CHAPTER III

METHODOLOGY

In this chapter, the researcher would like to present about methodology this chapter contains of research design, population and sample, data collection technique, research instrument, procedure of collecting data, the validity of test, the reliability of test, data analysis technique, homogeneity test of variance, hypothesis testing.

3.1. Research Design.

The research study on effect using Directed Reading Thinking Activity to improve reading comprehension of twelve grade for female student was quantitative research which focused on the efforts to improve the real condition of the English teaching and learning process. The quantitative research was used to find out whether or not the effect directed reading thinking activity can help students improve their reading ability. In this research, the researcher applied one group pretest-posttest design of pre-experimental research. The effects of the treatment were obtained from the difference between the pretest and posttest score.

Mc Millan and Schumacher (2006) stated that quasi-experimental research is a good design of the research because although it was not true experiments, it provided reasonable controlled over most sources of invalidity and it is usually stronger than the pre-experimental design. Quasi-experimental design focused on treatment and outcome, hence the data was taken from pre-test and post-test in order to know the significance difference in reading comprehension between

students who were taught using Directed Reading Thinking Activity and students who were taught using traditional strategy. In this research design, there were two kinds of classes used. There are the experimental class which used Directed Reading Thinking Activity technique and the control class which were taught using Traditional technique.

The purpose of the method is the same—to determine cause and effect—and there is direct manipulation of conditions. Quasi-experimental design focuses on treatment and outcome, enhance the data was taken from pre-test and post-test in order to know whether or not directed reading thinking activity was effective in improving students' reading comprehension achievement.

The design could be described as the following in below:

Group	Pre-Test	Treatment	Post-test
Experiment	X1	+	X2
Control	X1	-	X2

3.1. Pre-test and Post-test Quasi experimental design.

X1   : The pretest (before giving treatment)

+   : With the treatment directed reading thinking activity

-        : without the treatment directed reading thinking activity

X2   : The posttest (after giving treatment)

3.2. Population and Sample.

According to Paul, P., & Lee, C. (2010) a population consist of all the subjects in the study. So, from the statement above, the population of this study is female students in twelve grade of SMK NU Gresik in first semester 2017/2018 academic year. This research will be held in SMK NU Gresik which located on Jl. KH. Abdul Karim No.60, Gresik. The author decide twelve grade students of SMK NU Gresik but researcher focus on female student as population.

The researcher using cluster sampling because researcher choosing from some sample. The total numbers of the populations are 66 students. The researcher takes two classes XII-MM with 37 students and XII-TKJ with 29 students as the sample of the study. They will be two groups, one is experimental group and other is the control group. Class XII-TKJ for the control group and class XII-MM is for the experimental group. The researcher choose that subject because it is recommendation from teacher and researcher followed teacher's schedule.

3.3. Data Collection.

3.3.1. Data Collection Technique.

The researcher collects the data from the result of the tests. The researcher makes a pre-test and post-test to experiment group and control group as a data collections. The first data is pre-test that conducts to both classes to measure student's reading comprehension before giving treatment. From the pre-test score, the researcher will analyze the homogeneity and normality both of the class whether equal or not. Then, the researcher classifying the groups into experimental that teach using Directed reading thinking activity and control group

that teach using their teacher method. After pre-test, the researcher gives the treatment consists of four meetings which each meeting has a different topic based on syllabus.

The second data are taken from post-test of both experimental and control group to see the effect of using four square method on student's writing ability. Then the last is analyzing the data from pre-test and post-test by using SPSS 21.0 program.

3.3.2. Research Instrument.

Research instrument is an important thing in conducting the research. In this study, the researcher uses test in collecting the data. There are two tests that are used by the researcher. First is pre-test and the second is post-test. Pre-test will be given by the researcher for both experimental group and control group. It is to know the students ability in reading comprehension before they get the treatments and also to find the homogeneous both of group. Whereas, post-test will be given for both experimental group and control group after the researcher conducts the treatments only in experimental group. The score of post-test will show the influence of directed reading thinking activity strategy toward students' reading comprehension.

Based on the data from the tests, the researcher formed tables for frequency distribution and analyzed them by using the formula for means, variance, standard deviation, t-test and percentages as proposed by Sudjana (2002). In this case, before continuing to analyze the scores using the t-test, tests were done for normality and variance from a homogenous population (see also Sudjana, 2002).

