CHAPTER III

METHODOLOGY

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

3.1 Research Design

This research was conducted quantitavely through quasi-experimental design because the researcher may not possible to random the students in the class. 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 instructional conversation and students who were taught using oral reading. In this research design, there were two kinds of classes used. There are the experimental class which used instructional conversation technique and the control class which were taught using oral reading.

In this study, researcher decided to use pre test and post test because she needed to do two observations; before treatment and after treatment to know the effect of instructional conversation on students' reading comprehension.

The Research Design

(Pre – test and Post – test design)

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

Table 3.1 Pre – test and Post – test Quasi – experimental design

Explanation:

X1   : The Pre – test (before giving a treatment)

+   : With the treatment of instructional conversation

 -       : Without treatment of instructional conversation

X2   : The Post – test (after giving treatment)

From the table above, it can be seen that both of the classes are given pre-test in the beginning of the research. After that, the experiment group was given treatments by using Instructional Conversation for four times. After the treatments, post-test was given to both groups.

The procedures of the research design is as follows :

1. Giving pre-test to the correspondent (subject) to measure reading comprehension before the treatments.

2. Giving treatment to the respondents that is teaching Reading comprehension by using Instructional Conversation Method.

3. Giving post-test to measure the students reading comprehension achievement after being given the treatment.

4. Finding the mean different between results of the pre-test and post-test.

5. Analyzing the data using t-test formula to prove the hypothesis.

6. Finding the hypothesis testing : H0 is received if t statistic > t table.

                              H1 is failed if t statistic < t table.

3.2 Population and Sample

Arikunto (2004) stated that population is all subjects of a research. Then, Sekran (2000) said that population refers the entire group of people, events, or things of interest that the researcher wishes to investigate. Based on the two theories, it can be concluded that population is all subjects or individuals with certain characteristics that will be analyzed.

The population of this research is male students in the eleventh grade of SMK Daruttaqwa in the first semester 2016/2017 academic year. The total number of the population in this research is 37 students who were divided into two classes, XI TMA (18 students) and XI TMB (19 students).

Sample is part of all representatives of a population that are analyzed. Sekran (2000) stated that a sample is a subset of the population. It comprises some members selected from the population. So, the sample of this reserach is students in the class XI TMA and XI TMB because the eleventh grade of SMK Daruttaqwa consists of two classes, so the researcher uses population sampling to take the sample.

3.3 Data Collection Technique

To know the effect of instructional conversation on students' reading comprehension in this research, the researcher needs data collection. There are stages to collect the data.

3.3.1 Instrument of The Study

The researcher must use instrument in order to get the better data. The instrument of the research is a tool or facility that is used by researcher for collecting data in order to get better result or in other words, it can be occur complete and systematic.

To get the accurate data, in this study the researcher chooses test which is multiple choice for collecting data.

3.3.1.1 Test

The researcher gave two tests (pre-test and post-test) the control group and experimental group in order to know whether there was significance difference on students' reading comprehension using instructional converstion or not. Before giving the test, the researcher measured the validity and reliability of tests to know whether the tests were proper to be given to the students or not by doing try out to other class which is class XI TB.

3.3.1.1.1 Pre-test

Pre-test was given to find out the first students' reading comprehension score between experimental group and control group. The test was given before

the treatment of instructional conversation applied to the experimental group. The

reseracher gave the students 60 minutes to finish their pre-test. The test totally

consisted of 20 questions of multiple choice.

3.3.1.1.2   Post-test

Post-test was given after treatment of instructional conversation applied to

the experimental group. The researcher designed the questions of post-test

different with pre-test but it still equal in every item. It is to find out whether there

is the effect of instructional conversation on students' reading comprehension or

not. The researcher also gave 60 minutes to the students to finish their post-test.

The test also totally consisted of 20 questions of multiple choice.

