

CHAPTER 3

RESEARCH METHODOLOGY

This chapter discusses the details of research method applied in the research. It comprises research question, research design, variables, population and sample, data collection techniques which include research instrument, research procedures, and data analysis. The explanations of the matters are elaborated in the following subchapter.

3.1 Research Question

This research is conducted to answer the following question:

1. What are the effects of reading aloud and silent reading toward EFL high school students' reading comprehension on texts?

3.2 Research Design

This research employed quantitative method. The method was used to determine the effects of both modes of reading including reading aloud and silent reading on high school students' reading comprehension using numerical data and statistical testing techniques. This research tried to find the changing with both modes toward the students' reading comprehension. Quantitative research separates and finds the changing of dependent variables and then, categorizes and describes it into several categories (Brannen, 2005, p. 11). The quantitative method used then, definitely accommodated the purpose of the research which intends to find the changing of high school students' reading comprehension as the dependent variable and categorizes the findings into more effective and less effective mode of reading.

Ex post facto or causal comparative research was used in the current research. The ex post facto research is appropriate to conduct when manipulation of human behavior is not possible (Simon & Goes, 2013, pp. 1-2). Causal comparative research is in

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contrast with experimental study. Instead of making difference and giving treatment toward both groups, it uses the difference that already exists in the groups. The groups chosen for this research are XI MIA 1 and XI MIA 2.

The variable in the causal comparative research can be something which cannot be manipulated such as ethnicity, or has not been changed because of particular reason such as teaching style (Fraenkel & Wallen, 2009, p. 363). Kerlinger and Rint (1986) said that ex post facto research investigates the relationship of the current situation of particular thing and the possible causes in the past which influence the situation. This kind of research seeks to find the effect of past occurrence toward particular subject, the influence of one variable towards another, and examine a claim by using statistical testing techniques. The present research looked for the influence of independent variable (reading aloud and silent reading) toward dependent variable (reading comprehension).

Frankel and Wallen (2009) stated that there are three kinds of causal comparative research. The first is exploration of causes. It investigates the independent variable of the subject. It elaborates the reasons why particular subjects of research appear to be distinctive from the others. The second is exploration of effect. It is related with the effect of particular thing such as teaching style toward dependent variable. The third is exploration of consequences. It deals with the exploration of dependent variable with other intervention involved. The present research employed the second type of the causal comparative research. It compared the effects two reading mode to reading comprehension as dependent variable.

3.3 Variables

There are two variables classified in this research; independent and dependent variables. The independent variables can be defined as the one which gives effects to at least one other variable while the variable that the independent variables affects is

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called dependant variable (Fraenkel & Wallen, 2009). The independent variable of this research is reading aloud and silent reading. The dependant variable is the senior high school students' reading comprehension.

3.4 Hypothesis

Research hypothesis is functioned to give the temporary answer to the research questions (Sukardi, 2003, p. 42). This research stated two hypothesizes: the null hypothesis and the alternative hypothesis. They are stated as follow.

H₀: The effect of reading aloud mode in experimental group and silent reading mode in comparison group are not significantly different.

H_A: The effect of reading aloud mode in experimental group and silent reading mode in comparison group are significantly different.

3.5 Data Collection Techniques

3.5.1 Population and Samples

Population means the whole group of particular society which the result of the research can be applied (Frankel & Wallen, 2009, p. 90). Population can be teachers, students, head masters, offices, faculties, school, etc. (Sukmadinata, 2012, p. 250). Besides, population can be divided into two categories; general population and target population. The target population is the group of people in which the result of the research can be applied. The general population is the whole group of people who have identical characteristics of the target population (Sukmadinata, 2012, p. 250). The target population in this research was the students of eleventh grade of senior high school 9 which number is 400 students (approximately 40 students in each class). Meanwhile, the general population of the research was the eleventh grader of senior high school in Bandung. They were chosen because they were at the middle state of senior high school period. Furthermore, 11th graders have learnt various reading materials including procedure, report, short biography, and analytical

exposition text. In this stage, they need guidance to get the idea of texts with more effective way to get better understanding.

