

CHAPTER III

RESEARCH METHODOLOGY

A. Formulation of the Problem

This study mainly investigated the CTL approach used in English class, thus, the research problems were formulated into the following questions:

1. Does the CTL approach effectively improve the students' achievement?
2. Is there any significant difference between the students who were taught English using CTL approach with those who were taught without the CTL approach?

B. Research Design

According to Surakhman (1990), a research design has an important role in attaining the aim of the research as the solution for the research problem investigated. A proper design is therefore essentially required to attain the aim of the research that is expected.

The study was basically aimed at finding out whether or not the CTL approach is effective in improving the students' English achievement. In other words, the focus of the study was to investigate the influence given by the CTL approach on the students' English achievement. Sukardinata (2005) explains that the research which investigates one or more influences given by the variable to other variable is the research with experimental design. Further, Sukardinata (2005) states that in experimental studies, there are at least two variables employed: independent and dependent variables. An independent variable refers to the variable that gives influence, while a dependent variable is the measure of the effect given by the independent variable. The independent variable in this study is the CTL approach and the dependent variable is the students' English achievement.

Based on the statement above, therefore, the research method used in this study was quasi-experimental with nonequivalent control group design since the research method was proposed to find the effect given by independent variable (the CTL approach) to the dependent variable (students' English achievement). According to Ruseffendi (1994), in the quasi-experimental with nonequivalent control group design, there are pretest, different treatments, and posttest conducted toward the sample, which is divided into two groups: experimental group and control group. The sample who was taught English with the CTL approach was the experimental group while the sample who was taught with the conventional is the control group. Pretest was given before the treatment and the posttest was given after the treatment to both groups to see whether or not there was any difference between the experimental and control group.

This research was conducted based on the intact group design in educational research which was presented in the following formula:

$$\frac{G^1T^1XT^2}{G^2T^1T^2}$$

Where:

G¹ = experimental group

T¹ = pretest

G² = control group

T² = posttest

X = some treatment using CTL as the teaching and learning approach

The result of the pretest and posttest was analyzed by using statistics t-test to find out whether the English achievement of the experimental group has significant differences with the control group after the treatment.

C. Research Subject

Arikunto (1993) states that research subject is essential in research because it is from which the data concerned with the variable investigated is gathered. The whole subject that will be investigated in a research is population; however, Slameto (1988) says that it is difficult to conduct experimental design toward a large number of population. Consequently, experimental design is mostly conducted toward sample, which he defines as the number of research subject which represents the population.

Based on the statement above, the population of the study was all the students at the first Grade in SMP 1 Kadungora Garut. Ruseffendi (1994) says, in the quasi-experimental with nonequivalent control group design, instead of drawing the research sample randomly, the researcher drew the sample for experimental and control groups from the naturally assembled groups as intact classes, which may be similar. The sample, in other words, was drawn through purposive sampling with the following prerequisites:

- The students were at the same level and have equal English proficiency
- The students had not ever been taught English using the CTL approach.

Based on the statement above, therefore, from the nine existing classes in the first Grade at SMP 1 Kadingora Garut, this study involved only two classes. In these classes, there are 82 students which were divided into two classes: VIIA and VIIB. The class VIIA, which consisted of 41 students, was chosen as the experimental group while the class VIIB, which also consisted of 41 students, was chosen as the control group. The students in both classes had the same characteristics and the same level in English proficiency and had not been taught English using the CTL approach.

D. Research Procedure

The research procedure in this study generally dealt with the research instruments and the treatment, which was elaborated in the following details:

1. Developing Research Instruments

Research instrument is like an essential tool for collecting data (Arikunto, 1993). Dealing with the research questions, data required in this study were the data which could show the students' improvement in English after learning by CTL approach and the effectiveness of the CTL approach in the teaching of English. Hence, this study used research instruments to fulfill this requirement.

Juhana (2005) states that there are two kinds of research instruments: standardized instrument and the instrument arranged by the researcher himself/herself.