3.3.1.2 Scoring Guide

For scoring students' reading comprehension in pre-test and post-test, the

researcher made this formula and criteria :

$$SCORE = \text{Number of True Answer} \times 5$$

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

Table 3.2 Students' Test Criteria

3.3.2   Procedure of Collecting Data

It discusses about procedure of collecting data. Before administering the test, the researcher asked permission to the principal at the school and explained the purpose of this study. After getting the approval, the researcher met with English Teacher to discuss about the schedule of teaching. Then, she had prepared pre-test for XI TMA and XI TMB. But before administering the pre-test, the researcher tried out the test to find out the validity and reliability of those items. After find out the validity and reliability, the researcher conducted the research. For the first, the researcher gave pre-test to find out the initial different on the both groups, especially experimental group. After giving the test, the researcher gave the treatment for experimental group. It was conducted four times. And post test was administered after the researcher conducted the treatment and gave some exercises to the experimental group and control group in a period of time. It was to find out whether the students made progress in their reading comprehension or not.

3.3.2.1 Schedule

In implementing Instructional Conversation Method and Oral Reading, the researcher made in this schedule:

No	Date	Activity	Group	Topic
1	08 November 2016	Pre-Test	Experimental Group	Report Text and Procedure Text
2	09 November 2016	Pre-Test of	Control Group	Report Text and Procedure Text

3	10 November 2016	1st Treatment	Experimental Group	Report Text "Business Etiquette in Europe"
4	15 November 2016	1st Treatment	Control Group	Report Text "Business Etiquette in Europe"
5	15 November 2016	2nd Treatment	Control Group	Procedure Text "How to Keep Phone Calls Short"
6	16 November 2016	2nd Treatment	Experimental Group	Procedure Text "How to Keep Phone Calls Short"
7	17 November 2016	3rd Treatment	Experimental Group	Report Text "Webmaster : a Challenging Job"
8	22 November 2016	3rd Treatment	Experimental Group	Report Text "Webmaster : a Challenging Job"
9	22 November 2016	4th Treatment	Control Group	Procedure Text "How to Become an Airline Pilot"
10	23 November 2016	4th Treatment	Experimental Group	Procedure Text "How to Become an Airline Pilot"

| 11 | 24 November 2016 | Post-Test | Experimental Group | Report Text and Procedure Text |
| 12 | 29 November 2016 | Post-Test | Control Group | Report Text and Procedure Text |

Table 3.3 The Schedule of Research Implementation

3.3.3 The Validity of Test

Before conducting post-test and pre-test as instrument of the research, the test should be tried out terms of its validity and reliability. In order to check the validity of the test, the researcher did it into two steps. Those were checking content validity and construct validity. To determine the content validity, the researcher checked based on the syllabus.

BASIC COMPETENCE	SUB BASIC COMPETENCE	QUESTIONS	
		PRE-TEST	POST-TEST
2.2 Mencatat pesan-pesan sederhana baik dalam interaksi langsung maupun melalui alat	2.2.1 Mencatat pesan-pesan sederhana dalam interaksi langsung	1. Chinese Business - Chinese Business Meeting Etiquette	1. Mastering Business Etiquette in Bangladesh
	2.2.2 Mencatat pesan-pesan sederhana dalam interaksi melalui alat	2. How to Use The Facsimile Machine	2. How to Write a Meeting Memo

2.3 Merinci tugas pekerjaan dan latar belakang pendidikan yang dimilikinya secara lisan dan tulisan	2.3.1 Merinci tugas pekerjaan dan latar belakang pendidikan yang sesuai dengan profesi secara tulisan	3. Nurse Job Description	3. Bank Teller Education Requirements
	2.3.2 Merinci cara mendapatkan pekerjaan dan latar belakang pendidikan yang dibutuhkan sesuai dengan profesi secara tulisan	4. How to Become an Architect	4. How to Become a Hotel Receptionist

Table 3.4 Content Validity of The Test

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 in:s

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

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 16.0, 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 Analyze menu, correlates, 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.

3.3.4   The Reliability of Test

The basic concept of reliability of a test is consistency of the test score. Reliability measurement supplies an instrument of how much a variance might expect under different condition. The reliability of the test is characteristically presented by means of reliability coefficient or the standart error of measurement. To define the reliability of the test in order to find out the stability of the test, the researcher uses SPSS 16.0 with formula

$$rkk = \frac{K.Sx^2 - \tilde{x}\,(K - \tilde{x})}{Sx^2\,(K - 1)}$$

Where : $S = \sqrt{\frac{\Sigma F}{n-1}}$

$Fx \quad = X - \tilde{x}$

K : total item that accepted

n : total students follow the test

Fx : total of students' correct answer

F : total of students who get the particular score in x

Criteria:

$0.0 \leq rkk < 0.20$ is the lowest reliability

$0.20 \leq rkk < 0.40$ is the low reliability

$0.40 \leq rkk < 0.60$ is the quite reliability

$0.60 \leq rkk < 0.80$ is the high reliability

$0.80 \leq rkk < 1.00$ is the highest reliability

In SPSS 16.0, there were some procedures in measuring reliability of the test. Open the SPSS 16.0 program, and then choose file, New Data. After that, input the data in the data view. Click analyze, click scale and click reliability analyze. It will appear dialogue box named reliability analysis. Input all variables in items box then choose alpha in the model. Click OK. If Cronbach's Alpha value > r-table, the test items are reliable but if Cronbach's Alpha value < r-table the test items are not reliable.

3.3.5 The Readability of Reading Text

Readability formula will find out the reading level and grade level of materials and help to calculate grade level. There are many kinds of Readability formula that can be used such as Flesh Reading Case, The Fry Graph, Raygor Estimate Graph, Spache Formula, and New Dale-Chall Formula that can be used in one way to know the readability formula of the test.

Flesh Reading Case formula:

$$206.835 - 1.015 \left(\frac{total\ words}{total\ sentences} \right) - 84.6 \left(\frac{total\ syllables}{total\ words} \right)$$

In the Flesh Reading Case test, higher scores indicate material that is easier to read, lower number mark passages that are more difficult to read. Score can be interpreted as shown in the table below :

Score	School Level	Notes
90.0 – 100.0	5th grade	Very easy to read. Easy understood by an average 11 years old student
80.0 – 90.0	6th grade	Easy to read. Conversational English for consumers
70.0 – 80.0	7th grade	Fairy easy to read
60.0 – 70.0	8th & 9th grade	Plain English. Easily understood by 13 to 15 years old student
50.0 – 60.0	10th to 12th grade	Fairly difficult to read
30.0 – 50.0	Collage	Difficult to read
0.0 – 30.0	Collage graduate	Very difficult to read. Best understood by university graduates.

Table 3.5 Flesh Reading Case Test Table

New Dale-Chall Formula :

$$0.1579 \left(\frac{difficult\ words}{words} x\ 100\right) + 0.0496 \left(\frac{words}{sentences}\right)$$

If the percentage of difficult words is above 5% then add 3.6365 to the raw

score to get the adjusted score, otherwise the adjusted score is equal to the raw

score.

Score	Notes
4.9 or lower	Easily understood by an average 4th - grade student or lower
5.0 – 5.9	Easily understood by an average 5th or 6th – grade student
6.0 – 6.9	Easily understood by an average 7th or 8th – grade student
7.0 – 7.9	Easily understood by an average 9th or 10th – grade student
8.0 – 8.9	Easily understood by an average 11th or 12th – grade student
9.0 – 9.9	Easily understood by an average 13th or 15th – grade (collage) student

Table 3.6 New Dale-Chall Formula

3.4 Data Analysis Technique

The purpose of analyzing data is to answer the research problem with get

through pre-test and post-test. In this study, the researcher analyzed the data by

using independent sample t-test in SPSS 16.0. The researcher used independent

sample t-test because the sample was small and the groups were independent. It

was carried out to decide whether there was significance different between experimental group and control group.

Assumptions for the independent t-test: (1) Independence: Observations within each sample must be independent (they do not influence each other), (2) Normal distribution: The scores in each population must be normally distributed and, (3) Homogeneity of Variance: Two populations must have equal variances (the degree to which the distributions are spread out is approximately equal). The steps of analysing the result are:

The data analysis method used in this research is t-test. T-test is used to analyze the data and to compare the mean difference of the pre-test and post-test and this research wants to know the effect of instructional conversation on reading comprehension of male students at SMK Daruttaqwa.

