

CHAPTER III

RESEARCH METHODOLOGY

3.1 Research Design

The design of this research is an experimental research. Gay and Airasian (2000:367) argued that experimental research is the type of research that can test hypotheses to establish cause-and effect relationships. The design of this research is a quasi-experimental design which is focused on the non-equivalent control group. Gay and Airasian (2000:395) tell the non-equivalent control group design involve random assignment of intact groups to treatments, two or more treatment groups are pre-tested, administered a treatment, and post tested. In conducting the research, 2 classes of the second year students were involved. The first class was an experimental group and the second class was a control group.

In this research, there are three variables. The first and second variables are KWL-Plus and KWL strategies as variables X1 and X2 (independent variables). The third variable is students' reading comprehension as Y (dependent variable). This research aim to find out whether there is any significant difference of the use of KWL-Plus and KWL strategies on students' reading comprehension. This research design can be seen as follow: (Cresswell. 2008:314)

O1 X O2 (Experimental Group)

O3 O4 (Control Group)

In which:

O1 and O3 = Pre-test

O2 and O4 = Post-test

X =Treatment by using KWL-Plus Strategy.

Cresswell, (2008:314)

One class serves as an experimental group and the other one is as control group. The observations will be done twice, before and after the treatment. 1X1 in the box above is a treatment (in this case, the use of KWL-Plus strategy). O1 and O3 are the observations before the treatment or usually known as pre-test, O2 and O4 are the observations after the treatment or usually known as post-test. The difference between O1 and O2 ($O2 - O1$) and the difference between O3 and O4 ($O4 - O3$) are assumed as the effect of the treatment. The dashed line separating the parallel rows in the diagram of the non-equivalent control group indicates that the experimental and control groups have not been equated by randomization – hence the term ‘non-equivalent’. The next scheme is the research design of the research.

3.2 The Location and the Time of the Research

This research will be conducted at IT Al-Hafit Junior High School Pekanbaru which is located on Badak Street. The duration of the research is started on September-November 2016.

3.3 The Population and Sample of the Research

3.3.1 Population and sample

The total of population is 124. Two classes are used as samples of this research by using cluster sampling. Gay (2000:129) states that cluster sampling randomly selects groups (not individuals) that have similar characteristics. The kind of sample of this research is cluster sampling which means that one class is appointed to be the sample respondent to this research. The total number of the population of the second year students at Al-Hafit Junior High School Pekanbaru in academic 2015 – 2016 is 40 students. In this research, the sample is 40 students which are VIII A and VIII B as experimental group and the control group.

Table 3.2

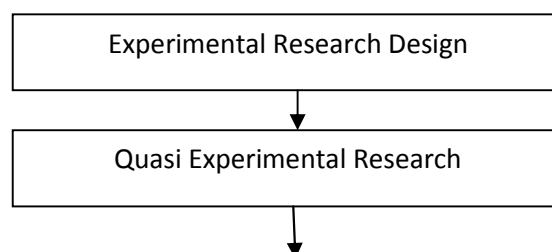
Sample of the second year students

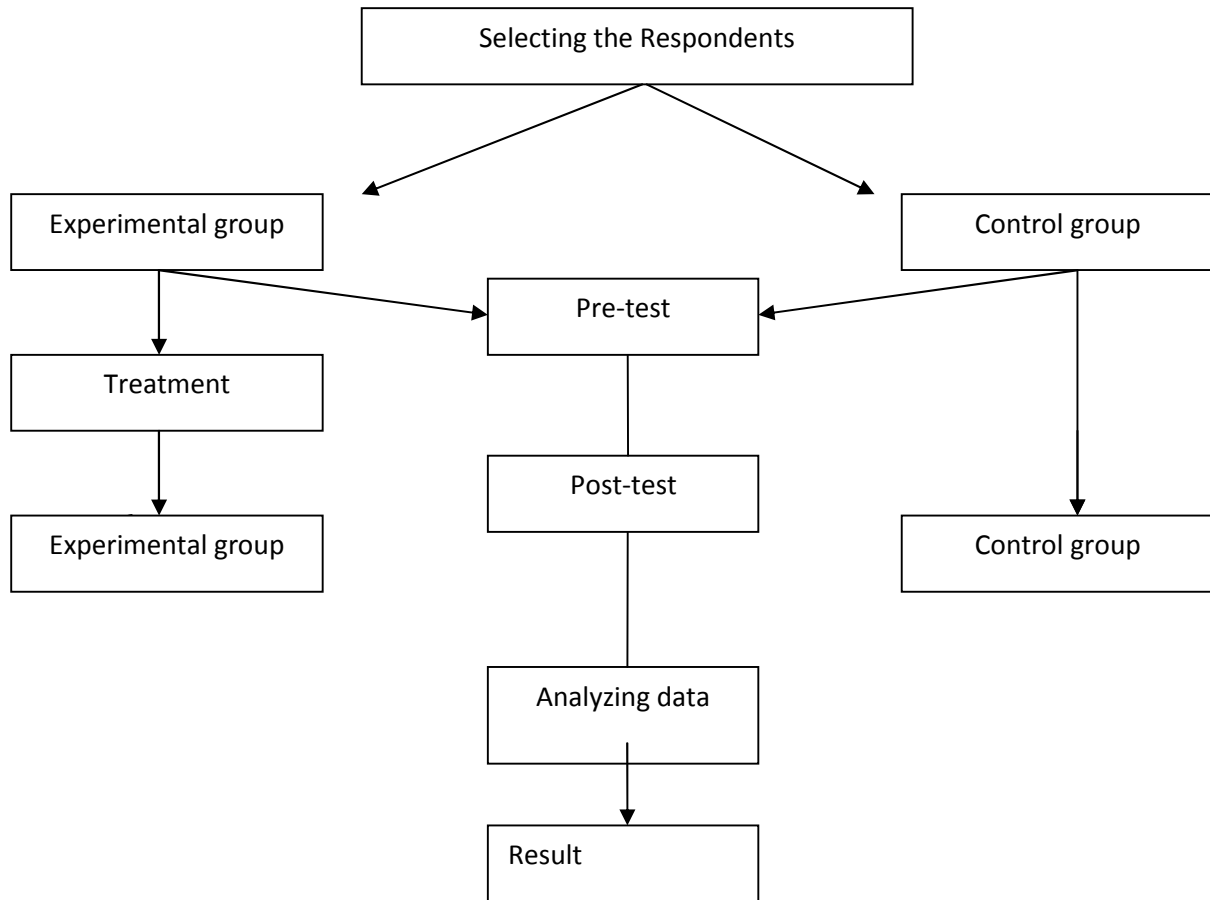
Class	Total of Students
VIIIA	20
VIIIB	20
Total Population	40

