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## CHAPTER III

### RESEARCH METHODOLOGY

This chapter describes the research design that is used in the research. It includes research design, the location and time of the research, population and sample, procedure of the research, instruments of the research, the technique of data collection, validity and reliability test, and the technique of data analysis.

#### III.1 Research Design

This research is an experimental research. Marguerite, et al (2010) explain that the experimental research is the researcher control or manipulates how group of participants are treated and then measures how the treatment affects each group. In technical term, the researcher control or manipulates one or more independent variable and examines the effect that experimental manipulation has on the dependent variable or the outcome of the study. The independent variable is the variable that refers to how participants are treated. Participants are usually assigned to different groups that receive different treatments.

The design of this study is a quasi-experimental research. It is pre-test and post-test non-equivalent control group design. Pre-test is administered before giving the treatment. In this research, three variables are used; using Running Dictation Strategy is an independent variable, students' reading comprehension is dependent variable 1, and students' writing ability is dependent variable 2. Two groups are involved: an experimental group and a control group.

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**Table III.1**  
**Quasi-Experimental Design**

Pre-and Post-test Design		Time	
Experimental Group	Pre-test	Treatment	Post-test
Control Group	Pre-test	No treatment	Post-test

(Adopted from Creswell 2011)

According to the design on table 3.1, firstly we need to determine sample. Then, we do pre-test to see the students' ability for both groups experimental group and control group. Furthermore, treatment is given to the experimental group by using Running Dictation Strategy. The control group is given a conventional technique or without treatment of Running Dictation Strategy.

### III.2 Location and Time of the Research

This research was conducted at SMK Labor Pekanbaru, which is located at Jl. M. Husni Thamrin No. 97 Pekanbaru, in academic year 2017-2018. The duration of the research was two months, ( January and February 2018).

### III.3 Population and Sample

Gay (2000) states that population is group interest that the evaluation of the result to be generalizable It involves object or subject that has certain quality and characteristics. The population of this research is the first year of SMK Labor Pekanbaru. The first year students in this school were divided into 8 classes. For more detail, see table III.2 below

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Table III.2

## Total number of the first year students of SMK Labor Pekanbaru

No.	Classes	Number of Students
1	X AK 1	30
2	X AK 2	35
3	X AK 3	18
4	X TKJ	23
5	X RPL	26
6	X Marketing	29
7	X SES 1	39
8	X SES 2	42
<b>Total of Population</b>		<b>242</b>

In this research, there are two groups of participants as sample namely the experimental group and the control group. They are determined by using cluster random sampling. Gay (2009) states that cluster sampling randomly select groups, not individuals. The researcher gets the sample by selecting the intact group as a whole is known as a cluster sampling (Singh, 2006).

