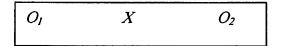
#### CHAPTER III

## RESEARCH METHODOLOGY

This chapter describes the steps of the research. It describes the research design, research setting and subject, population and sample, research variable, research procedure, research instrument, method of data collection and data analysis.

## A. Research design

This study uses qualitative – quantitative research method. Qualitative research method is used for describing the students' participation during the application of STAD and students' achievement after the application of STAD. Quantitative research method is used for analyzing the statistic data that is students' pre – test and post - test score. By that score, the researcher can analyze how the influence of STAD on students' achievement is. This study purposes to get information that deals with experiment. Research design in this study is called A Pre Experimental Design: the one group pre - test and post – test. There is one class that be taken the data. It is given a treatment of application of STAD.



 $O_1$  = the first process of measurement (pre-test)

<sup>&</sup>lt;sup>1</sup> Louis Cohen and Lawrence Monion, Research Methods in Education Forth Edition, (London: Routledge, 1997), p. 165

 $O_2$  = the second process of measurement (post-test)

x = treatment

# B. Research setting and subject

The study was conducted at SMPN 36 Surabaya. In order to get the data, the researcher focuses only on students in VII class.

## C. Population and sample

## 1. Population

Population in this study was students in VII grade of SMPN 36 Surabaya which were 264 students. Researcher chose this school because it is a RSBI (Rintisan Sekolah Bertaraf Internasional) and the class division is not based on academic level.

## 2. Sample

According to the English teacher, distribution class is not based on students' academic level. It means that the class is heterogeneous.

In order to collect the data, the researcher took the sample randomly (random sampling) by doing lottery to all VII class. By this way, researcher got VII A class to be treated. To collect students' participation data, researcher took the sample from students that were in VII A class randomly.

#### D. Research Variable

1. Independent Variable (x)

Students Teams - Achievement Divisions (STAD).

2. Dependent Variable (y)

Students' achievement.

### E. Research Procedure

- 1. Preparation
  - a. Choosing the material that appropriate with the time of the activity of the study. Material chosen was procedure text;
  - b. Designing Lesson Plan;
  - c. Designing the material and students' worksheet;
  - d. Preparing research instrument, those are:
    - 1) Students' observation sheet (check list).
    - 2) Test.
    - 3) Score note sheet.
  - e. Making learning media;
    - 1) Question cards for quiz.
    - 2) Making students' identity card.
  - f. Asking headmaster's permission whose school will be place of study;
  - g. Consulting with the English teacher.

- Everything that related to learning activity, such as learning method, students' profile and learning instruments (lesson plan, test, students' worksheet, quiz).
- 2) Observation sheet that used.
- 3) Time for doing the study.

## 2. Activity

- a. Researcher gave a pre-test to the students. Researcher gave 20 minutes to finish the test. But there were several students who collect the test before the dead line;
- b. Researcher gave an identity card to each student. It was used to identify students easier when observation time;
- c. Researcher divided students into several team works. Later, team work was used to make sure that they had mastered the material;
- d. Researcher asked the students to do the students worksheet (LKS) in their team works. They helped each other to comprehend the material through peer-tutoring, carrying on team discussion;
- e. Researcher asked the students to do the quiz individually. Each student had individual responsibility to master the material, so that every student individually responsible to master the material;
- f. Researcher asked the students to sum their score. Students sum their score and average score together;

- g. Researcher analyzed the score. This analyzes was used to decide the winning teams that got a good team, great team, super team predicate and a student who got a best score;
- h. Researcher gave reward to the winning team works. It was based on the analyzes of team score and students' score;
- i. Researcher gave a post-test. It was done in the end of the second cycle of the application of STAD.

### F. Research instrument

According to the Arikunto, research instrument is tools or facilities that are used by the researcher in order to collect data. So that makes the job easier, complete, and systematic.<sup>2</sup>

This study used instruments:

### 1. Check list

The observation check list was used to observe the students' participation during the application of STAD. Here, the researcher asked her friend to be an observer. She might go around the class to observe the students' participation.

Students' participations that observed were:

a. Students' relevant participation

<sup>2</sup> Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendekataan Praktek*, (Jakarta: Reineka Cipta, 2006), 149

- 1) paying attention to the teacher.
- 2) discussing or asking with their friends
- 3) discussing or asking with teacher
- 4) understanding and doing the work sheet
- 5) doing the quiz individually
- b. Students' irrelevant participation
  - 1) talking outside the topic of discussion
  - 2) cheating
  - 3) exiting the class without any permission

#### 2. Test

Researcher used this instrument in order to measure the students' achievement after the application of STAD. These instruments are pretest and post-test. The pre-test conducted before the application of STAD. Post-test conducted after the application STAD.

# G. Technique of data collection

### 1. Observation

This method was used in order to monitor the students' achievement during the application of STAD. It was done by an observer.

### 2. Document

It was used in order to know the school profile.

