



**CHAPTER III**  
**RESEARCH METHODOLOGY**

This chapter presents the methodology used in this study. It provides four main parts of the investigation. They are research design, data collection technique, research procedure, and data analysis procedure.

**3.1 Research Design**

This study employed quantitative method in the form of quasi-experimental with non-randomized pre-test and post-test groups. This design attempts to fulfill the true experimental design as close as possible (Hatch & Farhady, 1982). In addition, this design is used because the randomized sample is not feasible (Best, 2006, p. 177).

The design used in the study is presented below:

**Table 3.1**  
**Research Design**

Groups	Pre-test	Treatment	Post-Test
Experimental	O <sub>1</sub>	X	O <sub>2</sub>
Control	O <sub>3</sub>	-	O <sub>4</sub>

Note:

X : the exposure of a group to the experimental variable

O : the process of observation or measurement

*(Campbell and Stanley, 1966)*

According to Best (2006), a variable is the condition that being manipulated or observed by researcher. It is divided into independent and dependent variable. Independent variable is a variable that is selected, manipulated and measured by researcher, while dependent variable is a variable that is observed by researcher to determine the effect of independent variable (Hatch & Farhady, 1982). Therefore, the

independent variable in this study was TGT technique while the dependent variable is the students' reading comprehension score.

Hypothesis is a formal affirmative statement predicting a single research outcome, a tentative explanation of the relationship between two or more variables (Best, 2006).  $H_1$  is hypothesis researcher tries to support.  $H_0$  is null hypothesis which states there is no difference between the result of experimental group and control group while the treatment is conducted (Kranzler, 1998).

Therefore, the hypothesis of this study is presented as follow:

- $H_0$  = There is no significant difference between students' post-test scores in experimental group and control group.
- $H_1$  = There is a significant difference between students' post-test scores in experimental group and control group.

### **3.2 Data Collection**

The following sub-sections cover the data collection technique. Specifically, presented below are the population and sample of the study and research instrument.

#### **3.2.1 Population and Sample**

According to Nunan (1992), population is group of individuals that share observable characteristics that different from another group. However, it can have more similar characteristic to be observed by researcher. In this study, rather than examine the whole population, small proportion of the population is selected. This small proportion is called sample (Best, 2006). Since quasi-experimental design does not include random selection of subjects, the sample of this study was chosen purposively, based on the same number of students and absence of significant difference between scores of the two groups. The difference was determined by independent t-test.

There were two groups involved in this study; experimental group and control group. The experimental group was exposed to TGT technique while the control

group was not. The samples of the study were two classes of second grader in one senior high school in Subang, namely XI-IPA 4 as the experimental group and XI-IPA 5 as the control group. Each group consisted of 30 students.

### **3.2.2 Research Instrument**

Research instrument is defined as tools to collect data (Fraenkel & Wallen, 1990). In this study, there were three kinds of research instrument, namely pre-test and post-test, questionnaire, and interview. Each data collection technique is described below.

#### **3.2.2.1 Pre-test and Post-test**

The pre-test and post-test were used to investigate the effectiveness of TGT technique to improve students' reading comprehension skill of hortatory exposition text. The reading ability tested regarding to the students' ability to collect information to make meaning of the text as well as their mastery of the function, structure, and language feature of hortatory exposition text. The reading comprehension questions in the pre-test and post-test can be found in Appendix B.

The pre-test and post-test technique was chosen because of its ability to measure the students' prior ability to administer some treatment and the students' post ability after the treatment (Best, 2006). Pre-test were administered to both experimental and control groups before the treatment while the post-test was administered after the treatment. The pre-test score was used to find out the students' basic score in reading comprehension and to assign students to teams in TGT procedure. The pre-test and post-test score were then analyzed to find out the effectiveness of TGT technique in teaching reading comprehension of hortatory exposition text using independent t-test.

The tests in this study were in the form of multiple choice tests. This structure was used because it allows researcher to test receptive skills such as reading comprehension without requiring the students to produce written or spoken language

which makes the test more reliable (Hughes, 2007, p. 76). As stated by Day and Park (2005), multiple-choice form is suitable to test reader's comprehension. In this study, fifty questions were tested through pilot test to find out the validity and reliability of the test. After being proven to possess both face validity and content validity through the pilot test, 42 questions were divided to be used in pre-test and post-test. The both test possess the similar difficulty level.