3.3.2.1. Test.

The kind of the test that will be used in this research is a subjective test. In this study, the researcher collecting the data uses test. The purpose of giving the tests is to check the students' achievement as a progress indicator educational objectives set for the students. Test conducted two test, pre-test and post-test based on the Standard of competence in the syllabus of twelve grade (School Based Curriculum at twelve grade of vocational high school). The general concept of the test will be elaborated as follows:

3.3.2.1.1. Pre-test

Pre-test is done for experimental and control group. It is conducted for knowing the previous female students' ability on reading comprehension. Pre-test will be given before the implementation of directed reading thinking activity in teaching English vocational high school. Because in this test to find out the reaction and response of the students. Every student will be divide in a group or individually. Both of control and experimental class got this test.

3.3.2.1.2. Post-test

In this test like pre-test, post-test was also done by experimental and control group. The procedure of post-test has the same procedure with the pre-test, but in this post-test was conducted after giving all the treatment only in the experimental group.

It measured the result of this treatment success or not. The item and topic of post-test are same with the items and topic given to the experimental and control group in post-test.

3.3.2.2. Scoring Guide.

For scoring students' reading comprehension in pre-test and post-test, the researcher made this formula and criteria:

SCORE = Number of True Answer X 5

SCORE	CATEGORY
85-100	Excellent
70-84	Good
55-69	Enough
40-54	Poor
0-39	Very Poor

Table 3.2. Student's Test Criteria.

3.3.3. The Procedure of Collecting Data.

In this research, the researcher In this research, chooses the students' of vocational high school at SMK NU GRESIK in the first semester of academic year 2017/2018. The researcher takes this school because the school fills with the researcher criteria. First, researcher want to discovery research different with before research. It is conducted on vocational high school. Second, the researcher need female student so researcher decided this school almost student is female.

Before conducting the test, the researcher asks permission to the principal at the SMK NU GRESIK and explains the purpose of the study. After getting her approval, the test is given to the students. Before conducting the test, the researcher tried out the test to find out the validity and reliability. After find out the validity and reliability, the researcher conducts the research.

 First the researcher gives pre-test for experiment and control class to find out the differences both of them. Then, the researcher gives the treatment for experimental group at XII MM and control group at XII-TKJ. It is conducted four times. The last, the researcher gives post-test after the researcher conducts the treatments and some exercises. Post-test is given to find out whether the subject makes progress in their reading comprehension or not.

3.3.2.1. Schedule

During doing this study, the researcher has schedule to conduct the study as follow:

NO	Date	Activities
1.	October 25th ,2017	Giving pre-test for experimental group and control group
2.	October 26th, 2017	Giving first treatment " Procedure text" for experimental group and control group
3.	November, 1st ,2017	Giving second treatment "procedure text" for experimental group Giving second treatment "procedure text" for control group.
4.	November, 2nd , 2017	Giving third treatment "Short functional text" for experimental group. Giving third treatment " Short functional text" for control group.
5.	November, 8th , 2017	Giving fourth treatment "Short functional text" for experimental group.

		Giving fourth treatment "Short functional text" for control group.
6.	November, 9th, 2017	Giving post-test for experimental group and control group.

Table 3.3. Schedule of Research Implementation.

3.3.4.   The Validity of Test.

The test should be tried out in terms of its validity and reliability on order to check the validity of the test the researcher did it into two steps. According to (Ary, 2002) states Validity is the most important in developing and evaluating of measuring instruments. There are three types of validity, they are content, predictive, and construct. Ary (1990) stated that content validity it can be used test's items based on objective in curriculum, syllabus, and course book.

In the validity of test were teacher look syllabus 12 grade in vocational high school from government then making a lesson plan, handbook, and media to support the teaching English using Directed Reading Thinking Activity. In the syllabus, researcher using KTSP curriculum.

There first semester for pre-test and post-test. Researcher focus on reading skills which is listed on the syllabus in standards competency. It is more detail each meeting, research make a schedule below:

No	Basic Competence	Sub-Basic Competence	Question	
			Pre-test	Post-test
1.	3.4. Memahami Manual penggunaan peralatan.	3.4.1. Pertanyaan-pertanyaan yang terkait denga nisi manual penggunaan alat dijawab dengan benar	Procedure Text a. How to change an Epson printer ink cartridge. b. How to change the background of a photo in photoshop	Procedure Text a. How to set-up laptop to print wirelessly. b. How to set-up first thing before we use camera.
	3.5.Memahami surat-surat bisnis sederhana	3.5.1.Pertanyaan yang terkait dengan isi surat-surat bisnis dijawab dengan benar	Short Functional Text (Business Letter). a. Complaint letter. b. Decision letter	Short Functional text (Business Letter). a. Application letter.