Sample is the group which the researcher gains information from (Frankel & Wallen, 2009, p. 90). Fraenkle and Wallen (2009, p. 102) suggested that causal comparative studies have at least 30 students in each group. Thus, the current research sample is considered sufficient. In this research, 80 students were assigned randomly with 40 students in reading aloud group and 40 students in silent reading group.

Purposive sampling method was employed in this research. According to Fraenkle and Wallen (2009, p. 99), purposive sampling is a sampling method which involves the personal judgment about which sample can be the representative of the population in the selection process. This research's samples were 2 eleventh grade classes; XI MIA 1 and XI MIA 2. They were chosen based on the English teachers' consideration and judgment about both classes' scores on English lesson which were identical so that the comparison between two reading modes effects can be conducted more precisely. Furthermore, the teacher said that both classes were already taught about analytical exposition text which was used in the research.

3.5.2 Research Instrument

Research instrument is tools to help researcher to collect the data and answer the research questions (Sukardi, 2003, p. 121). In this research, 3 reading texts and 10 comprehension questions were used. The post-test instrument was used to determine whether the treatment of reading aloud and silent reading had impact toward the dependant variable (reading comprehension).

3.5.3 Reading Test

Reading test was administered to find out the development of students' reading comprehension using two modes of reading. Thus, the research could find out the

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difference of students' reading comprehension. Furthermore, the findings of the reading test can answer the research question on the effects of each mode of reading. The reading test comprised three texts entitled air pollution, being on time, and tourism with 10 items of multiple choice questions which were designed based on Indonesia's national examination for senior high school students. The test was composed based on standards in Indonesian curriculum of English teaching 2013 as follow.

Table 3.1
Basic Competence

Aspect	Basic Competence
Reading	3.10 Analyze the social function, text structure, language features of analytical exposition text about the current issues, related to the surrounding. 4.14 Understanding the meaning of the current issues of analytical exposition text.

The multiple choice questions are analyzed using Barrett's Taxonomy of reading comprehension as follow.

Table 3.2
The Barrett's Taxonomy

The Barrett's Taxonomy	Item Number
	Post-test
Literal Recognition	1, 3, 5, 6, 8, 9, 10
Reorganization	2, 4, 7
Inferential Comprehension	-
Evaluation	-
Appreciation	-

3.5.4 Reading Materials

The reading material covered analytical exposition text type. The reading materials were adapted from Indonesian national examination instrument. There are three texts entitled “Air Pollution”, “Being on Time”, and “Tourism”. The materials were chosen based on Indonesian Curriculum 2013 for 11th graders. Besides, it was chosen because the students have learnt about it. According to a short interview with the English teacher, the students in both classes have learnt the analytical exposition text so that the research instrument was appropriate to use in the research.

3.6 Research procedure

3.6.1 Selecting Participants

In this research, the participants were selected based on the English teacher consideration. All of the participants were 11th graders of senior high school in Bandung. 80 students were selected and then divided into two groups. Each group consists of 40 students. The number of students in silent reading group was 40 students and the number of reading aloud group was 40 students.

3.6.2 Selecting reading materials

The reading texts were taken from the Indonesian national examination. The taken reading passages were only analytical exposition text type which has been learnt by the students in the first semester of school period. The texts used are entitled air pollution, being on time, and tourism. The number of questions in the first text was 4 questions, the second text was 3 questions, and the third text was 3 questions.

3.6.3 Making questions

Each passage used in this research was consisted of 4, 3, and 3 questions. The questions were made based on the Barrett’ Taxonomy of reading comprehension which consists of five level of questions; literal recognition, reorganization,

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inferential comprehension, evaluation, and appreciation. However, in this research all level of the reading comprehension was used except the appreciation level.

3.6.4 Reading Aloud Mode

The 40 students were invited to an empty classroom during the school time one by one. In this mode of reading, the students were asked to read three texts one by one loudly. The text was taken and the questions were given after the students finished reading each text. Before the reading test was started, the participants were given a verbal instruction before the reading test started. However, to avoid misunderstanding of the instruction, the instruction was delivered in English and Indonesian.

