

## **CHAPTER III**

### **RESEARCH METHOD**

This chapter reflects the research method used this study; it defines how the research will be conducted and how the data for of the research will be collected. This chapter explains about the research design, time and location of the research, population and sample, research instrument, research procedures, and the last is data analysis technique.

#### **3.1 Research Design**

The research design used in this study was experimental design. Cresswell (2012:309) defines that experimental design is the researcher will test the idea to analyze whether it affects the outcome or the dependent variable. Next, researchers used a quasi-experimental design. The quasi experimental design means that how to choose a control group and not random treatment. After the researcher decided on the control and experimental class, the researcher designed the pre-test and post-test to the class.

According to Bordens and Abbott (2011:109), the basic experimental design consisted of the experimental group and the control group. The group that received treatment was called the experimental group and another group that did not receive treatment was the control group. The control group was mostly treated the same as the treatment class except having treatment as a treatment class. Thus, the experimental group was taught by the instructional chain method in learning hortatory exposition text while in the control group it was not taught to use it.

#### **3.2 Time and Location of the Research**

##### **3.2.1 The Location of the Research**

The research was held in SMA Muhammadiyah 10 Surabaya which is located in Jalan Genteng Muhammadiyah No.45, Genteng, Surabaya.

##### **3.2.2 Time of the Research**

The research was conducted to the eleventh grade students of SMA Muhammadiyah 10 Surabaya in the second semester of 2018/2019 academic year. Furthermore, the research was carried out in April 2019.

### **3.3 Population and Sample**

The population of this research was all of the eleventh grade students of SMA Muhammadiyah 10 Surabaya in the Academic year of 2018/2019. Moreover, Bordens and Abbot (2011:163) explain that sample is a small subgroup which is chosen from the larger population. It means that sample is a part of population from which the research data are obtained. There were two classes of eleventh grade students used as the sample of this research. The control class in XI MIA 2 and experimental class in XI MIA 1 were chosen by the recommendation from the English teacher.

### **3.4 Research Instruments**

#### **3.4.1 Observation**

In this research the data that had been collected by doing an observation to get the information before interviewing the respondent. Observation is an invaluable way of collecting data because the instrument based from what all of the researcher see and feeling with the researcher own senses is not sifted by other document what made other people Yin (2011:143). Thus observation is done to fulfill the researcher can be organize appropriate the system of research design on case study. The research investigated with indicators that decided and relevant of the implementatation of instructional chain method in writing class at critical exposition text course. In this utilization of instructional chain method can promote students higher order thinking skills or not.

##### **3.4.1.1 Test**

According to Arikunto (2010), test is a set of questions, exercises or other instruments which are used to measure skill, knowledge, intelligence, and atattitude of an individual or groups. Writing test was used to know the students' writing skill. In this case, this researcher used a form of essay writing test with the chosen form to know and measure the

students' mastery in writing hortatory exposition text. Pre-test and Post-test were tested in control and experimental group. The instruments that used in the research were pre-test and post-test data.

#### 3.4.1.2 Pre Test

Cresswell (2012:298) said "a pretest provides a measure on some attribute or characteristic that you assess for participants in an experiment *before* they receive a treatment". It can be concluded that pre-test is a test given before the treatment was given in an experiment. The purpose of the pre-test is to measure the students' understanding in hortatory exposition text.

#### 3.4.1.3 Post Test

Post-test is a test which is given to measure the participants' ability after getting the treatment in an experiment Cresswell (2012:298). The post-test is a representative of the student' outcome after getting the treatment. It aims to measure the students' understanding after learning writing hortatory exposition text by using instructional chain method to analyse higher order thinking skill.

### 3.4.2 Scoring Rubric of Writing

Brown (2003: 6) said that assessment is a spesifically procedure designed to measure the skills and knowledge. The scoring rubric of writing is used to attain the reliability test. In other word, the scoring rubric in writing was used both in pre-test and post-test. In this research, the writer adapted the scoring rubric of writing by Osima & Hogue (2008). There are five aspects of students' composition/ essay. The five aspects are format, mechanics, content, organization, and grammar & sentence structure. All of the element has different point range.

