

CHAPTER III

RESEARCH METHODOLOGY

This chapter is presenting research methodology. It presents about research design, population and sample, research instrument, data collection technique and data analysis. Each of them is discussed separately in the following section.

3.1. Research Design

Research design of this research used an experimental research. According to Wiersma (1991:99) experimental design is preconceived plan for conducting an experiment. According to Ary (2010:217) stated that experimental research is a scientific research that is conducted to manipulate independent variable, to observe the influence of dependent variable and to control the relevant variable.

Based of this research, the independent variable is TPS (Think-Pair-Share) as a technique for teaching reading while the dependent variable of this research is the students' achievement focus on short functional text (pamphlet) and hortatory exposition text in reading comprehension which are measured by post-test after giving the treatment. Here, the researcher use TPS (Think-Pair-Share) technique as treatment.

It is aimed to know the student's achievement in short functional text (pamphlet) and hortatory exposition text when they will be taught by using TPS (Think-Pair-Share) technique in reading comprehension.

The experimental design of this research is quasi experimental research. Since the researcher is impossible to conduct true experimental in SMA YPI Darussalam Cerme because true experimental need to randomize the variable. It

means that the researcher has to change the classification of the class in which has been fixed by the school. In this school, is prohibited to change the classification of the class. So, the researcher conducted quasi experimental with non randomized subjects, pre-test and post-test quasi experimental design.

The Table of Quasi Chart

Group	Pre-test	Treatment	Post-test
Experiment	✓	✓	✓
Control	✓	X	✓

Table 3.1. None randomized subjects, pre-test and post-test quasi experiment.

Where :

✓ : With TPS (Think-Pair-Share) treatment.

X : With EGRA (Exposure,Generalization,Reinforcement,Application) treatment.

From table above shows that experimental group and control group are given pre-test and post test, but they receive different treatments. The experimental group with TPS (Think-Pair-Share) technique treatment while the control group with EGRA treatment.

The procedures of the research design are as follows:

1. Before giving the treatment, the respondents (subject) are given pre-test to measure the students' competence.
2. The respondents (subject) are given the treatment in teaching reading comprehension. TPS (Think-Pair-Share) technique is conducted as the treatment in this research.

3. After giving the treatment, The respondents (subject) are given post-test to measure the students' progress.
4. The researcher calculated the results of the pre-test and post-test scores. So here, the researcher found the mean score of two groups.
5. The researcher analyze the data using t-test formula to prove the hypothesis.
6. Ho is received if $t \text{ statistic} > t \text{ table}$.
7. Ho is failed if $t \text{ statistic} < t \text{ table}$.

The table 3.1 above, it shows that the researcher divides two groups into experimental and control group. Pre-test is given to both of groups at the beginning of the research. then, the experimental group is given TPS (Think-Pair-Share) technique for four meetings with the different theme. Meantime, the control group is given a EGRA technique for four meetings. After that, post-test is given to both of groups to get the result.

3.2 Population and Sample

All members of any well-defined class of people, events or objects is called population. (Ary, 1985:138) the population of this research is the students in the second grade of senior high school at YPI Darussalam Cerme, in the second semester 2015/2016 academic year that consist of two classes, there are XI A Class and XI B Class.

According to Ary (1985:138) the small part of people or individuals with the same characteristics is sample. In this research, the researcher take two classes as the sample based on the students' ability in reading comprehension, there are XI A Class and XI B Class and every class consists of 38 students. Then, the

researcher divided the students into two groups include the experimental and the control group. The experimental group is A class while the control group is B class. The researcher take A class and B class because the students had the equal characteristics in the average score of the previous semester.

3.3 Research Instrument

The good instrument is used in a research must be valid and reliable, validity refers to the degree to which a test measure what is supposed to be measured (Gay, 1992: 155). Research instrument is so necessary in doing this research. The success of this research instrument greatly depends on the role which was made. While, the researcher acts as the practitioner who had the important roles to do this research. Here, the researcher used a test to measure the prior knowledge. To make the test valid, the researcher searched another class which had the equal characteristics as the characteristics of A class and B class students.

Based on senior high school Curriculum, there are two types of text genre which are taught at the first grade students. They are recount text and narrative text. But here the researcher does not choose recount teks or narrative teks as testing how far the students understand about reading comprehension in second grade of senior high school because the researcher follows the rpp and sillabus that use in the second grade of senior high school (XI class), In this research, the researcher chooses short functional text (pamphlet) and hortatory exposition text as the material of reading text to be researched. By the analysing short functional text (pamphlet) and hortatory exposition text, students in the second semester can understand how to comprehend the text because there are many types of short

functional text (pamphlet) and hortatory exposition text. And the researcher tries to test how far the students of second grade of senior high school at YPI Darussalam Cerme understand and comprehend short functional text (pamphlet) and hortatory exposition text.

Research instrument of this research is test. It is used by the researcher because it is suitable with the syllabus and rpp in the XI class. The syllabus and rpp in the XI class is supported by the KTSP curriculum. In this research, the researcher use short functional text that has many types of text such as pamphlet, and hortatory exposition text. By using various themes, the students get more information. So, the students can comprehend those achievements reading text easily.

