

CHAPTER III

RESEARCH METHODOLOGY

This chapter presents the research methodology which is used as the framework of this research. It involves the research design, population and sample, time allocation, instruments used in this research, procedure of the research, and procedure of data analysis.

Research Design

This research is a quantitative research which employs an experimental research design. Experimental research design is a study which investigates the effect of an independent variable on dependent variable (Gay, 1992). In an experimental research design, there is a manipulated activity called treatment which is believed to make difference or effect to the dependent variable.

Specifically, this research use a quasi-experimental research design. In this research design, pre-test and post-test were provided to both experimental and control group. However, unlike true-experimental research design, the experimental and the control group in quasi-experimental design had already been grouped before the research was conducted. As stated by Nunan (1992), quasi-experimental research contains pre-test and post-test with experimental and control groups but no random assignment of subjects.

The formulation of quasi-experimental research based on Cresswell (2003) is presented in the following table:

Table 3.1
Pre-test Post-test Group Design

Group	Pre-test	Treatment	Post-test
Experimental Group (A)	O ₁	X1,X2,X3,X4,X5,X6	O ₂
Control Group (B)	O ₁	Placebo-treatment	O ₂

Note:

O₁ : pre-test of experimental and control groups

- X : treatment for the experimental group
 O₂ : post-test of experimental and control groups

From the table, it can be seen that pre-test and post-test were given to both experimental and control groups. Whereas the experimental group received TPRS as the treatment, the control group received non-TPRS as the placebo-treatment. Both of the group were given the treatment in six meetings.

Variables

A variable can be defined as an attribute of a person or of an object which “varies” from person to person or from object to object (Hatch and Farhady (1982). Moreover, Nunan (1992) states that variable is anything which does not remain constant.

In quasi-experimental research, there are two major types of variable to be identified; independent and dependent variable. According to Hatch and Farhady (1982) Independent variable is the variable which is selected, manipulated, and measured by the researcher. Meanwhile, dependent variable is the variable which is observed and measured to determine the effect of the independent variable.

In case of this research, the independent variable is Total Physical Response Storytelling (TPRS) method, while the dependent variable is the students’ listening score.

Population and Sample

A population is a theoretical group of all possible scores with the same trait or traits (Collidge, 2000). According to Nunan (1992) population is a group of people which share common, observable characteristics that differentiate them from other groups. In case of this research, the population of this research was the students of a Primary School in Sukabumi.

Meanwhile, a sample is a subset of individuals from a given population. Hence, the samples of this research then were 60 fifth grade students of Primary

School. The students were divided into two classes that were labeled as experimental and control groups.

Time Allocation

The time allocation of this research was adjusted with the schedule that already existed in the school. The research was conducted in eight meetings, the pre-test, six times treatments, and the post-test. Both experimental and control groups were given two meetings in a week. Hence, the research was done in one month. In detail, the schedule of the research can be seen in the following table:

Table 3.2
Schedule of the Research

No	Experimental Group		Control Group	
	Date	Materials	Date	Materials
1.	12th Nov 2013	Pre-test	13th Nov 2013	Pre-test
2.	14th Nov 2013	Treatment 1: Introduction to Parts of The Body	14th Nov 2013	Placebo-Treatment 1: Introduction to Parts of The Body
3.	19th Nov 2013	Treatment 2 : Learn parts of body using a story “Bolang and The Green Monster”. In this meeting, TPRS was applied to the story.	20th Nov 2013	Placebo-Treatment 2 : Learn parts of the body using story “Bolang and The Green Monster” without the use of TPRS
4.	21st Nov 2013	Treatment 3: Learn parts of body using a story “Bolang and The Green Monster”. In this meeting, TPRS was applied to the story.	21st Nov 2013	Placebo-Treatment 3: Learn parts of the body using story “Bolang and The Green Monster” without the use of TPRS
5.	26th Nov 2013	Treatment 4: Introduction to Daily Routines	27th Nov 2013	Placebo-Treatment 4: Introduction to Daily Routines

6.	28th Nov 2013	Treatment 5: Learn Daily Routines using story “Bolang The Adventurer Boy” In this meeting, TPRS was applied to the story	28th Nov 2013	Placebo-Treatment 5: Learn Daily Routines using story “Bolang The Adventurer Boy” without the use of TPRS
7.	3rd Dec 2013	Treatment 6: Learn Daily Routines using story “Bolang The Adventurer Boy” In this meeting, TPRS was applied to the story	4th Dec 2013	Placebo-Treatment 6: Learn Daily Routines using story “Bolang The Adventurer Boy” without the use of TPRS
8.	5th Dec 2013	Post-test and administering questionnaire and interview.	5th Dec 2013	Post-test and administering questionnaire and interview.