Table III.3

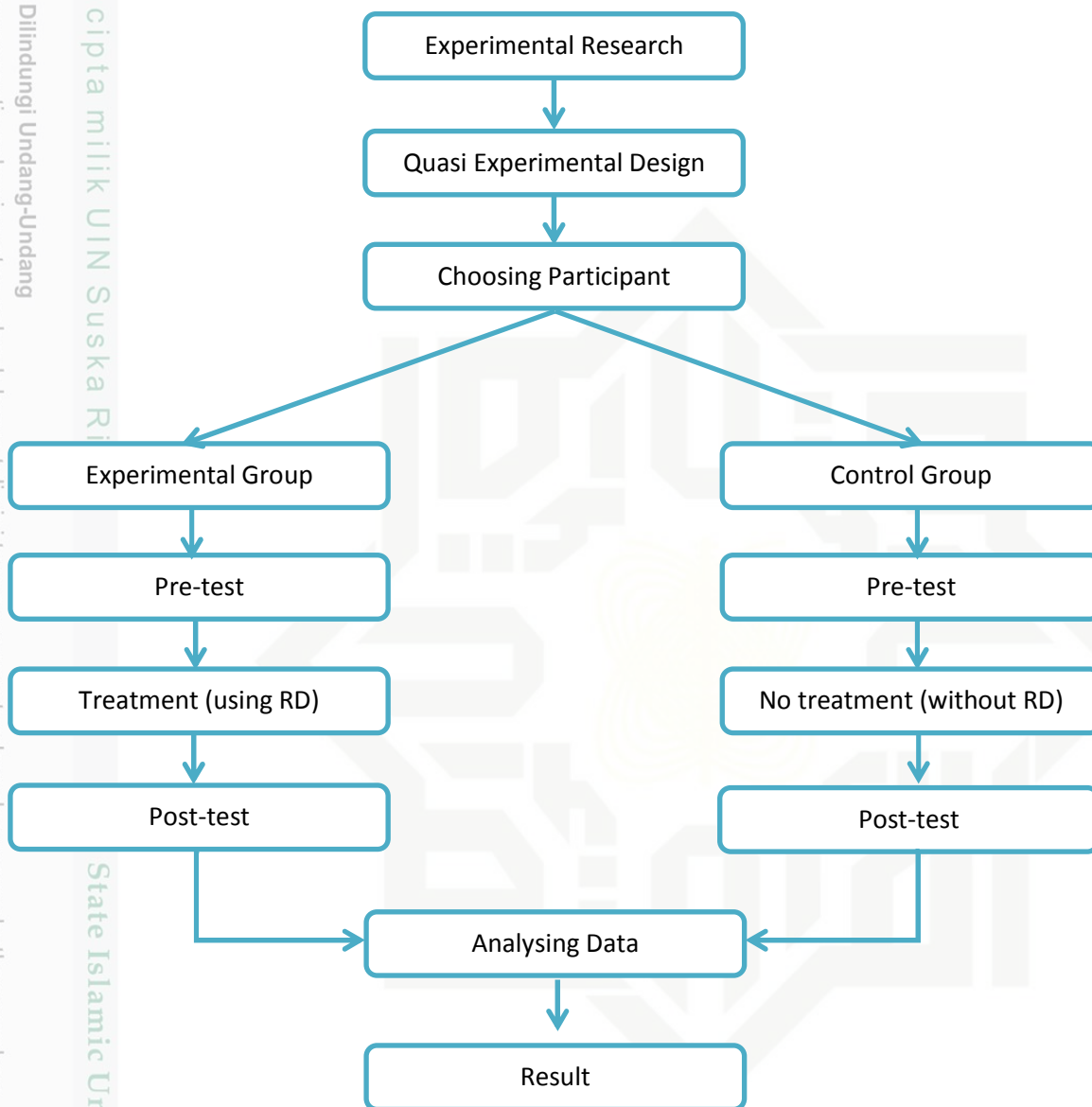
## The Total Sample of the Research

No	Class	Male	Female	Total
1	X AK 1(Experimental Class)	13	17	30
2	X Marketing (Control Class)	15	14	29

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### III.4 Procedure of the Research



### III.5 Instrument of the Research

To collect the data, writing and reading tests were used as instrument. To measure writing ability of the students, writing test is administered to them. The students choose and write one topic of descriptive texts based on topics given. The test has some considerations such as; how to describe something accurately, use

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correct grammar (simple present tense, adjectives, noun, connective word, and adverbial clause), use appropriate vocabulary, use mechanic (spelling, punctuation, capitalization) and lastly use fluency (using simple sentence and flowing style).

On the other hand, to measure reading comprehension of students' in this study, reading test is administered to them. Text comprehension is usually assessed through questions in multiple choices. Questions should focus on finding main idea, supporting detail, inference, reference and vocabulary in context. Elizabeth (2011) states that material used for assessing reading should ideally be authentic. They should reflect the type of reading normally encountered in daily life. Clay (2001) remarks that multiple choice questions can be used to test factual recall as well as levels of understanding and ability to apply learning.