“I am going to give you three reading passages, but I will give it to you one by one. When I say begin, I want you to read the first passage aloud. Read the passage aloud at your normal pace. When you have finished reading the passage aloud, I will take up the text and give you some comprehension questions to answer. After you finish the first passage, I will give you the second and the third passage. Do your best to answer each question correctly. Do you have any questions? Ok, here is the passage. The title of the first passage is _____ . You can now begin .”

3.6.5 Silent Reading Mode

In this mode of reading, 40 students in a classroom were asked to read three texts one by one silently. Each text was given to the students one by one too. After the students finished reading each text, the text was taken and the questions were given. Before the reading test was started, the instruction on how to do the test was given in English and Indonesian to avoid misunderstanding.

“I am going to give you two reading passages, but I will give it to you one by one. When I say begin, I want you to read the first passage silently. Read the passage aloud at your normal pace. When you have finished reading the passage silently, I will take up the text and give you some comprehension questions to answer. After you finish the first passage, I will give you the second and the third passage. Do your best to answer each question correctly. Do you have any questions? Ok, here is the passage. The title of the first passage is _____ . You can now begin .”

3.7 Data Analysis

3.7.1 Scoring Procedure

Multiple choice questions instruments were used in this research. After the data gained the data analyzed by using scoring technique. According to Arikunto, there are two kinds of formula which can be used to analyze multiple choice data; those are the formula with punishment procedure and the formula without punishment procedure. This research employed the formula without punishment which was analyzed using the following formula:

$$R = \frac{S}{N}$$

S : Score

R : Right answer

3.7.2 Data Analysis on Try Out Test

The data Analysis on tryout test was conducted to 25 students of senior high school in Bandung before the test was administered. To find out the quality of the instruments,

the researcher followed the tryout test procedure analysis proposed by Arikunto (2001) which consist of four steps; calculating validity, reliability, difficulty level, and discriminating power of the test instrument.

3.7.2.1 Validity Analysis

Validity Analysis refers to how the test instrument is considered appropriate to examine the research aims. According to Fraenkle and Wallen (2009), Validity is defined as “the appropriateness, correctness, meaningfulness, and usefulness of the specific inferences researchers make based on the data they collect”. The process of gathering and identifying evidences to support the inferences is called validation. The validity analysis was calculated using Pearson Product Moment correlation in SPSS 20 for Windows. The criteria for the validity test can be seen in the following table.

Table 3.3
r Coefficient Correlation (Validity)

Raw Score	Interpretation
0.800-1.00	Very High
0.600-0.800	High
0.400-0.600	Moderate
0.200-0.400	Low
Raw Score	Interpretation
0.00-0.200	Very Low

(Arikunto, 200, p. 147)

3.7.2.2 Reliability Analysis

Reliability refers to the consistency of the scores obtained by individuals using certain instruments (Fraenkel & Wallen, 2009, p. 154). Reliability analysis was measured using Cronbach Alpha Formula in SPSS 20 for Windows. According to

Creswell (2009, p. 149), if the reliability coefficient is more than 0.6, the research instrument can be said to have reliability and can be used to conduct the research.

3.7.2.3 Difficulty Level Analysis

The difficulty level analysis is used to find out whether the instrument is considered difficult or easy (Arikunto, 2010, p. 75). According to Arikunto, the classification of difficulty level analysis can be seen as follow.

Table 3.4
Index of Difficulty Level

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

(Arikunto, 2010, p. 75)

3.7.2.4 Discriminating Power Analysis

According to Arikunto (2010), a good test instrument has to be able to differentiate between the high achiever and low achiever students. To calculate this matter, the discriminating power analysis was used in this research. There are two steps which need to be done before calculating the discrimination index for each item question; arranging the students' total score from the highest to the lowest and dividing the subjects into two groups (high achiever group and low achiever group). After those steps were done, the calculation and interpretation can be obtained. The following is formula and the criteria of discriminating index.