The pre-test and post-test consist of 20 items and treatments consist of 10 items in which use the multiple choices items. The researcher gave different number of items in test because it is appropriate with the indicators and the purposes of the study and the time that will given by the class. Here, the researcher gave three tests that consist of pre-test, treatment and post-test. Those tests are explained as follows:

3.3.1. Pre Test

Before giving treatments the researcher give pre test to know the previous ability of the students in XI class . Pre-test had some procedures to support this research. That procedure describes as follows: before receiving the treatment, the researcher give the test consist of 20 items. The test was in form of multiple choices items. The questions of the test were related to their material what will be learned. After finishing the test, the students' submitted their work. Then, the

researcher evaluated the student's task. Pre-test conducted to two classes as the sample separately. After that, the researcher divided into two groups including the experimental and control group.

3.3.2. Treatment

After giving pre test the researcher give treatment to increase the student's achievement in short functional text (pamphlet) and hortatory exposition text of reading comprehension using TPS (think-pair-share) technique in experimental group in the XI A class while control group in the XI B class with EGRA treatment.

3.3.3. Post Test

Then the researcher give post test to measure the students' progress after giving the treatment use TPS technique to the experimental group whereas the treatments of control group is EGRA technique so that the researcher know, is the any significant effect of using TPS (Think-Pair-Share) technique as treatment of this research. Afterwards, the procedure of post test has the same procedure of pre test.

3.4. Data Collection Technique

Data collection is An important part of this research. So here, the researcher collects the data to avoid some mistakes in getting the data because the data must be valid and reliable. In collecting the data, the researcher takes the students' scores from the tests. Here, the researcher collects pre-test and post test scores.

Based on this research the researcher analyzed pre-test and post-test scores by using SPSS version 14.0 program. It purposed to measure the tests which will

be examined. In pre-test and post-test, the researcher measured the item tests to be valid and reliable. The validity and the reliability can be explained as follows:

3.4.1. The Validity of the Test

The validity is the most consideration in developing and evaluating measuring the instruments. Ary (2010: 225). It means that validity is an instrument of the research in evaluating the test. In this research, the validity of the test focuses on the result of the reading comprehension test that consists of pre-test and post-test. The researcher analyzes two tests to be valid. In this research, the researcher also checked the content validity and the construct validity.

To determine the content validity, the researcher asked to the English teacher checking the instrument validity as syllabus, lesson plan and scores criteria. The score of multiple choices, there are 20 items and every correct answer could 3 point, totally 100 point. Whereas to determine the construct validity, the researcher used the assistance of SPSS version 14.0 programs to compute descriptive statistics. The instrument validity was examined by analyzing item was good or not.

The researcher used in testing the validity with this formula:

$$r_{xy} = \frac{N(\sum xy) - (\sum x)(\sum y)}{\sqrt{\{N\sum x^2 - (\sum x)^2\}(\sum y^2 - (\sum y)^2)}}$$

Where

R_{xy} : the coefficient of correlation X and Y variable or validity of each item.

N : the number of students/subject participating in the test

X : the sum of X scores

Y : the sum of X scores

ΣY : the sum of total score for each student.

ΣX : the sum of total score in each item.

ΣXY : the sum of multiple score from each student with the total score in each item

ΣX^2 : the sum of the square score in each item and,

ΣY : the sum of the total score from each student.

Each item square is determined by using these following categorizations:

<0, 3 is difficult

03 – 07 is medium

0, 7 - is easy

3.4.2. The Reliability of the Test

The researcher use the reliability in which it is a important element to measure the quality of the test. The researcher should know the consistency of the test scores. In addition, the researcher needs to try out the test to another class in different school because in SMA YPI Darussalam Cerme only consist of two classes there are XI A class and XI B class. The researcher gave try out to the students of C class in MAM 1 Cerme. And how to determine the reliabilty of the test the researcher use SPSS version 14.0 with formula:

$$r_{kk} = \frac{K.Sx^2 - \bar{x}(k - \bar{x})}{Sx^2(k - 1)}$$

$$s = \sqrt{\frac{\Sigma Fx}{n-1}}$$

$$n-1$$

$$\chi = X - \bar{x}$$

Where:

K : total item that accepted

N : total students followed the test

χ : total of correct answer a student

F : total of student who got the particular score in x

Criterion:

$0.0 \leq r_{kk} < 0.20$ is the lowest reliability

$0.20 \leq r_{kk} < 0.40$ is the low reliability

$0.40 \leq r_{kk} < 0.60$ is the quite reliability

$0.60 \leq r_{kk} < 0.80$ is the high reliability

$0.80 \leq r_{kk} < 1.00$ is the highest reliability

3.5. Data Analysis

In this research, after the data is collected, the researcher analyzes the data that the researcher got by using the independent sample t-test in SPSS version 14.0 programs. Independent sample t test is used to know the score and the result of the experimental and control group. The researcher used SPSS version 14.0 programs to compare a significant difference whether there is positive effect of using cooperative integrated reading and TPS (Think-Pair-Share) technique for teaching reading comprehension of invitation letter.