### III.6 Technique of Data Collection

To collect the data of this research, the students on both experimental and control classes are given tests namely; pre-test and post-test. Pre-test uses to determine the students' writing ability and students' reading comprehension in descriptive text before giving treatment, while post-test is used to identify the students' writing ability and students' reading comprehension in writing descriptive text after the treatment is given. It is used to explore the development of students' comprehension of descriptive text by using Running Dictation Strategy. In doing the test the students are instructed to write and answer questions about descriptive text in 2x45 minutes.

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### III.7 Validity and Reliability Test

#### III.7.1 Validity

Before collecting the data, the researcher tried to test the items that should be ideally to try out. The purpose of the try out is to find out the quality of the test items. We get main point from Brown (2003:3) that a test is method of a measuring a person's ability, knowledge, or performance in a given domain. In line with that, Creswell (2008) states that validity is the individual's scores from an instrument make sense, meaningful, enable you, as the researcher to draw good conclusions from the sample you are studying to the population. It means that validity is the extent to which inferences make from assessment result are appropriate, meaningful, and useful in terms of the purpose of the assessment.

To analyze the validity of the data, the writer analyses by inter item validity used SPSS 20 program. The following table is the criteria of items validity.

**Table III.4**

**The criteria of item validity**

Range	Interpretation
$0,80 < r \leq 1,00$	Very high
$0,60 < r \leq 0,79$	High
$0,40 < r \leq 0,59$	Average
$0,20 < r \leq 0,39$	Low
$0,80 < r \leq 0,19$	Very low

(Arikunto, 2006)

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### III.7.2 Reliability

A reliability is an important characteristic of a good test. In order to calculate the reliability of the test, the researcher finds out the mean of the students' scores the standard deviation.

To find out the reliability of the test the following formula is used; the discrimination index of an item indicates the extent to which the item discriminates between the students, separating the more able students from the less able. The following formula is taken from Heaton (1975: 164) as follow :

$$r_{ii} = \frac{N}{N-1} \left( 1 - \frac{m(N-m)}{N(X)^2} \right)$$

Where :  $M = \frac{\sum x}{N}$  and  $S^2 = \frac{\sum x^2 - \frac{(\sum x)^2}{N}}{N}$

$r_{ii}$  : Reliability of the test

$N$  : The number of item in the test

$M$  : The mean score of all the test

$S^2$  : The standard deviation of all the test score

**Table III.5 Criteria Coefisien of Reliability**

Coefisien Reliability	Criteria
$0,80 \leq r_{11} \leq 1,00$	Highest reliability
$0,60 \leq r_{11} \leq 0,79$	High reliability
$0,40 \leq r_{11} \leq 0,59$	Middle reliability
$0,20 \leq r_{11} \leq 0,39$	Low reliability
$0,00 \leq r_{11} \leq 0,19$	Lowest reliability

(Arikunto, 2006)



### III.8 Technique of Data Analysis

Post-test score from experimental and control classes are used in order to find out whether there is a significant effect or not of using Running Dictation Strategy on students' writing ability and students' reading comprehension at SMK Labor Pekanbaru. The writer uses simple regression by SPSS 20.

#### 1. Independent sample t-test

The scores will be analysed statically by using independent sample t-test and paired sample t-test. They are used in order to find out the result of the hypotheses that mentioned at chapter II. They are as follows:

- a. To find out whether there is a significant difference between students' reading comprehension pre-test mean score of experimental group and students' reading comprehension pre-test mean score of control group on descriptive text by using Running Dictation Strategy at SMK Labor Pekanbaru.
- b. To find out whether there is a significant difference between students' reading comprehension post-test mean score of experimental group and students' reading comprehension post-test mean score of control group on descriptive text by using Running Dictation Strategy at SMK Labor Pekanbaru.
- c. To find out whether there is a significant difference between students' writing ability pre-test mean score of the experimental group and students' writing ability pre-test mean score of the



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control group on procedure text by using Running Dictation Strategy at SMK Labor Pekanbaru.