In this study, there were two kinds of test applied, namely pretest and posttest, which were given to both experimental and control groups. The questions in both tests were the same. The pretest was given to find out the students' achievement of their English before they were taught English by the CTL approach. In other hand, the posttest which was given after the teaching English using the CTL approach was aimed at finding out the measurement of the students' achievement improvement by comparing it to the pretest on.

The test used to measure students' English comprehension was composed of these following different materials:

1. Devianty, Gilang Asri, et.al. 2004. *Bahasa Inggris untuk SMP Kelas 1*. Bandung. PT Sarana Pamca Karya Nusa.

2. Mukarto. 2004. *English on Sky 1 for Junior High School Students*. Jakarta. Erlangga.
3. Wardiman, Artono, et.al. 2001. *The Global Language for SLTP Students 1*. Jakarta. Grafindo.

The score for pretest and posttest was based on the following formula:

$$N = \frac{B}{35}$$

Where: N = score

B = the sum of the right answers

Since the questions of pretest and posttest were only 35 numbers, the score was on scale 0-35. The lowest score was 0 and the highest one was 35. The result of pretest and posttest given to both experimental and control groups was analyzed to test the hypothesis formulated in this study.

Table 3.1
The Items of English Test

Topic	Identification	Numbers
Professions	<i>Kinds of professions</i>	17, 18, 19, 20, 21, 22, 23, 24
	<i>Imperative Sentences</i>	12, 13, 14, 16, 16
	<i>Small functional texts (announcement)</i>	31, 32, 33, 34, 35
	<i>Possessive Pronoun</i>	25, 26, 27, 28, 29, 30
	<i>Can / Can't</i>	7, 8, 9, 10, 11
	<i>Simple Past Tense</i>	1, 2, 3, 4, 5, 6

2. Trying Out the Research Instruments

Faisal (1981) states that a research instrument can be considered effective if it has a high level of relevance. To measure the relevance of the instrument, Arikunto (1993) adds that the try-out of the research instrument is necessarily administered to find out the validity and reliability level of the instrument.

Since the test used in this study were developed by the researcher herself, the researcher has found it necessary to try the test out. The try-out was then administered

toward 41 respondents from the class that was not taken as a sample of the research. The class, however, belongs to the population. The respondents were the 41 students of VIIC.

3. Testing the Validity and Reliability of the Instruments

The analyses on try-out test were as follow:

1. Ranking the data obtained starting from the lowest to the highest score
2. Separating the Highest (H) and the Lowest (L) 27% of the papers:

$$H = 27\% \times N = 27\% \times 41 = 11$$

$$L = 27\% \times N = 27\% \times 41 = 11$$

3. Estimating the Validity and Reliability of the Test:

a) Validity

Azwar (2003) also stated that validity measurement is needed in order to know how the instrument ability produces the data accurately. The research instrument can be said to be valid if the instrument measures what it was designed to measure.

For instrument test using, the writer used content validity testing. According to Hatch and Farhady (1982:25), content validity is the extent to which a test measure as representative sample of the subject matter content. Moreover, the writer tested the instrument using analysis items in statistical ways that the items calculated based on the existence of data. The instrument validity of this research was determined by item analysis therefore the process of calculation called as index validity with the following procedures:

1. Arranging each subject's test scores (x scores) from the highest to the lowest one.

2. Determining the difficulty level of each item with the following formula:

$$P = \frac{B}{JS}$$

Note:

P= the difficulty index

B= the item that could be answered by the test participants

JS = the test participants

Next interpreting the result with the following items difficulty criteria as follow:

Table 3.3
Difficulty Criteria

No	Difficulty Index	Criteria
1	0.00 – 0.30	Difficult
2	0.30 – 0.70	Good, the item can be used
3	0.70 – 1.00	Easy

3. Determining the discrimination of each item with the formula:

$$DP = \left[\frac{WL - WH}{n} \right]$$

WL = numbers of the lower group whose answers are wrong

WH = numbers of the upper group whose the answers are wrong

n = 27% X N

The interpretation of the criteria was presented in the following table:

Table 3.4
Discrimination Criteria

No	Discrimination Index	Criteria
1	0.00 – 0.02	Poor
2	0.02 – 0.04	Satisfaction
3	0.04 – 0.07	Good
4	>0.07	Excellent

4. Determining the upper group and the lower group by calculating 27% from the test participants.

5. Calculating the index validity of each item using the following formula:

$$v.i = \left(\frac{RH - RL}{n} \right)$$

Note:

RH = the items that can be answered by the higher group

RL = the items that can be answered by the lower group

n = 27% X N

The criteria were presented in the following table:

Table 3.5
Validity Index Criteria

No	Validity Index	Criteria
1	0.00 – 0.02	Bad
2	0.02 – 0.04	Enough
3	0.04 – 0.07	Good
4	> 0.07	Very good

6. Make the table of items analysis

After following those steps, finally the instrument validity was completed. The result shows that the instrument was valid and it could be used for pre-test and post test.

b) Reliability

Reliability referred to a constituency of the measurement result. The unreliable measurement will produce score that cannot be trusted and this will cause the inconsistency (Azwar, 2003). In computing the reliability of the test, the researcher used alpha formula in the computer program SPSS 15.0. The calculation of reliability can be seen in the appendix.

In finding out the reliability of the test, the writer used the following procedures:

1. Divided the items into two groups. The odd numbered items became X and the even numbered items became Y.
2. Calculated the two half items using Pearson Product Moment formula:

$$r_{xy} = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{\{N \sum X^2 - (\sum X)^2\} \{N \sum Y^2 - (\sum Y)^2\}}}$$

Where, r_{xy} = coefficient correlation between X and Y variable

N = the sum of the samples

3. Calculated the full reliability of the test with the following formula

$$r_1 = \frac{2r_{xy}}{1 + r_{xy}}$$

Table 3.6
Criteria of Coefficient Correlation

No	Coefficient interval	Interpretation
1	$0,00 \leq r_1 < 0,20$	Very low/uncorrelated
2	$0,20 \leq r_1 < 0,40$	Low
3	$0,40 \leq r_1 < 0,60$	Fair
4	$0,60 \leq r_1 < 0,80$	High
5	$0,80 \leq r_1 < 1,00$	Very high

4. Teaching-Learning Activity

The experiment was conducted from the middle of November to the beginning of December 2007. The materials used in this experiment were taken from the textbook used for the first grade of SMP students and some compatible materials. In conducting the research, the writer acted as a teacher and facilitated the students in the whole process of teaching and learning.

In order to run the experiment, the writer arranged the research time-table which has been consulted to the English teachers. During the research, the two classes were taught twice a week. The time spent was illustrated on the table below.

Table 3.7
The List of Control and Experimental Groups' Schedule

Control Group			Experimental Group		
No	Date	Activity/Topic	No	Date	Activity/Topic
1	19/11/07	Pre-test	1	19/11/07	Pre-test
2	20/11/07		2	20/11/07	1 st treatment: Kinds of Professions
3	21/11/07		3	21/11/07	2 nd treatment: Imperative Sentences
4	27/11/07		4	27/11/07	3 rd treatment: Small Functional Text
5	28/11/07		5	28/11/07	4 th treatment: Telling time
6	4/12/07		6	4/12/07	5 th treatment: Can / Can't
7	5/12/07		7	5/12/07	6 th treatment: Simple Past Tense
8	6/12/07	Post-test	8	6/12/07	Post-test
8 Meetings			8 Meetings		

E. Data Analysis

The data obtained from the posttest and pretest were analyzed with the t-test statistic, which covered the following steps:

- a. Testing the normality of distribution test.
- b. Computing the homogeneity of the variances test.
- c. Computing the t-test by comparing the t_{obs} and t_{crit} .
- d. Testing the null hypothesis (H_0).

The statistical analysis of t-test applied in this research was analyzed using the SPSS 15. The result of the computation could be seen on the appendix page and the discussion of the result of t-test computation would be explained in the next chapter.