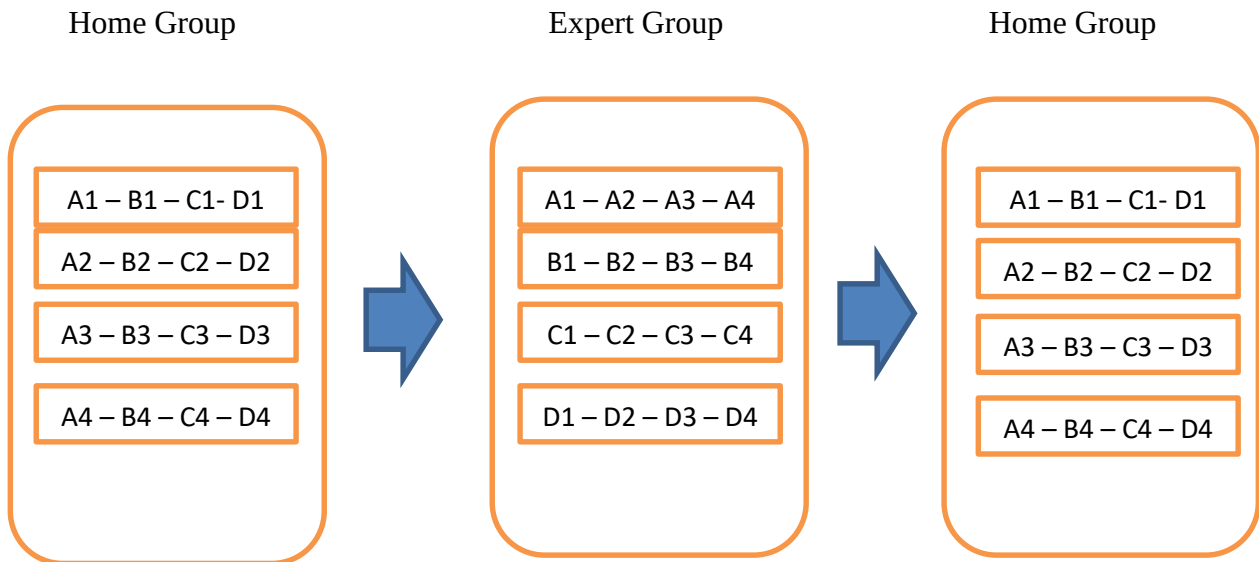
The pre-test was used to both groups in order to find out the students’ initial ability before conducting the treatments to the experimental class. Pre test is given with the intention to know whether any of the students who already know about the material to be taught. Pre test can also be interpreted as an activity to test the level of students' knowledge of the material to be delivered, pre-test activities conducted before the teaching activities are given .The students had 50 minutes to finish the test consisting of 30 multiple choice questions.

3.2.4 Treatment

The treatment was given only in the experimental group. The methods were different but the teaching materials were similar. The treatment was given in the form of applying the Jigsaw technique to assist students in reading comprehension. The design of the lesson plan was based on the standard competence and the basic syllabus of the school developed by the teacher. The learning activities in jigsaw technique are explained below adapted from Aronson (1978a, 1997b, 2008c):

1. Making students a group of 3 to 5 persons in each group (home group).
2. Divide the material into five or six segments.
3. Assigning each student to learn the text, and making sure students have direct access only to their own.
4. Giving students time to read over their text at least twice.
5. Making an expert group consisting of one student from each home group. Giving student time to discuss about their own text.
6. Bringing the students back into their home group.
7. Asking each student to present what they get in the expert group.
8. Checking per group and observing the process.
9. Giving a quiz at the end of the session related to the material so that students quickly come to realize that these sessions are not only fun and games but also meaningful.

