

CHAPTER III

RESEARCH METHOD

A. Research Design

This research involved an experiment research which used the competitive game in teaching speaking skill to know the effectiveness of using the game. Sugiyono (2011, p. 72) explains that experiment research had goal to find the influence of the specific treatment given to the students.

This research uses quantitative method. It means this research tends to use numerical investigation and calculation. In this research quantitative method is used to find out whether there is significant between students who are taught without TGT at eleventh grade IPS 2 and MIA 3 in SMAN 1 Murung academic year 2017/2018. Therefore, there are two variables used in this research, the independent variable and dependent variable. Variable is a concept where the subject stand variously in a class. The independent variable is Teams Games Tournament and the dependent variable is students' reading comprehension.

In experimental design, a pre-test is administered and followed by treatment to a number of different classes. After a fixed period of time, a post-test is given. Based on the explanation above, the design of research can be seen in the table following:

Table 3.1 The design of the research

Experiment class	Pre-test (01)	Treatment	Post-test (03)
Control class	Pre-test (02)	No treatment	Post-test (04)

In this research design, mainly is quantitative. It means the method and the instrument used numerical measurement and then statistical quantification is conducted. The writer uses quantitative design to analyze the quantitative data gained from test (pre-test and post-test). Besides that, the writer also uses the qualitative design to analyze the qualitative data gained from observation.

B. Research Setting

The research conducted at SMAN 1 Murung. It placed on Veteran Street No. 25 Puruk Cahu, Central Kalimantan. This research applied to students in eleventh grade IPS 1 and MIA 3 at SMAN 1 Murung academic year 2017/2018.

C. Subject and Object

1. Subject of The Research

The subjects of this research were the students of eleventh grade at SMAN 1 Murung academic year 2017/2018. It consisted of 29 students in IPS 2 as experiment class and 29 students in MIA 3 as control class. The writer chose the class based on the interview result with the English teacher. She said that the reading comprehension ability of both classes was average same.

Table 3.2 Class of the Research

No	Class	Number
1.	Experiment class (IPS 2)	29
2.	Control class (MIA 3)	29

2. Object of The Research

The object of this research was the application of Teams Games Tournament in improving students' comprehension achievement of eleventh grade students at SMAN 1 Murung.

D. Research Instrument

The data in this research was the achievement of students who taught by using TGT in learning reading comprehension and students who were taught without TGT at SMAN 1 Murung academic year 2017/2018. The writer used multiple choices to the students to find out the result of their reading ability.

The writer analyses the data using comparative technique between the control and experiment class. The score of experiment class and control class in pre-test and post-test will be compared. So, the writer use formula to determining mean of variable.

The formula is:

$$M = \frac{\Sigma}{N}$$

M : The mean of difference

: The total of difference

N : Number of cases

E. Data Collection Procedure

The techniques of data collection used in this research are test observation and interview.

1. Test

This technique used to find out how significant the reading comprehension ability of the student after and before given the treatments. In this way, the writer asked of the students to do some item test. Twenty five items were chosen because they can cover enough all of the indicator that will be tested to measure students' reading comprehension. Every true answer has 4 points. If all of the answer is true, the students get 100 points. The writer used this indicator which cited from Lulu's thesis to make sure the result was valid. The test applied in two stages: pre-test and post-test to both classes; control class and experiment class. There was the scheme for scoring the reading test.

2. Observation

Observation also used to collect data. That was about the while condition of activity during teaching learning process in classroom and also about the condition of the school included the facilitation of the school.

3. Interview

Interview used to get information about the school and the condition of students and the process in class room while teaching learning process.

F. Data Analysis Procedure

After the test is given to the students in the pre- test and post-test, it will be tested. The test is focused on normality of the students' pre-test and post-test score. The result from the test will be analyzed first by the test of normality and

test of homogeneity in SPSS 16. The data will be analyzed by assumption testing and hypothesis testing. The kind of assumption testing was normality test and homogeneous test. It is calculated due to know the next step of analyzing the data which whether using parametric test or non-parametric test.

1. Normality Test

Normality test is used to know whether the data come from the normal distribution or not. In this study, the writer tends to use SPSS version 16 to find out the normality of the data.

There are some outputs of test normality in SPSS 16 program such as Shapiro Wilks, Kolmogorov and Liliefors. In this research, writer used it because the sample number was included in small group or < 30 .