The formula is as follows:

$$t = \frac{Md}{\sqrt{\dfrac{\sum x^2 d}{N\,(N-1)}}}$$

Notes :

t : The Coeficient of the formula

Md : Mean of deviation (pre-test and post-test)

x^d : Deviation of each subject (d − Md)

$\sum x^2 d$: the sum of squared of deviation

N : The total number of subject

Db : N-1 (degree of freedom)

T-test is used to check the effect of using instructional conversation on reading comprehension of male students at SMK Daruttaqwa. Then, to know the

degree of effectiveness of the treatments, the researcher applies the formula of

DRE (Degree of Relative Effectiveness) as follows:

$$DRE = \frac{MX2 - MX1}{MX1} \times 100\%$$

Notes :

DRE   : The Degree of Relative Effectiveness

M_{x1} : Mean of Pre-test

M_{x2} : Mean of Post-test

3.4.1   Homogeneity Test of Varience

The analysis of varience, assume that variances are equal across groups or

sample. For homogeneity test, the researcher uses Levene's test of homogeneity in

SPSS 16.0 program. The test of Levine's test, or P, defines as follow:

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

Where

P is the result of the test

K is the number of different groups to which the samples belong

N is the total number of samples

N_i is the number of samples in the ith group

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

$$Z_{ij} = \begin{cases} |Y_{ij} - \tilde{Y}_i|, \tilde{Y}_i. \text{ is a mean of } i^{th} \text{ group} \\ |Y_{ij} - \tilde{Y}_i|, \tilde{Y}_i. \text{ is a mean of } i^{th} \text{ group} \end{cases} \Bigg\}$$

The significance of *P* is tested againts *F* (*α, k - 1, N - k*) where *F* is a quintile of the F test distribution, with $k - 1$ and $N - k$ its degrees of freedom, and α is the chosen level of significance (0.05).

To analyze the homogeneity, the researcher uses SPSS (Statistical Product and Service Solutions) 16.0 program. 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 procedure is going to analyze menu, selecting compare means, and choosing independents sample t-test. The last procedure is interpreting the homogeneity test output, the researcher needs to see Levene's test Column to know whether the equality of variences in the groups of scores is homogeny or not.

3.4.2 Hypothesis Testing

Independent t-test is used to to find out the significances between experimental and control groups. Here the steps of t-test calculation:

The first step is stating the hypothesis and setting the alpha level at 0.05 (two tailed test). In this research, the hypothesis used is a null hypothesis that said "There is no significant different on the effect of instructional conversation in reading comprehension between experimental and control group."

The hypothesis can be formulated as follow:

H1 (null hypothesis) is $\mu_1 - \mu_2 = 0$ ($\mu_1 = \mu_2$)

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

H1 : Reading comprehension using instructional conversation

H2 : Reading comprehension using oral reading

 Hypothesis testing in this research is:

H0 : There is no significant different on the effect of instructional

conversation in reading comprehension between experimental and control group

H1 : There is significant different on the effect of instructional conversation in

reading comprehension between experimental group and control group

 The second step is finding t-value using independent t-test formula and

comparing the probability with the level of significance for testing the hypothesis.

Determining t-critical in table t-(0.05) df, the researcher compares t-observed and

t-critical. If t-obs<t-critical, the researcher should accept the null hypothesis and if

t-obs>t-critical, it means the researcher can reject the null hypothesis and another

word. The researcher can accept the alternative hypothesis.

 T-test was 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 used indepenndent t-test formula. The formula used in calculating t-test

is:

$$t = \frac{(\tilde{x}_1 - \tilde{x}_2) - (\mu_1 - \mu_2)}{s_{\tilde{x}_1 \ \tilde{x}_2} \ -}$$

 Where

$$s_{\tilde{x}_1 \ \tilde{x}_2} \sqrt{\frac{S^2 \ pooled}{n_1} + \frac{S^2 \ pooled}{n_2}}$$

 Pooled variance: the average of two sample variances, allowing the larger

sample to weight more heavily.

Formula:

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

Df$_1$ = df for 1st sample ; n$_1$-1

Df$_2$ = df for 2nd sample ; n$_2$-1

Estimated Standart Eror of the Difference

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

Clearly, the result of the tests are subjected to the following statistical procedures. To calculate t-test, the researcher uses SPSS 16.0 program. The post-test of experimental and control group are analyzed by using SPSS 16.0 program with the following procedure. The first procedure is inserting post-test data of both experimental and control groups using the data view. The second procedure is goring to analyze Menu, selecting compare means, then choosing independent sample t-test. The last procedure is interpreting t-test output, automotically it could answer to the research questions about the comparison between two groups.

In short, the primary data is collected by means of pre-test and post-test to find out the significance on the effect of instructional conversation on reading comprehension of male students at SMK Daruttaqwa.