**Table 3.2**  
**The Specification of Pilot Test Item**

Aspect	Competence Standard	Basic Competence	Indicator	Item Number
Reading	11. Memahami makna teks fungsional pendek dan esei berbentuk <i>narrative, spoof</i> dan <i>hortatory exposition</i> dalam konteks kehidupan sehari-hari dan untuk mengakses ilmu pengetahuan	11.2 Merespon makna dan langkah retorika dalam esei yang menggunakan ragam bahasa tulis secara akurat, lancar dan berterima dalam konteks kehidupan sehari-hari dan untuk mengakses ilmu pengetahuan dalam teks berbentuk <i>narrative, spoof</i> , dan <i>hortatory exposition</i>	Identifying main idea	1, 9, 11, 17, 25, 27, 28, 33, 37, 40, 41, 46
			Identifying detail information	2, 4, 10, 12, 16, 19, 26, 34, 42, 43, 44, 45
			Inferring implicit information	3, 13, 18, 21, 23, 29, 35, 36, 47, 50
			Identifying characteristics of the text	5, 6, 8, 32
			Referring word meaning	7, 14, 15, 20, 22, 24, 30, 31, 38, 39, 48, 49

**Table 3.3**  
**The Detail of Difficulty Level on Pre-test and Post-test**

Item Pre-test	Difficulty level	Item Post-test
1, 2, 3, 4, 5, 7, 8, 12, 16, 18, 19, 21	Easy	1, 2, 5, 6, 8, 9, 10, 11, 12, 15, 16, 18
6, 9, 11, 13, 14, 17, 20	Moderate	3, 4, 7, 13, 14, 19, 21
10, 15	Difficult	17, 20

### 3.2.2.2 Questionnaire

Questionnaire was used as a main instrument to gather information about the students' responses to the implementation of TGT technique to teach reading comprehension in the classroom. This technique was chosen based on its function to gather much information from large number of people in the limited time (Best, 2006). It also allows the students as respondent to answer the questions comfortably according to their feeling so that the answer is considered authentic.

The questionnaire was spread at the last meeting of the study to the experimental group only. The questionnaire consisted of 15 questions in the form of Likert Scale with the scale from SA (Strongly Agree), A (Agree), D (Disagree) and SD (Strongly Disagree). The questionnaire can be found in Appendix B. The detail of the questionnaire is presented as follow:

**Table 3.4**  
**The Detail of Questionnaire**

No.	Categories	Item Number	Total
1.	Students' response to the application of TGT technique	1, 2	2
2.	Benefit of TGT technique in students' comprehension of hortatory exposition text	3, 4, 6	3
3.	Benefit of TGT technique in students' motivation to learn	5, 7, 8, 9, 10	5
4.	Benefit of TGT technique in students' social interaction	11, 12, 13	3
5.	Weakness of TGT technique	14, 15	2

### 3.2.2.3 Interview

Interview was a supplementary instrument to strengthen the information collected from the questionnaire. Interview was used because it provides in-depth information about people's feeling, way of thinking, and experience so that researcher can have the better understanding about the subject matters. It also offers different ways of exploring people's experience and views (Richards cited in Croaker, 2009).

The interview was conducted to experimental group only. Five students were chosen based on their performances during the implementation of TGT technique in their classroom or their scores in the post test. The interview consisted of three open-ended questions about their opinion about the implementation of TGT technique as well as the strengths and weaknesses of teaching reading comprehension using TGT technique.

Researcher used semi-structured interview in interviewing the students. It enables researcher to get relevant and deep information from the students since “it allows interviewer to ask more than the prepared questions” (Berg, 2001) and elaborate topics of interest of him/her (Bryman, 2004). To keep the conversation safely, tape recording was applied in the interview process. The recording then was transcribed to gather the full information during the interview. The interview questions can be found in Appendix B.

### **3.2.3 Research Procedure**

The following sub-sections discuss the research procedure including the organization of teaching procedure and research procedure.

#### **3.2.3.1 Organizing Teaching Procedure**

The teaching procedure was organized through two steps. The first step was preparing appropriate materials for the teaching and learning processes during the treatment. The learning material chosen was hortatory exposition text since it was appropriate with the curriculum for the XI grade students participating in the study. The texts and the exercise used were taken from BSE textbooks, adapted from internet, and made by the teacher. The texts used in this study were proven as hortatory exposition text by analyzing the characteristics (see Appendix A). The second step was organizing teaching procedure. The teaching procedure in the experimental group employed TGT technique while the control group employed conventional lecturing. However, the teaching material is made similar.

There were three main steps conducted in the experimental group; class presentation, team activity and tournament. The steps were repeated to cover the whole learning material of hortatory exposition text. The first cycle of TGT technique focused on the identification of hortatory exposition text. It covers the characteristics of the text including the purpose and schematic structure. The second cycle of TGT technique focused on the language feature of hortatory exposition text including modality, conjunction, expression of stating suggestion and simple present tense. Each meeting of the treatment lasted for 90 minutes. The treatment process that applied TGT technique in teaching reading comprehension hortatory exposition text is interpreted below while the lesson plan can be found in Appendix A.