3.4. Research Procedure

Figure 3.1

Research Procedures





3.5. Research Instruments

To collect the data, reading test is administered as the instrument of this study. The pre-test, treatment and post- test are administered to two classes which consisted of VIIIA and VIIIB. Pre-test is given first and the treatment is second session and then post-test aimed at finding out the students' reading comprehension after treatment. The treatment is given by teaching with KWL-Plus and KWLStrategies. This activity also intended to find out whether the students' skills keep holding of the material after doing the treatment.

To investigate the student's reading comprehension, this study used multiple choice test which covered 25 questions. The participants are chosen the

answer by crossing (A, B, C or D), based on the true answer. To avoid misunderstanding, the items of the tests were shown in the following table, then, the classification of the students' test score are shown below;

Table 3.4

The Classification of Students' Reading Comprehension Scores

Score	Categories
80 – 100	Very good
66 – 79	Good
56 – 65	Sufficient
40 – 55	Less
30 – 39	Fail

(LDC Assessment, 2016)

3.6. Data Collection Technique

In this research, the data is collected by distributing test to the students. The test is given after the teacher taught the students by using the reading strategy. The test consisted of 5 passages about descriptive text where each of the passage consisted of five questions related to the passages of reading comprehension test. All questions of the text contain 5 aspects of reading comprehension, they were; main idea, specific information, reference, inference and vocabulary in context. Each reading text had been considered the time and the procedures of KWL-Plus

and KWL Strategies, the duration of time is 2 x 40 minutes. The test will be taken from textbook and internet materials.

3.7 Validity and Reliability Test

1. Reliability

A test must first be reliable as measuring instrument. According to H. Douglas Brown that reliability has to do with accuracy of measurement (2003). This kind of accuracy is reflected in the obtaining of similar results when measurement is repeated on different occasions or with different instruments or by different persons. The characteristic of reliability is sometimes termed consistently. Meaning that, it can say the test is reliable when an examinee's results are consistent on repeated measurement. Heaton explains that reliability is of primary importance in the use of both public achievement and proficiency test and classroom test. There are some factors affecting the reliability of a test, they are:

- a. The extent of the sample of material selected for testing,
- b. The administration of the test is clear; this is an important factor in deciding reliability.

The following table is the level of internal consistency of Cronbach Alpha.

Table 3.5

A commonly accepted rule of thumb for describing internal consistency by using cronbach alpha

Cronbach Alpha	Internal Consistency
.9	Excellent

.9 > .8	Good
.8 > .7	Acceptable
.7 > .6	Questionable
.6 > .5	Poor
.5 >	Unacceptable

To obtain the reliability of the test given, the writer used SPSS 21 program to find out whether or not the test was reliable.

Table 3.6
Cronbach Alpha Table

Reliability Statistics	
Cronbach's Alpha	N of Items
,803	4

2. Validity

In general, validity refers to the appropriateness of the test given or any of its component part as measure of what it is purposed to measure. It means the test will be valid to the extent that is measured what it is supposed to measure. In addition, every test whether it is a short, informal classroom test or public examination should be as valid as test constructor that can make it. The instrument of the test must aim at providing a true measure and useful. Validity is the extent to which inferences made from assessment results are appropriate, meaningful,

and useful in terms of the purpose of the assessment (Brown, 2003). Validity is important because it can help determine what types of tests to use, and help to make sure researchers are using methods that are not only ethical, and cost-effective, but also a method that truly measures the idea or construct in question.