Instruments

Instrument is a device (such as test, questionnaire, or rating scale) the researcher uses to collect data (Fraenkel, 2006). The test instrument included pre-test, post-test, and questionnaire. Both pre-test and post-test were given to experimental and control group. Pre-test was intended to measure the students' ability before the treatments and to ensure that both control and experimental group had the equal ability. Meanwhile, post-test was conducted after the treatments to find out the effect of Total Physical Responses Storytelling in improving the students' listening skill. The pre-test and post-test were provided in multiple choice. The questions in pre-test and post-test were different. It was to avoid the students remembering the answers. However, the level of difficulty was still equal

In order to answer the second question of this research, questionnaire technique was used. The questionnaire was conducted only to experimental group. The instrument for questionnaire consisted of 7 questions related to the students'

responses toward the use of Total Physical Response Storytelling in improving their listening skill. Refer to appendix to see the questions of the questionnaire.

Research Procedures

The first step in conducting this research was preparing and creating the lesson plan. The lesson plan for this research was adjusted with the Standard Competence and Basic Competence of English (listening) for grade 4 students:

Table 3.3
English Syllabus

Standard Competence	Basic Competence
Mendengarkan 1. Memahami instruksi sangat sederhana dengan tindakan dalam konteks kelas.	1.1 Merespon dengan melakukan tindakan sesuai instruksi secara berterima dalam konteks kelas. 1.2 Merespon instruksi sangat sederhana secara verbal dalam konteks kelas.

After the Standard Competence and Basic Competence had been analyzed, the lesson plan was then created. The lesson plan used Total Physical Response Storytelling. The activities, materials, and stories used in the lesson plan had been suited with the level of 4 grade students as well. The lesson plan presented in Appendix.

The next step was preparing the instruments to be used in collecting data. The instruments were pre-test, post-test, and interview. However, before distributing the instruments, a pilot test was conducted to see the reliability and validity of the pre-test. Pilot testing is important to ensure that the instruments used are valid and reliable. In this research, pilot test was conducted to a class of grade 4 students who were not assigned as experimental and control group. The result of pilot test then determined the valid and reliable questions that can be used in the instrument.

As soon as the instrument was ready, the pre-test was given to both experimental and control group. The result of pre-test was very crucial in order to know the students' ability before the treatments. Moreover, it was also to ensure that the students in experimental and control group had equal ability.

The treatments were given in six meetings to the experimental group only. The treatments were presented using Total Physical Response Storytelling in different materials and various activities. It was to prevent the students from feeling bored with the lesson.

After the treatments, the post-test (see Appendix) were then conducted to experimental and control group. The result of post-test was used to determine the effect of Total Physical Responses Storytelling in improving the students' listening skill. Moreover, it was also intended to find out the significance of the effect.

Lastly, in order to answer the second question of the research, questionnaire technique was employed. Questionnaire was conducted to experimental group. The questionnaire was then analyzed to see the responses of the students toward TPRS. Furthermore, the result of the questionnaire was presented in the next chapter.

Data Analysis

Test Instrument Analysis

In order to get the valid data collection, the instruments used in the research has to be valid and reliable. It was supported by Nunan (1992) who said that to be valid in data collection, every procedure used in collecting data has to have acceptable validity and reliability. Hence, the validity and reliability of the instruments of this research were tested through pilot test.

1.7.1.1 Validity Analysis

Following Fraenkel&Wallen (1990), an instrument is valid if it measures what is supposed to be measured. The validity of each question in the instruments

was tested using a statistical tool named Karl Pearson Product-Moment. In detail, the formulation of Pearson Product-Moment can be seen as follows:

$$r_{xy} = \frac{n \sum xy - [(\sum x)(\sum y)]}{\sqrt{[n \sum x^2 - (\sum x)^2][n \sum y^2 - (\sum y)^2]}}$$

Note:

r_{xy} = index correlation

n = number of students

x = total score of each item

y = total score of all student

The data were computed using computer software named Anates V4 and SPSS 18. The computation result was then analyzed to decide if the question is valid or not. The decision was made by considering the criteria of the coefficient correlation by Arikunto (2006).