## H. Technique of Data Analysis

1. Analysis students' participation data

Observation research data is analyzed by describing students' participation during STAD being appplied. In order to find percentace frequency and average students' participation is done steps as follows:

- a. Decide frequency average each indicator of three meetings from students' participation observation research.
- b. Look for indicator frequency percentace by dividing the participation frequency with the number of frequency for each indicator, then times 100%.

%each activities = 
$$\frac{A}{B}$$
 x 100%

A = total participation that appears

B = general frequency total

Criteria students' participation in Student Teams Achievement

Divisions method is

$$50\% \le x < 60\%$$
 = not active;

$$60\% \le x < 70\%$$
 = less active;

$$70\% \le x < 80\%$$
 = active enough;

$$80\% \le x < 90\%$$
 = active;

$$90\% \le x < 100\%$$
 = very active.

## 2. Statistical data analysis

Data in this study is quantitative data that is test score. Data analysis that is used to analyze the sore is statistics analysis by using t-test.

In order to know the influence of STAD on students' achievement, students in experimental class are given a test before and after STAD being applied. Here, the researcher uses paired sample t-test. Paired sample t-test analyzes post-test and pre-test score. However, before using paired sample t-test, it will be done normality test as the requirement.

## 1. Normality test

Normality test is used to know whether the two samples are from population that has normal distribution or not.

The steps are:

- a. Make frequency distribution list
- b. Count average  $(\bar{x})^3$

$$\bar{x} = \frac{\sum f_i x_i}{\sum f_i}$$

 $x_i$  = interval class sign

 $f_i$  = frequency that appropriate with class sign  $x_i$ 

<sup>&</sup>lt;sup>3</sup> Sudjana, Metoda Statistika, (Bandung: Tarsito, 2005), p.70

c. Count standart deviation (s) from sample class<sup>4</sup>

$$s^{2} = \frac{n \sum f_{i}(x_{i})^{2} - (\sum f_{i}x_{i})^{2}}{n - (n - 1)}$$

- d. Count expectation frequency table
  - 1). Decide lower boundary  $(x_i)$  in each interval class
  - 2). Decide standart unit  $(z_i)$  in each interval class<sup>5</sup>

$$z_i = \frac{x_i - \overline{x}}{s}$$
; for i= 1,2,3,...n

 $z_i = \text{standart unit}$ 

 $x_i$  = lower boundary the-... class

 $\bar{x}$  = score test average (from frequency distribution)

s = standart deviation (from frequency distribution)

- 3). Count wide each interval class (L)
- 4). Count expectation frequency ( $E_t$ )

$$E_i = L \times n$$

 $E_i$  = Expectation frequency

L = wide each interval class

n = number of data

e. Decide hypothesis

<sup>&</sup>lt;sup>4</sup>Ibid, p.95

<sup>&</sup>lt;sup>5</sup> Ibid, p.99

 $H_0$  = sample is from population that has normal distribution

 $H_1$  = sample is from population that does not have normal distribution

- f. Decide significance level  $\alpha$  ( $\alpha = 0.05$ )
- g. Count chi-kuadrat<sup>6</sup>

$$\chi^{2} = \sum_{i=1}^{k} \frac{(O_{i} - E_{i})^{2}}{E_{i}}$$

k = number of class interval

 $O_i$  = observation frequency

 $E_i$  = expectation frequency

- h. Look for the value of  $\chi^2_{(1-\alpha)(k-3)}$
- Decide test criteria:7

 $H_0$  accepted if  $\chi^2_{hitang} < \chi^2_{(1-\alpha)(k-3)}$  dengan dk = k - 3

 $H_0$  rejected if  $\chi^2_{hitmg} \ge \chi^2_{(1-\alpha)(k-3)}$ 

Make conclusion

<sup>6</sup> Ibid, p.273 <sup>7</sup> Ibid

## 2. Sample paired t-test

Sample paired t-test is used to know whether there is an influence on students' achievement after the application of STAD. It analyses the students' post-test score.

a. Decide hyphotesis

 $H_0$ :  $\sigma_1^2 = \sigma_2^2$  students' achievement before and after treatment is same

 $H_0: \sigma_1^2 \neq \sigma_2^2$  students' achievement before and after treatment is not same

- b. Decide significance level  $\alpha$  ( $\alpha = 0.05$ )
- c. Decide statistical test<sup>8</sup>

$$\overline{D} = \sum_{i=1}^{n} n_i$$

$$S_{\overline{D}} = \sqrt{\frac{\sum_{i=1}^{n} (D_i - \overline{D})^2}{n-1}}$$

$$t_{hitung} = \frac{\overline{D}}{S_{\overline{D}}/\sqrt{n}}$$

d. Decide test criteria:

$$H_0$$
 accepted if  $t_{hitung} < t_{tabel}$ 

$$H_0$$
 rejected if  $t_{hittang} > t_{tabel}$ 

e. Make a conclussion

<sup>&</sup>lt;sup>8</sup> Pangestu Subagyo dan Djarwanto, *Statistika Induktif*, (Yogyakarta: BPFE-Yogyakarta, 2005), 5<sup>th</sup> edition, p. 186-188