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

D : Discrimination index

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- U : Number of correct answers for each item in upper half group
 L : Number of correct answers for each item in lower half group
 n : number of the students in one group.

Table 3.5
Criteria of Discrimination Index

Score	Interpretation
0.00-0.20	Poor
0.20-0.40	Satisfactory
0.40-0.70	Good
0.70-1.00	Excellent

(Arikunto, 2010, p. 210)

3.7.3 Data Analysis on Reading test

The data gained from reading test were analyzed using SPSS 20 for windows, Microsoft Excel 2007 and some statistical calculation. There were 4 measurements used in the research; frequency and central tendency, normality distribution test, homogeneity of variance test, and independent T-test. The explanation of each measurement is elaborated as follow.

3.7.4 Measuring Frequency and Central Tendency

According to Fraenkle and Wallen (2009, p. 243), two different groups can be compared using frequency polygon and central tendency. Frequency polygon provides most information of the result scores between two groups and the central tendency presents the summary of group performance. Central tendency or average covers not only the mean of the data but also median and the mode (Ary, Jacobs, Sorensen, & Razavieh, 2010, p. 108). It was used to see the general overview of the data gained from the post-test. In this research, the frequency and the central tendency were calculated using Microsoft Excel 2007.

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3.7.5 Normality Distribution Test

To know whether the data in the reading aloud and silent reading group were normally distributed, it is important to test the normality distribution test. Shapiro-Wilk in SPSS for windows was employed to get the normality of distribution to both groups. Below are the calculation steps using SPSS 20.0 for Windows.

1. Setting the level of significance at 0.05 and stating the hypothesis.
H₀: The scores in reading aloud and silent reading group are normally distributed.
H_A: The scores in reading aloud and silent reading group are not normally distributed.
2. Calculating the data using Kolmogorov-Smirnov formula in SPSS 20.0 for Windows.
3. Comparing the result score of significant with the level of significance value (0.05). If the score of asymptotic significance (asymp.sig) was bigger than 0.05, the data was normally distributed and the null hypothesis was accepted. In contrast, when the score of asymptotic significance was smaller than 0.05, the null hypothesis was rejected and the data was not normally distributed.

3.7.6 Homogeneity of Variance Test

The variance of both silent reading and reading aloud group were crucial to be calculated after gaining the normality of distribution. It is used to know whether the variances of both groups were homogenous or not (Arikunto, 2010, p. 357). In this research, the homogeneity of variance was calculated using Levene SPSS 20.0 for windows. Below were the calculation steps:

1. Setting the level of significance at 0.05 and stating the hypothesis.
H₀: The variances in experimental and comparison group are homogenous.
H_A: The scores in experimental and comparison group are
2. Calculating the homogeneity using Levene test in SPSS 20.0 for windows.

3. Comparing the result score of significant with the level of significance value (0.05) to test the hypothesis. If the score of asymptotic significance (asymp.sig) was bigger than 0.05, the variance was homogenous and the null hypothesis was accepted. In contrast, when the asymptotic significance was smaller than 0.05, the null hypothesis was rejected and the variances were no homogenous.

3.7.7 The Calculation of Independent Samples T-test

According to Fraenkle and Wallen, independent T-test is defined as tool to see whether there is a significant difference between the means of two different independent groups (Fraenkel & Wallen, 2009, p. 229). In this research, the T-test was calculated using SPSS 20.0 for Windows. Calculating the independent variable group t-test required the following steps.

1. Stating the hypothesis.
H₀: There is no significant difference between two samples.
H_A: There is significant difference between two samples.
2. Setting the alpha level at 0.05 (two tailed test)
3. Analyzing if the t_{obt} is equal or greater than the level of significance (t_{crit}), the null hypothesis was rejected and the groups were significantly different.

3.8 Concluding Remark

This chapter has presented the research methodology including the research design; expost facto research, variables, hypothesis, data collection techniques, tryout test data analysis, sampling techniques, research instruments, research procedures, reading test data analysis. The following chapter explains findings and discussion of the research findings.