Table 3.4

The Criteria of the Coefficient Correlation (Arikunto, 2006)

Coefficient Interval	Interpretation
$0,90 \leq r_{xy} \leq 1,00$	Very High
$0,70 \leq r_{xy} < 0,90$	High
$0,40 \leq r_{xy} < 0,70$	Moderate
$0,20 \leq r_{xy} < 0,40$	Low
$0,00 \leq r_{xy} < 0,20$	Very Low
$r_{xy} < 0,00$	Not Valid

Reliability Analysis

Reliability refers to the consistency of scores or answers from one administration of an instrument to another, and from one set item to another (Fraenkel&Wallen, 1990). In order to find out the reliability of instruments for

pre-test, post-test, and questionnaire, AnatesV4 and SPSS 18 were employed. Furthermore, followingKranzler&Moursand (1999), the reliability value was also compared to r table to find out the level of reliability.

Pre-Test Data Analysis

1.7.1.1 Independent t-test

Pre-test was conducted before treatments to ensure that both control group and experimental group had relatively equal ability in listening comprehension. The result of pre-test was analyzed using SPSS 18. The statistical tool which was used is Independent T-test. The following is the formula of Independent t-test:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\left[\frac{\sum x_1^2 - \frac{(\sum x_1)^2}{N_1} + \sum x_2^2 - \frac{(\sum x_2)^2}{N_2}}{N_1 + N_2 - 2} \right] \cdot \left[\frac{1}{N_1} + \frac{1}{N_2} \right]}}$$

\bar{x}_1 = the mean of the scores of the first group

\bar{x}_2 = the mean of the scores of the second group

$\sum x_1^2$ =the sum of the squares of the first group

$\sum x_2^2$ = the sum of the squares of the second group

$(\sum x_1)^2$ = the square of the sum of the scores of the first group

$(\sum x_2)^2$ = the square of the sum of the scores of the second group

N_1 = the total number of the scores in the first group

N_2 = the total number of the scores in the second group

Normality Test

Normality test was conducted to ensure that the distribution of scores in the data was normal. To compute the normality of the pretest, Kolomorgov-Smirnov test in SPSS 18 for windows was employed

Variance Homogeneity Test

Variance homogeneity test was conducted to ensure that the two groups tested in Independent t-test were equal or approximately equal (Collidge, 2000).

The variance homogeneity in this pretest then was computed using Levene formula in SPSS 18 for windows.

Post-test Data Analysis

The data collected from posttest of both groups were analyzed using the same procedure as pretest which involved Independent t-test, normal distribution test, and variance homogeneity test. It could be identified then whether there was a difference between the listening scores of control and experimental group.

Moreover, to find out whether there was a significant difference between pretest and posttest in each group, a statistical tool which was dependent t-test was employed. The dependent t-test score was computed using SPSS 18. Meanwhile, the formulation of dependent t-test is as follows:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{\sum D^2 - \frac{(\sum D)^2}{N}}{N(N-1)}}$$

\bar{x}_1 = the mean of the pre-test score

\bar{x}_2 = the mean of the post-test score

$\sum D^2$ = the sum of the squares of the differences between the pre-test and post-test scores

$(\sum D)^2$ = the square of the sum of the differences between the pre-test and post-test scores

Meanwhile, to measure how significant the effect of treatments to experimental group, it is important to calculate the effect size (Collidge, 2000). The following is the formulation of effect size:

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

r = effect size

t = t-test value

df = degree of freedom (the amount of samples minus 2. df= n-2)

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Table 3.5
Effect Size Scale

Effect Size	r Value
Small	.100
Medium	.243
Large	.371

Data Analysis of Questionnaire

Questionnaire was intended to find out students' responses toward the use of TPRS in improving their listening skill. The data from questionnaire then were analyzed and calculated in percentage using SPSS 18 for windows. Moreover, the result was then presented in the form of table.