The criteria of determining the normality of the data was:

Hypothesis:

H_0 : the data distributed normally

H_a : the data not distributed normally

a. If t_{value} was smaller than t_{table} ($t_{\text{value}} < t_{\text{table}}$), it means that H_0 was accepted and H_1 was rejected

b. If t_{value} was greater than t_{table} ($t_{\text{value}} > t_{\text{table}}$), it means that H_0 was rejected and H_1 was accepted

2. Homogeneity Test

Homogeneity test is used to know whether the data come from the homogeneous variance or not. To calculate the data, the researcher use SPSS version 16.

Homogeneity test liliefors test used to analyze two independent data that they have homogeneity data or not. It is also the requirement test for parametric test. Homogeneity test used after the data had been analyzed by normality test and result is the distribution of data is normal so the homogeneity test should be done to continue the next step. But, if the result of normality test is not normal, the homogeneity test can be not used, because the next step of analysis data can make sure used the non-parametric analysis. According to Raharjo (2016) explained in statistic non-parametric analysis that the variant of data can be homogeneity and can be not. It is not a problem in paired sample test.

The criteria of determining the normality of the data was:

Hypothesis:

H_0 : the data distributed homogeneity

H_a : the data not distributed homogeneity

- a. If t_{value} was greater than t_{table} ($t_{\text{value}} > t_{\text{table}}$), it means that H_0 was accepted and H_1 was rejected
- b. If t_{value} was smaller than t_{table} ($t_{\text{value}} < t_{\text{table}}$), it means that H_0 was rejected and H_1 was accepted

After tested the normality and homogeneity of the data, the writer in t-test the writer analyzes the data using comparative technique between the control and experiment class. The score of experiment class and control class in pre-test and post-test will be compared. This technique is very effective to show the result statistically. Then the result of the strategy is effective or not in improving reading comprehension.

To show differences, the writer uses t-test formula.

$$t_0 = \frac{M_D}{SE_{MD}}$$

t_0 = The value of t observation

M_D = Mean of difference

SE_{MD} = Standard Error of Mean of Difference

The procedure of calculating is as follows:

- a. Determining mean of variable x with the formula:

$$M_x = \frac{\Sigma}{N}$$

- b. Determining mean of variable y with the formula:

$$M_y = \frac{\Sigma}{N}$$

- c. Determining Standard Deviation of variable x with formula:

$$SD_x = \sqrt{\frac{\Sigma x^2}{N}}$$

- d. Determining Standard Deviation of variable y with the formula:

$$SD_y = \sqrt{\frac{\Sigma y^2}{N}}$$

- e. Determining Standard Error of variable x with the formula:

$$SE_{N_x} = \frac{SD_x}{\sqrt{N_1 - 1}}$$

- f. Determining Standard Error of variable y with the formula:

$$SE_{N_y} = \frac{SD_y}{\sqrt{N_1 - 1}}$$

- g. Determining Standard Error of the different mean between variable x and variable y with the formula:

$$SE_{M_x - M_y} = \sqrt{SE_{M_x}^2 - SE_{M_y}^2}$$

- h. Determining Test Observation with the formula:

$$t_0 = \frac{M_x - M_y}{SE_{M_x - M_y}}$$

- i. Determining T-Table in significance of level 5% with df.

$$Df = (N_1 - N_2) - 2$$

Explanation:

M_x : Mean of gain's score of experimental class

M_y : Mean of gain's score of control class

$\sum x$: The total score of experimental class

$\sum y$: The total score of control class

$\sum x^2$: The total score of the calculation score minus mean score of experiment class

$\sum y^2$: The total score of the calculation score minus mean score of control class

SD_x : The standard deviation of gain's score of experiment class

SD_y : The standard deviation of gain's score of control class

SE_{M_x} : Standard error of mean of experiment class

SE_{My} : Standard error of mean of control class

N_1 : Total students of experiment class

N_2 : Total students of control class

3. Statistical Hypothesis

A hypothesis is a tentative statement about the relationship between two or more variables. This research is designed to find out whether there is progress of using TGT on students' reading achievement. In order to get the answer of that hypothesis, the writer proposed Alternative Hypothesis (H_a) and Null Hypothesis (H_0) which is described to the following statistical hypothesis.

1. $H_0 = \text{If } t_{\text{test}}(t_{\text{count}}) < t_{\text{table}}(t_t) \text{ in significant degree of } 0,05$

2. $H_a = \text{If } t_{\text{test}}(t_{\text{count}}) > t_{\text{table}}(t_t) \text{ in significant degree of } 0,05$

Meanwhile, the degree of freedom (df) = $N - 1 = 58 - 1 = 56$. It must be consulted with t-table of df . If df is 28, the value of the significance level 5% is 1.673.