**Table 3.1 Aspect of Scoring Rubric**

Aspect	Score
Format and mechanics	25

Content	25
Organization	25
Grammar and sentence structure	25

### 3.5 Research Procedures

The research procedure of this experiment was generally same as the other research. There were some steps of the research procedure applied in this research.

3.4.3 First, the writer went to SMA Muhammadiyah 10 Surabaya. The aim was to meet the headmaster and ask the permission to do the research.

3.4.4 Second, the writer met the English teacher of SMA Muhammadiyah 10 Surabaya to discuss about the experimental research. She asked about the teacher's recommendation for deciding the sample of the research.

3.4.5 The researchers do observation in the class.

3.4.6 The writer gave the try out test to another class in the same grade except the experimental class and the control class.

#### 3.4.6.1 Try Out

The aim of try out was to find out what kind of test which was appropriate for the students. The test is used to measure the validity and reliability of the try out. Furthermore, the try out will be given to the class which is not the experimental and control classes. The try out is going to be conducted before the writer conducts the pre-test.

#### 3.4.6.2 Validity Test

Cresswell (2012:630) said "validity is the development of sound evidence to demonstrate that the intended test interpretation (of the concept or construct that the test is assumed to measure) matches the proposed purpose of the test". In this research, the researcher is going to use the expert judgement to measure the validity of the instrument. The expert judgement is used to validate the listening test. To judge whether a test instrument has high validity, it is necessary to ask for expert opinion. The expert judgement is to reveal if the test is based on the given materials.

#### 3.4.6.3 Reliability Test

After the valid items are determined, the writer needs to measure the reliability of the instrument. Cresswell (2012:627) stated, “validity means that individual scores from an instrument should be nearly the same or stable on repeated administrations of the instrument and that they should be free from sources of measurement error and consistent”. The test which will be used in this research is the form of writing test. Therefore, inter-rater reliability is used to find out whether a test is reliable or not. Djwandono (2011: 187-188) states that inter-rater reliability makes sure the level of reliability of two rowscores obtained from two correctors or testers in which each corrector or tester does the scoring to the same number of test participants.

- 3.4.7 The researcher will go the control and experimental classes to do the pre-test with the same material of writing hortatory exposition text.
- 3.4.8 The researcher will prepare the lesson plans and another teaching material to give the treatment.
- 3.4.9 Then, the researcher will give the treatment of using the instructional chains method to develop the students’ higher order thinking skills in writing hortatory exposition text. The teacher will teach the experimental class by using the lesson plan that made by the writer. It is going to be done in experimental class for about 3 meetings.
- 3.4.10 The teacher will teach the control group by using the lesson plan that made by the writer. The method used to teach the control class is the traditional method. The documentation will be taken during the teaching process.
- 3.4.11 The writer is going to give the post-test both in control group and experimental group.
- 3.4.12 Finally, the writer is going to analyse the data of both classes by using SPSS Statistics version 16.0 to find out the implementation of instructional chain method in writing hortatory exposition text to analyse higher order thinking skills. The data will be analysed to find out whether the data is normal and homogent. Furthermore, the hypothesis will be tested by using t-test in SPSS version 16.0.

### 3.5 Data Analysis Technique

After conducting the research, the writer will analyse the data by using SPSS Statistics version 16.0 and Microsoft Excel. Sugiyono (2012 : 210) said that analysing the data is the steps is going to be done after collecting the data. The activities are grouping, tabulating, serving, and calculating the data. After that, the writer will test the hypothesis which is made before the experiment. The T-test will be calculated by using SPSS Statistics version 16.0 to find out whether the  $H_0$  is accepted or rejected.

The research is going to use parametric statistics. Sugiyono (2012 : 210) stated that parametric statistic has more than 20 samples. Then, the data must be normal and homogen. The sample of this research is more than 20 samples so it is concluded that the research uses parametric statistic. Moreover, SPSS Statistics version 16.0 will be used to calculate the normality test, homogeneity test, and independent sample t-test. The tests are used to compare the means of both experimental and control classes.

#### 3.6.1 Normality Test

After we get the data, we will process it by testing the normality and the homogeneity. Normality and homogeneity are the component that must be followed when we do the t-test to test the hypothesis. Normality test is used to know whether the data have normal distribution or not. In order to test the normality, the writer uses *Liliefors* formula. The procedures are as follows.