Table 3.4. Content of Validity of the test.

Ary (2010) explained that content validity its must appropriate with handbook, curriculum and syllabus. For testing content validity, the researcher looked out English syllabus of vocational High School especially accounting program 11th grade in the 1st semester. If the test items appropriate with curriculum syllabus and course book, it can be said that the test has content validity.

Whereas to find the construct validity, the researcher used assistance of SPSS 16.0 program to compute descriptive statistics the instrument validity are examined by analyzing item is valid or not valid. The researcher used in testing the validity below:

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

Where :

rxy : The cofiicient of correlation X and Y variable or validity of each item

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

$\sum y$: The sum of score of Y item

$\sum x$: The sum of score of X item

After findings the value of rxy, we can determine the validity of the test by looking at Guilford (1956) criteria:

0,80 – 1,00 : Very High Validity
0,60 – 0,79 : High Validity
0,40 – 0,59 : Intermediate Validity
0,20 – 0,39 : Low Validity
0,00 – 0,19 : Very Low Validity
<0,00 : Invalid
By SPSS Statistics 21.0, the step for determining validity of the test were open SPSS 16.0 program, choose file and New Data. Then, input the data in the data view. For counting the test validity, Click transform, compute variable, after that click Analyze menu, correlates and choose bivariate. Input all variables in the variables part, give checklist in Pearson and choose two tailed in Test of significance then click OK. The last, the result of validity will appear in the output.

For checking validity of test items, the researcher conducted try out once in other classes beside experimental and control group who had same ability with those groups. The researcher only conducted try out for once because of the limited time which was given by the institution

3.3.5. The Reliability of Test.

In this study, the researcher used Cronbach's Alpha for measuring reliability of the test. The formula of Cronbach's Alpha is:

$$r = \left(\frac{k}{k-1}\right)\left(1 - \frac{\sum Si^2}{St^2}\right)$$

Where:

r : Cronbach's Alpha coefficient
k : total of test items
$\sum Si^2$: total of test variance
St^2 : total variance

After knowing Cronbach's Alpha coefficient, we must consider in this

Guilford (1956):

<0.20 : Very Low Reliability

0.20 – 0.39 : Low Reliability

0.40 – 0.59 : Intermediate Reliability

0.60 – 0.79 : High Reliability

0.80 – 1.00 : Very High Reliability

In SPSS 21.00, there are some procedures in measuring reliability of the test such as: First, open SPSS 21.00 program. Second, choose File, New Data. Third, Input the data in the data view. Fourth, click analyze, click scale and click reliability analyze. Next, it will appear dialogue box named reliability analysis. Input all variables in items box then choose alpha in the model. Last, click OK.

If Cronbach's Alpha value > r-table, the test items are reliable but if Cronbach Alpha Value < r-table, the test items are not reliable.

Based on the result of try out for pre-test and post-test, the researcher found that both of pre-test and posy-test were reliable. It was showed from the result of test items' reliability in SPSS 21.0.

3.4. Data Analysis.

This research using quantitative data analysis which there is fundamental statistic include frequency, percentage, mean, standard deviation, with criteria of data interpretation. The dependent sample t-test and the independent sample t-test were also used. We using quasi experimental and interval scale will analyze by using T-Test (Paired sample) to calculate the pre-test and post-test.

All the answers of tests are manually counted and tabulated into frequency count and percentage. Arikunto (2010:278) classified the data analysis method into three parts are: Preparation, Tabulation and Making Conclusion. The data analysis is carrying out in order to answer the problem with the data obtained through pre-test and post-test. The research analyze the data by using independent sample t-test. Since the samples are small and the groups are independent, the t-test for independent samples are carried out to determine whether there is any difference between experiment and control group.

3.4.1. Normality Distribution Test.

To know the normality, the researcher uses *kolmogorov-smirnove test* with SPSS. In this study, Kolmogorov Smirnov Sample Test in SPSS Version 21.0 is used to analyze the normal distribution. If the results are significant, then the null hypothesis of no difference between the observed data distribution and a normal distribution is rejected. If the value is more than the level of significance (0, 05) the null hypothesis is accepted; the score are normally distributed.