The illustration of jigsaw in teaching and learning process according to Lie (2002) is presented below:

Figure 3.1

This following table shows the research schedule:

Table 3.2**The Research Schedule**

No	Date	Activities
1	Mei 16 th 2016	Pilot Test The pilot test was given to the other students in the same school who were not the sample of the research. The pilot test consisted of 40 questions in a multiple-choice form and the students did the test in 80 minutes.
2	Mei, 18 th 2016	Pretest The pretest was given to the students which are the sample of this research. The test consisted of 30 questions in multiple choice form and they did the test in 80 minutes.
3	Mei, 19 th 2016	1 st Treatment The students were divided into group consisting 5 to 6 members, it was called home group. After that,

		teacher gave some descriptive texts to each group with same theme which was animals, and the title of the text was My Blewuk, My Dogs, My Cat, My Pet. Each member should read the text at least twice. After the member read the text, they joined their friend in expert group. Each student in expert group had different stories about the text and then each student told about their own text. After the students discussed in expert group, they went back to the home group and discussed the topics with the members and shared what they had known after discussing with the expert group. After that, the teacher gave each group the quiz randomly so that it was possible to the group to answer the questions based on others group's text. At the end of the session, the teacher and student discussed the answer of the questions together.
4	Mei, 23 rd 2016	2nd Treatment The teaching learning activity was the same as the first treatment but the text had different theme and during this second meeting, teacher gave jumbled paragraph from several different texts. The students along with their group arranged the text and eventually they were given time to read and share some informations with each other. This activity was done to practice students' ability in memorizing, because they were expected to be able to easily arrange the text they had. In assumption, the text itself had read before. The students were given a text

		entitled Agnes Monica, My Father, My Best friend, and My Mother.
5	Mei, 24 th 2016	3 rd Treatment The teaching learning activity was the same as the first treatment but the text had different theme. The students were given a text entitled Margareta's house, My Simple House, Hello this is my new house, and Classroom.
6	Mei, 30 th 2016	4 th Treatment The teaching learning activity was the same as the first treatment but the text had mixed theme. The students were given a text entitled Peacock, My Older Brother, The White House, and King of The Jungle.
7	Mei, 31 st 2016	Posttest The posttest was given to the students. The assessment consisted of 30 questions in multiple choice form and they did the test in 80 minutes. Questionnaire. The questionnaire was given to the students after the test. The questionnaire consisted of 18 questions related to the teaching learning activity with and without jigsaw technique.

3.2.5 Posttest

Post-test was used in the last program of this study after giving some treatments to experimental groups in period of time. The purpose was to find out whether the method was effective or not. The benefit of holding this post test is to get an idea of the abilities achieved after the end of the course. The result of this post test is compared with the result of pre test that has been done so that will be known how

far effect or influence of teaching that have been done, beside also can be known what part of teaching materials still not understood by majority of student. The students had 50 minutes to finish the test consisting of 30 multiple choice questions.

3.2.6 Questionnaire

After all the treatments, questionnaire was administered to the students. It was used to get the information about their responses on the process of learning English texts by using jigsaw technique and their difficulties in learning English texts. Questionnaire is a method used to collect standardized data from large numbers of people. Questionnaires consist of the same set of questions that are asked in the same order and in the same way in order that the same information can be gathered.

3.3 Data Analysis

After collecting data from the sample, data analysis was conducted with some procedures. There were several procedures in analyzing the obtained data. They were scoring technique, data analysis on pilot test, validity test, reliability test, difficulty level test, normality distribution test, data analysis on pretest and posttest and data analysis of questionnaire.

3.3.1 Scoring Technique

Pretest and posttest were in the form of multiple choice questions. How to score a test result is usually adjusted to the form of test questions that are used, whether objective tests or essay tests. For objective questions, usually each correct answer is given a score of 1 (one) and each wrong answer is scored 0 (zero); The total score is obtained by summing the scores obtained from all questions.

3.3.2 Data Analysis on Pilot Test

Pilot testing (a session or two before the real test) helps fine-tune usability studies, leading to more reliable results. It provides an opportunity to validate the wording of tasks, understand the time necessary for the session. Pilot test was conducted to measure the validity, reliability and the level of difficulty of the

instrument. The valid and reliable items were used as the research instruments. Recruit participants who match your target profile for pilot studies. This means that any feedback — about the study or about the site being tested— will be more relevant. In a pinch, recruiting someone who doesn't quite fit the profile is typically better than not running a pilot test at all, but the results from those sessions then would not be applicable in the final study.