Furthermore, Brown says that there are three kinds of validity (2001). They are content validity, face validity, and construct validity. All of them have different usage and function. Moreover, Gay (2000) said, Validity is the appropriateness of the interpretations made from tests score. There are also three kinds of validity; content validity, criterion-related validity, and construct validity.

Based on the definition above, to measure whether the test is valid in this research, the researcher will use content validity which is an attempt to determine how an individual will function in a set of actual situations. Rather than placing individuals in each actual situation, a test is used as a shortcut to determine their behaviors or performances in the set of situations (Tuckman, 1978). Meaning that tests will be given based on materials that they learn and concern to five components:

1. Identifying the main idea in the text
2. Identifying the detail information in the text
3. Identifying the meaning of word in the text
4. Identifying the references from the text
5. Identifying the inferences in the text

The formula for item difficulty is as follows:

$$FV = \frac{R}{N}$$

Note:

FV : Index of difficulty or facility value

R : The number of correct answers

N : The number of examinees or students taking the test.

Validity Statistic

Case Processing Summary

		N	%
Cases	Valid	20	50,0
	Excluded ^a	0	0
	Total	40	100,0

Item Total Statistic Reading Comprehension

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Pretest_experiment	247,3500	207,397	,609	,832	,763
Pretest_control	247,8000	190,484	,722	,862	,712
Posttest_experiment	229,8000	184,379	,561	,489	,785
Posttest_control	233,7000	168,116	,625	,642	,757

3.8. The Technique of Collecting Data

The technique used in collecting data of this research is by using reading comprehension test and observation. In reading comprehension test, the teacher gave an assignment for the students to read descriptive text in English form based on theme. The students must to pay attention based on the five aspects of reading comprehension which is used as the assessment. These five aspects were as

follow; finding the main idea, finding factual information/details, finding the meaning of unfamiliar vocabulary in context, identifying references and making inference, then the test aim was to investigate the students' reading comprehension.

The observation sheet aim was to observe teaching and learning process by using KWL-Plus strategy. The observation sheet consists of the teacher's activities in teaching process, whether the teacher applied the activity or the teacher did not apply the activity.

3.9. Technique of the Data Analysis

In order to analyze the data quantitatively, three kinds of formula of T-test through using IBM Statistics 21 was used; a paired sample T-test and independent sample T-test.

3.9.1. T-test

T-test was used to find out the difference between scores of pre-test and post-test taken from the experimental group by using KWL-Plus and control group by using KWL strategy. The difference scores between pre-test and post-test is taken from the both groups. The formula was presented as follows:

a.Independent sample T-test

Parmjit et.al (2006:160) says that Independent sample t-test is used to find the significance of the difference between the means of two samples. Gay (2000:484) adds that the t-test for independent sample is used to determine whether there is a probably a significant difference between the means of

independent sample t-test and dependent sample t-test are used to find out the results of the first and second hypotheses.

In order to find whether there is significant difference of students' Reading Comprehension in Descriptive text pre-test mean score between experimental group and control group by using independent sample T-test. The formulas as follow:

$$t_o = \frac{Mx - My}{\sqrt{\left(\frac{SDx}{\sqrt{N-1}}\right)^2 + \left(\frac{SDy}{\sqrt{N-1}}\right)^2}}$$

b. Paired sample T-Test

Paired sample T-test is also known as non-independent sample t-test. Gay (2000; 488) states that for non independent samples is used to compare groups that are formed by some type of matching or to compare a single groups' performance on pre- and post-test or on two different treatments. Paired sample T-test was used in order to find out (a) the difference of scores between pre-test and post-test of the experimental group, and (b) the difference of scores between pre-test and post test of the control group. The formula was identified as follows:

$$t = \frac{d}{\sqrt{\frac{n(\sum d^2) - (\sum d)^2}{n-1}}}$$

The top of the formula was the sum of the differences. The bottom of the formula was read as:

The square root of the following: n times the sum of the differences squared minus the sum of the squared differences, all over $n-1$.

1. The sum of the squared differences: meant take each difference in turn, square it, and add up all those squared numbers.
2. The sum of the differences squared meant add up all the differences and square the result.
3. Brackets around something in a formula meant (do this first), so meant add up all the differences first, the square the result.

c. Eta square

As for the effect size of the independent sample t-test, the eta squared was 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 follows

$$\text{eta squared} = \frac{t^2}{t^2 + (n - 1)}$$

Where:

Eta square : the value of effect size

t : t value

N : the number of sample in experimental class

Here is the category of effect size (Cohen, 2007: 521)

0 – 0, 20 = Weak effect

0, 21 – 0, 50 = Modest effect

0, 51 – 1, 00 = Moderate effect

> 1, 00 = strong effect