- d. To find out whether there is a significant difference between students' writing ability post-test mean score of an experimental group and a control group on descriptive text by using Running Dictation Strategy at SMK Labor Pekanbaru

To analyse the final-test scores of the experimental group and the control group, the following formula is used:

$$t = \frac{M_X - M_Y}{\sqrt{\frac{(SD_X)^2}{N_1 - 1} + \frac{(SD_Y)^2}{N_2 - 1}}}$$

Where:

- $t$  = The value of comparing two means  
 $M_X$  = Mean of the score in pre-test  
 $M_Y$  = Mean of the score in post-test  
 $SD_X$  = Standard deviation of experimental group  
 $SD_Y$  = Standard deviation of control group  
 $N_1$  = Number of the sample in pre-test  
 $N_2$  = Number of the sample in post-test  
 1 = The constant number

The t-table has the function to see if there is a significant difference between the mean of the score of both experimental group and control group. The t-

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obtained value is consulted with the value of the t-table at the degree of freedom (df) by using formula:

$$(df) = (N_1 + N_2) - nr$$

Where:

df = the degree of freedom

$N_1$  = number of students from experimental class

$N_2$  = number of students from control class

nr = number of variable

The value of both;  $t_o$  and t-table statistically hypothesis:

$H_a$  =  $t_o > t\text{-table}$

$H_o$  =  $t_o < t\text{-table}$

- a.  $H_a$  is accepted if  $t_o > t\text{-table}$  or there is effect after giving the treatment by using Running Dictation Strategy students' reading comprehension and students' writing ability of the first year students at SMK Labor Pekanbaru.
  - b.  $H_o$  is accepted if  $t_o < t\text{-table}$  or there is no an effect after giving the treatment by using Running Dictation Strategy students' reading comprehension and students' writing ability of the first year students at SMK Labor Pekanbaru.
2. Non-independent sample t-test (paired sample t-test)

Non-independent sample t-  $t_{test}$  is known also as Paired-Sample  $t_{test}$ .

The researcher uses this formula to obtain the result of the third, fourth, seventh and eight hypotheses that is to find out whether there is significant

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effect of Running Dictation Strategy conventional teaching technique on students' reading comprehension and students' writing ability at the first year students of SMK Labor Pekanbaru. L.R Gay (2000) states that t-test for non-independent sample is used to compare groups that are formed by some types of matching or to compare a single group's performance on a pre-test and post-test or on two different treatments. (L.R Gay, 2000).

Pre-test and post-test scores are used in the experimental class in order to find the significant effect of using Running Dictation students' reading comprehension and writing ability of the first year students at SMK Labor Pekanbaru. To obtain the data, SPSS 20 is used.

As for the effect size of the independent sample t-test, the eta squared is commonly used (Pallant: 2001). Eta squared ranges from 0 to 1 and represents the proportion of variance in the dependent variables that is explained the independent variables. The formula is as follow:

$$eta\ squared = \frac{t_2}{t_2 - (N_1 + N_2 - 2)}$$

Paired sample t-test is used in this research to obtain the result of hypotheses. Gay (2000:163-167) contends that t-test for non-independent variable sample is used to compare groups that are formed by some types of matching or to compare a single group's performance on pre-test and post-test.

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The formula of paired-sample  $t_{\text{test}}$ :

$$t = \frac{\bar{D}}{\sqrt{\frac{\sum D^2 - \frac{(\sum D)^2}{N}}{N(N-1)}}$$

$D$  : Gain Score ( $D=X_2-X_1$ )

The t-table has the function to see if there is a significant improvement among the mean of the score of both pretest and post test. The t-obtained value is consulted with the value of t-table at the degree of freedom (df) = N-1 which is statistically hypothesis:

$$H_a = t_o > t\text{-table}$$

$$H_o = t_o < t\text{-table}$$

- a.  $H_a$  is accepted if  $t_o > t\text{-table}$  or there is any significant effect after giving the treatment by using Running Dictation Strategy on students' reading comprehension and writing ability of the first year students at SMK Labor Pekanbaru.
- b.  $H_o$  is accepted if  $t_o < t\text{-table}$  or there is no significant effect after giving treatment by using Running Dictation Strategy on students' reading comprehension and writing ability of the first year students at SMK Labor Pekanbaru.