Assumptions for the independent t-test are:

1. Independence: the observation of each sample must be independent (the samples do not influence to each other)
2. Normal Distribution: the scores of the population must distribute normally

3. Homogeneity of variance: the two populations must be equal variances (the degree of the distributions is approximately equal).

3.5.1. Normality Distribution Test

According to Santoso (2006:157) found that the normality distribution test is used to test whether the distribution test is normal or not. It means that we need to test the distribution test to be normal. The distribution test is said normal if the significant value or the probability value is larger than the level of significant (0.05). While, if the significant value or the probability value is lower than the level of significant (0.05) so that the distribution test is not normal.

To test normality distribution test, the researcher use kolmogrov smirnov in SPSS version 14.0 program with the following procedures. The first procedure was inputting the pre-test score in the data view. The second procedures were going to analyze, nonparametric, and 1 – sample K-S. The third procedure was interpreting the normality distribution test.

3.5.2. Homogeneity Test of Variance

According to Santoso (2006:158) found that homogeneity test of variance is used to test whether two sample that have been taken have the same variance or not. It means that the researcher needs to test two sample that have been taken and have the same variance or not. Two sample show the same variance if the significant value or the probability value is larger than the level of significant (0.05). While, if the significant value or the probability is lower than the level of significant (0.05) so that, those samples are not the same variance.

Based on this research, the researcher use independent sample t test in SPSS version 14.0 program to test the homogeneity test of variance with the

following procedures. The first procedure was inserting the pre-test score of two groups in the data view. The second procedures were going to analyze, compare means, and independent sample t test. The third procedure was interpreting the homogeneity test of variance. Here, the researcher need to see the levennes' test to know whether two sample of experimental and control group are homogeneous or not.

The test of Levenes' test defines with the formula:

$$P = \frac{(N - K) \sum_i^k \frac{1}{N_i} (Z_i - Z)^2}{(K - 1) \sum_i^k \frac{1}{N_i} \sum_j^{N_i} (Z_{ij} - Z_i)^2}$$

Where:

P : the result of the test,

K : the number of different groups to which the samples belong,

N : the total number of samples,

N_i : the number of samples in the ith group,

Y_{ij} is the value of the jth sample from the ith group,

$$Z_{ij} = \left\{ \frac{Y_{ij} - \bar{Y}_i, \bar{Y}_i \text{ is mean of } i \text{th group}}{Y_{ij} - \bar{Y}_i, \bar{Y}_i \text{ is median of } i \text{th group}} \right\}$$

3.5.3 Hypothesis Testing

In this research, Independent t-test was used to finds out the significant effect between experimental group and control groups. So here the reader can read the steps of t-test calculation below:

1. The first step was stating the hypothesis and setting the alpha level at 0.05 (two tailed test).

2. The second step was finding t-value using independent sample t-test formula and comparing the probability with the level of significance for testing the hypothesis.
3. The last was write the results of the tests were subjected to the following statistical procedures.

The hypothesis can be formulated as follow:

$H_0 =$ (null hypothesis) is $\mu_1 - \mu_2 = 0$ ($\mu_1 = \mu_2$)

$H_1 =$ (Alternatives hypothesis) $\mu_1 - \mu_2 \neq 0$ ($\mu_1 \neq \mu_2$)

H_1 : Reading comprehension using cooperative integrated reading and using TPS technique.

H_0 : Reading comprehension without using cooperative integrated reading and using TPS technique.

Hypothesis testing in this research was:

H_0 : There is no significant difference on the effect of cooperative integrated reading and TPS (Think-Pair-Share) technique in reading comprehension between experimental group and control group.

H_1 : There is significant difference on the effect of cooperative integrated reading and TPS (Think-Pair-Share) technique in reading comprehension between experimental group and control group.

Based on this research, t-test is calculated to find out the comparison of two means between experimental and control group pre-test and post-test. In analyzing the data, the researcher use independent sample t-test formula and the reader can see the formula below.

The formula use in calculating t-test is:

$$T = \frac{(\bar{X}_1 - \bar{X}_2) - (\mu_1 - \mu_2)}{S_{\bar{X}_1 - \bar{X}_2}}$$

$$\text{Where : } S_{\bar{X}_1 - \bar{X}_2} = \sqrt{\frac{S^2_{pooled}}{n_1} + \frac{S^2_{pooled}}{n_2}}$$

Pooled variance: the average of the two sample variances, allowing the larger sample to weight more heavily.

The formula is below:

$$S^2_{pooled} = \frac{(df_1)s^2_1 + (df_2)s^2_2}{df_1 + df_2} \quad \text{OR} \quad S^2_{pooled} = \frac{SS_1 + SS_2}{df_1 + df_2}$$

$df_1 = df$ for 1st sample; $n_1 - 1$

$df_2 = df$ for 2nd sample; $n_2 - 1$

Estimated Standard Error of the Differences

$$s_{\bar{x}_1 - \bar{x}_2} = \sqrt{\left(\frac{SS_1 + SS_2}{n_1 + n_2 - 2}\right)\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}$$