3.4.2. Homogeneity test of variance

For homogeneity test, the researcher uses Levene's *test* of *homogeneity in SPSS 21.0 version.* The purpose of this test was to analysis the variances of the observation in Control Group and Experimental Group were equal. Because the researcher could not random the students so, homogeneity test was necessary to make sure the students in both of the class had the same ability in reading comprehension or not and the researcher could conduct the treatment.

The test of Levine's test, or P, defines as follow:

$$P = \frac{(N-k)}{(k-1}\frac{\sum_{i=1}^{k} N_i (Z_i - Z_{..})^2}{\sum_{i=1}^{k} \sum_{j=1}^{N_i} (Z_{ij} - Z_i)^2}$$

Where:

P   is the result of the test,
K   is the number of different groups to which the sample belong, N is the total number of samples,
N1   is the number of samples in the ith group,
Yij   is the value of the jth sample from the ith group,

$$Z_{ij} = \begin{cases} \left| Y_{ij} - \bar{Y}_i \right|, \bar{Y}_i \text{ is a mean of } ith \text{ group} \\ \left| Y_{ij} - \hat{Y}_i \right|, \hat{Y}_i \text{ is median of } ith \text{ group} \end{cases}$$

The significance of P is tested against $F(\alpha, k-1, N-k)$ where F is a quintile of the F test distribution, with $k-1$ and $N-k$ it is degrees of , and α is the chosen level of significance (0.05).

To analyze the homogeneity, the researcher uses SPSS (Statistical product and service solutions) version 21.00. The homogeneity assumption is checked in SPSS by Levene's test with the following procedures. The first procedure is inserting the pre-test data both experimental and control groups using the data view. The second procedures is going to the analyze menu, selecting compare means, and the choosing independents sample t-test. The last procedure is interpreting the homogeneity test output, the researcher needs to see Lavene's test Column to know whether the equality of variances in the groups of scores were homogeny or not.

3.4.3. Hypothesis Testing

First, the researcher groups the tests based on the data resources (class A and class B). Then, the researcher counts all the answers of the tests generally. After that, the researcher tabulates the result of each class into percentage. After counting and tabulating the responses generally, the researcher makes conclusions of what significant effect for using directed reading thinking activity strategy toward the female students' ability in reading skill.

H₀: There is no significant effect of Directed Reading Thinking Activity for student's comprehension on twelve grade at SMK NU GRESIK.

H₁: There is a significant effect of Directed Reading Thinking Activity for student's comprehension on twelve grade at SMK NU GRESIK.

If the t-count was found to be smaller than the t-table, it means that the null hypothesis was accepted and the alternative one was rejected. Vice versa, if the t-count was found to be higher than the t-table, it means that the null hypothesis was rejected and the alternative one was accepted.

T-test was calculated to find out the comparison of two means between experimental and control group pre and post-test. In analyzing the data, the researcher used independent t-test formula. The formula used in calculating t-test is:

$$t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{S_{\bar{x}_1 - \bar{x}_2}}$$

Where:

t	is t value
x_1	is average group 1
x_2	is average group 2
S	is standard error of the two groups
$\mu_1 - \mu_2$	is always defaults to

Where:

$$Sx_1 - x_2 = \frac{\sqrt{S^2\text{pooled} + S^2\text{pooled}}}{n_1 + n_2}$$

$Sx_1 - x_2$ is standard error of two groups

$S^2\text{pooled}$ is variants of the two groups

n_1 is Number of sample group 1

n_2 is Number of sample group

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

Formula:

Estimated standard error of the difference

$$S_{x_1-x_2} = \frac{\sqrt{(SS_1 + SS_2)(1 + 1)}}{(n_1 + n_2)\,(n_1 + n_2)}$$

In order to, the result of the test were subjected to the following statistical procedures. To calculate t-test, the researcher used SPSS (Statistical product and Service Solution) version 21.00. The post of experimental and control groups were analyzed by using SPSS version 21.00 with the following procedures. The first procedure was inserting the post test data of both experimental and control groups using the data view. The seconds procedures were going to the analyze Menu, selecting compare was interpreting t-test output, automatically it could answer to the research questions about the comparison between two groups.

In short, the primary data was collected by means of pre-test and T-test to find out the significance on the effect of Directed Reading Thinking Activity strategy in reading comprehension.