3.3.3 Validity Test

In addition, validity is a measure that shows the variable that really variables that must be investigated by researchers (Cooper and Schindler, in Zulganef, 2006). A test can be said to have a high degree of validity if the text performs its measuring function, or provides a precise measurement and is appropriate for the purpose of the test. Validity test was measured by using Pearson Product Moment Correlation. It was used to analyze the validity of each item, which is calculated through SPSS 20 for Windows.

3.3.4 Reliability Test

According to Hatch and Farhady (1982, p. 224) define reliability as the extent to which a test produces consistent result when administered under similar condition. The reliability test was measured by using Cronbach's Alpha formula, which is used to measure the reliability of the instrument. The criteria for the reliability test can be seen in the following table:

Table 3.3

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

3.3.5 Difficulty level test

The difficulty level test was aimed at measuring whether an instrument was considered difficult or easy. Arikunto (2010:75) classifies index of difficulty test as presented below:

Table 3.4

Index of Difficulty	Interpretation
0.0-0.30	Difficult item
0.30-0.70	Moderate item
0.70-1.00	Easy item

3.3.6 Data Analysis on Pretest and Posttest

Pretest and posttest were measured by using paired sample t-test. It was analyzed to find out the difference between pretest and posttest mean score whether it was significant or not by comparing their mean (mean of pretest and mean of posttest). Pre test is given with the intention to know whether any of the students who already know about the material to be taught. Pre test can also be interpreted as an activity to test the level of students' knowledge of the material to be delivered, pre-test activities conducted before the teaching activities are given Post-test was used in the last program of this study after giving some treatments to experimental groups in period of time. The purpose was to find out whether the method was effective or not. It was calculated by using SPSS 20 for Windows.

3.3.7 Data Analysis of Questionnaire

Questionnaire was conducted in order to get the information from the students about the learning process and their responses to the learning activity by using jigsaw technique. Questionnaire is a method used to collect standardized data from large

numbers of people. Questionnaires consist of the same set of questions that are asked in the same order and in the same way in order that the same information can be gathered. It was analyzed by interpreting the students' answer of the questions.

3.3.8 Normality of Distribution on Pre-Test and Post Test

Analysis of normality of distribution on pre-test was conducted to find out the scores of the experimental and control class whether normality distributed or not. The first step in calculating the normality distribution test stated that hypothesis:

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

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

The second step to analyze normality of distribution, Kolmogorov - Smirnov formula was used in SPSS 20 for windows. If the Asymp. Sig > level of significance (0,05), the scores on pre test was normally distributed.

3.3.9 Homogeneity of Variance on Pre-Test and Post Test

Analysis of homogeneity of variance on pre test was conducted to find out whether variance of the experience of the experimental and control class was homogenous. . The first step in calculating the variance homogeneity test stated that hypothesis:

H_0 : the scores of the experimental class and control class are normally homogeneous .

H_1 : the scores of the experimental class and control class are not homogeneous .

The second steps to analyze homogeneity of variance, Levene Test formula in SPSS 20 for windows was used in SPSS 20 for windows. If the probability > the level

of significance (0,05), mean that the experimental and control classes on pretest were significantly different.

3.3.10 The Independent T-test on Posttest

Analysis of the independent t-test on posttest was conducted to find out whether there is significant difference between the posttest means the experimental and control classes. Independent sample test formula in SPSS 20 for windows was used. If the Asymp. Sig > level of significance, then the difference is not significant.

3.3.11 Analyzing Data on the Experimental Class Scores

Analysis data on the experimental class was to investigate whether the difference the pre-test and post-test means of the experimental class was significant, or not the matched t-test in SPSS 20 for windows was used to analyze the pre-test and post-test scores. If the probability was more than or equal to the level of significance, there was no significance difference between the pre-test and post-test scores.