- Step 1: introducing the new concept or learning material. This step was done in the class presentation of TGT technique. In the first class presentation, the materials presented were the function, schematic structure of hortatory exposition text and the comparison of hortatory exposition text to analytical exposition text. While in the second class presentation, the materials presented were suggestion, arguments, and conjunction to identify the language feature of hortatory exposition text such as simple present tenses, modality in the suggestion, and conjunctive words.
- Step 2: providing questions to guide students' reading for comprehension development and discussion to increase understanding of concepts. This step was done in the team activity stage of TGT technique. The questions took form in a worksheet and a discussion guideline related to the learning material taught in the class presentation stage.
- Step 3: providing comprehension practice. This step was done in the tournament stage in which the students answering questions related to hortatory exposition text in the context of academic game. Teacher should also prepare the reward for the winner of the tournament.



### **3.2.3.2 Organizing Research Instruments**

Organizing the research instruments includes creating the test item for both pre-test and post-test, creating items for the questionnaire and constructing open-ended questions for the interview. The research instruments of this study can be found in Appendix B.

### **3.2.3.3 Testing Validity of the Pre-test and Post-test through Pilot Test**

The use of pilot test was to examine whether or not the pre-test and post-test maintain face validity and content validity. A class from the same grade of the experimental and control group of this study was participated in the pilot test. To find the face validity, the students were asked to read the instruction of the test item first. The test possesses face validity if the instruction was understandable and clear. Then the content validity was examined by using Ms. Office Excel 2007 program.

### **3.2.3.4 Administering Pre-test to Experimental and Control Group**

After the test was determined to be valid through the pilot test analysis using Ms. Office Excel 2007, pre-test was conducted in both experimental and control group. Pre-test was done before the treatment applied to find out the students initial ability in reading comprehension hortatory exposition text.

### **3.2.3.5 Conducting Treatment to Experimental Group**

The treatment of TGT technique was administered to the experimental group, while conventional lecturing method was carried out in the control group. However, the learning material and context of the learning was made approximately similar.

The teaching program during the study was following this schema:

**Table 3.5**  
**The Teaching Program**

Meetings	Activity	
	Experimental Group	Control Group
Meeting 1	<i>Thur/3-Apr-14</i> Pre-test	<i>Thur/3-Apr-14</i> Pre-test
Meeting 2	<i>Sat/5-Apr-14</i> Class presentation: function, structure of hortatory, comparison to analytical exposition text	<i>Sat/5-Apr-14</i> Lecturing: function of hortatory, comparison to analytical exposition text
Meeting 3	<i>Mon/7-Apr-14</i> Team activity: Worksheet, group discussion of function, structure of hortatory, comparison to analytical exposition text	<i>Thur/10-Apr-14</i> Lecturing: structure of hortatory
Meeting 4	<i>Sat/12-Apr-14</i> Tournament 1	<i>Sat/12-Apr-14</i> Lecturing: suggestion
Meeting 5	<i>Sat/19-Apr-14</i> Class presentation: suggestion, arguments, conjunction, simple present tense	<i>Thur/17-Apr-14</i> Lecturing: arguments
	<i>Mon/21-Apr-14</i> Team activity: Worksheet, group discussion of suggestion, arguments, conjunction, simple present tense	<i>Sat/19-Apr-14</i> Lecturing: conjunction
Meeting 7	<i>Sat/26-Apr-14</i> Tournament 2	<i>Thur/24-Apr-14</i> Lecturing: simple present tense
Meeting 8	<i>Mon/28-Apr-14</i> Post-test, Questionnaire, Interview	<i>Sat/26-Apr-14</i> Post-test

### 3.2.3.6 Administering Post-test to Experimental and Control Group

Post-test was conducted after the treatment to both experimental and control group (see Table 3.5). This test aimed to see the progress of the students' reading comprehension skill after the application of TGT technique to teach hortatory exposition text.

### 3.2.3.7 Distributing Questionnaire and Conducting Interview

Questionnaire was distributed to only experimental group. It was given after the students had finished the post-test. It was used to find out the students' response on the implementation of TGT technique.

In order to get the deeper information of the students' response in the questionnaire, five students of the experimental group were interviewed after the questionnaire distribution (see Table 3.5).

### 3.3 Data Analysis

The following sub-sections discuss the data analysis procedure. Specifically, it covers the data analysis procedure on pilot test, pre-test and post-test, questionnaire and interview.

#### 3.3.1 Data Analysis on Pilot Test

Before applying the test to both experimental and control group, a test was tried out to test the validity, reliability and difficulty level of the test. The pilot test was conducted in class XI-IPA 3 which neither experimental nor control group in the study. To find out the face validity of the tests, the students were asked whether or not the instruction was understandable. Meanwhile, the data was then analyzed using Ms. Office Excel 2007 as the statistical computation calculation of the test to find out the content validity, reliability and difficulty level of the tests.