- a. Having an observation of  $X_1, X_2, X_3, \dots, X_n$ . The result of  $X_1, X_2, X_3, \dots, X_n$  become standard number  $Z_1, Z_2, Z_3, \dots, Z_n$  by using the formula as follows:

$$Z_i = \frac{X_i - \bar{X}}{S}$$

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(  $\bar{X}$  is the average while  $S$  is standard deviation of the sample).

- b. Using standard number distribution list for each of the standard number, then count the probability  $F(Z_i) = P(Z \leq z_i)$ .
- c. Counting of proportion of  $Z_1, Z_2, Z_3, \dots, Z_n$  which less than or equal to  $Z_i$ . If the proportion stated by using  $S(Z_i)$ , so  $S(Z_i)$  is the number of  $Z_1, Z_2, Z_3, \dots, Z_n$  which is less than or equal to  $Z_i$  divided by  $n$ .
- d. Counting the result of  $F(Z_i) - S(Z_i)$  then state the absolute value.

- e. Taking the highest value among the absolute values from that result. The maximum result of  $F(Z_t) - S(Z_i)$  is  $L_o$ .

Criteria:

$L_o(L \text{ obtained}) > L_t(L \text{ table}) =$  data do not have normal distribution

$L_o(L \text{ obtained}) \leq L_t(L \text{ table}) =$  data have normal distribution

(Budiono, 2004, 170-171)

### 3.6.2 Homogeneity Test

Homogeneity test is used to know whether the data is homogeneous or not.

In order to test the homogeneity, the writer uses *Bartlet formula* as follows:

$$\chi^2 = \frac{2,303}{c} ((N-k) \log(S_{total}^2) - (\sum (n-1) \log S_i^2))$$

$$c = 1 + \frac{1}{3(k-1)} \left( \sum \frac{1}{n_i - 1} - \frac{1}{N-k} \right)$$

Where:

$\chi^2$  = the Bartlet homogeneity test.

N= the total samples that is used.

k= the total classes that is used.

n= the total sample in each class.

S= the total variance

Criteria:

$\chi^2 < \chi^2_{table} =$  the data are homogeneous.

$\chi^2 > \chi^2_{table} =$  the data are not homogeneous.

(Budiono, 2004: 176-177)

### 3.6.3 T- Test

In analysing the data, the writer uses t-test for independent sample formula. It is a statistical test used to determine whether the difference between the means of the two groups is statistically significant. In this case, the writer uses SPSS statistics version 16.0 to determine whether the difference between the means of the two groups (experimental and control groups) is statistically

significant and the instructional chains method is effective in teaching writing of narrative text. Whether there is any difference between the mean of the two groups depend on the comparison between the value of t-test and the value of t-table. If the value of the t-test is higher than t-table, it can be concluded that there is a significant difference between experimental group and the control group.

### 3.6.4 Eta Squared

Eta squared is used as a measurement to find the effect of a treatment. Furthermore, eta squared is a tool to get more valid data to support the output of T-test (Pallant, 2010). The calculation of eta squared aims to know whether a treatment is effective or not. According to Pallant, there is a criteria to interpret the output of eta squared. First, if the score is 0.00 – 0.01, it means that it has small effect. Second, if the score is 0.06, it means that it has moderate effect. The last, if the result is more than 0.14, it means that it has large effect. The formula of eta squared are in the following:

$$\text{Partial } \eta^2 = \frac{SS_{\text{effect}}}{SS_{\text{effect}} + SS_{\text{error}}}$$

Note

$\eta^2$  = Eta squared

Ss = sums of squares

### 3.6 Statistical Hypothesis

The statistical hypothesis of the research is as follows.

$$H_0 (\text{Null Hypothesis}) : \mu_1 = \mu_2$$

$$H_a (\text{Alternative Hypothesis}) : \mu_1 \neq \mu_2$$

Where:

$\mu_1$  = the mean of scores of the experimental group

$\mu_2$  = the mean of scores of the control group

Criteria:



- $H_0$  is accepted, if the mean of scores of the experimental group is not significantly different from the mean of scores of the control group.

$H_0$  is rejected if the mean of scores of the experimental group is significantly higher than the mean of scores of the control group