Following is the criteria of reliability test classification:

**Table 3.6**  
**Reliability Classification**

Coefficient Correlation	Interpretation
0.7 – 1.0	Very High
0.4 – 0.7	High
0.2 – 0.4	Moderate
0.0 – 0.2	Low

### 3.3.2 Data Analysis on Pre-test and Post-test

The pre-test data was computed by using SPSS statistics 16.0 for Windows. To process the data, the first step to do was scoring. There were 21 questions on the pre-test. The students' correct point was converted to the scale of maximum score of 100. After that, the next step to do was a normal distribution test. It was conducted to measure the normality of the pre-test and the post-test score. Conducting normal distribution test included three steps: stating the hypothesis and setting the level of significance, analyzing the score using Kolmogorov-Smirnov formula, and interpreting the output. With the level of significance set at 0.05, the hypothesis is:

- $H_0$ : The score of the experimental and control group is normally distributed
- $H_1$ : The scores of the experimental and control group is not normally distributed

If the significant value is equal to or greater than 0.05, the data of the two groups is normally distributed (Uyanto, 2009, p. 54). Meanwhile, if the significant value is less than 0.05, the data of the two groups is not normally distributed.

The third step in analyzing the test was the homogeneity of variance test. It used Levene test (Levene, 1960) in SPSS statistics 16.0 for Windows. In conducting the test, three steps were applied: stating the hypothesis and setting the level of significance, analyzing the scores using Levene's test using SPSS 16.0, and interpreting the output.

With the level of significance at 0.05, the hypothesis is:

- $H_0$ : The variances of the control and experimental groups are homogenous
- $H_1$ : The variances of both groups are not homogenous

The result is significant if the significant value  $> 0.05$  which means the null hypothesis is accepted or the data were homogenous. On the contrary, if significant

value  $< 0.05$  which means the null hypothesis is rejected, the data were not homogenous (Field, 2005).

If the data of normal distribution test and variance of homogeneity test showed that the data were normally distributed and homogenous, the independent t-test can be administered (Uyanto, 2009, p. 161). This fourth step was done to analyze the causative relationship between the independent variable and dependent variable in both experimental and control group (Coolidge, 2000). In this study, the data was calculated by using SPSS 16.0 for Windows. There are three steps to conduct independent t-test: stating the hypothesis and the level of significance, analyzing the groups' score using SPSS statistics 16.0 for Windows, and comparing the  $t_{obt}$  with the level of significance for testing the hypothesis. With the level of significance set at 0.05, the hypothesis is:

- $H_0$ : There is no significant difference between the experimental and control group's score
- $H_1$ : There is a significant difference between the experimental and control group's score

If the  $t_{obt}$  is equal to or greater the level of significance ( $t_{crit}$ ), the null hypothesis is accepted; the two groups are not significantly different. Meanwhile, if  $t_{obt} < t_{crit}$ , it means that the null hypothesis is rejected, there is a significant difference between the two groups (Kranzler & Moursund, 1999).

To check the level of effect of the treatment after the t-test was done, the effect size test was conducted. This test aims to determine how significant the effect of the treatments was to the experimental group's score. The formula of the effect size test is below:

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

Note:

r : effect size

t : t obt or t value from the calculation of independent t-test

df :  $N_1 + N_2 - 2$

**Table 3.7**  
**Scale of Size Effect**

Effect Size	r Value
Small	0.100
Medium	0.243
Large	0.371

(Coolidge, 2000, p. 151)

### **3.3.3 Data Analysis on Questionnaire**

The data analysis on the questionnaire covers the validity test analysis and the questionnaire data analysis.

#### **3.3.3.1 Validity of Questionnaire**

The validity test was employed through Ms. Office Excel 2007 using the sample of the experimental group's questionnaire. With  $N = 20$  and  $\alpha$  level is set at 0.05,  $r_{crit}$  was obtained. The item of the questionnaire is considered to be valid if  $r_{obt} > r_{crit}$  (Arikunto, 1998).

#### **3.3.3.2 Likert scale**

After the item of the questionnaire was considered to be valid, each valid item can be used to measure the students' responses to the application of TGT technique. The Likert scale used in this study was the four-level scale type: Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). The scoring of each answer is described below.

**Table 3.8**  
**Criteria Likert Scale**

No	Criteria	Score
1	Strongly Agree	4
2	Agree	3
3	Disagree	2
4	Strongly Disagree	1

(Sugiyono, 2010)

The result then put in the form of percentage with the formula:

$$P = \frac{f}{n} \times 100\%$$

Note:

P : percentage

F : frequency

N : response

100 : constance

#### **3.3.4 Data Analysis on Interview**

To analyze the data from the interview, the interview was transcribed. The transcription was used to get the better understanding of the students' feeling to the implementation of TGT technique in teaching reading comprehension hortatory exposition text.