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CHAPTER III

RESEARCH METHODOLOGY

III.1. Research design

This research aimed to find out the effect of using authentic materials on the development of the motivation and the vocabulary mastery of sixth grade students of SDN 6 Bengkalis Sub-district. The research was quasi-experimental study of non-equivalent pre-test and post-test Control Group design. One group served as an experimental group and the other one as a control group. Creswell (2009: 155) states that when individuals are not randomly assigned, the procedure is called Quasi-experiment. The pre-test and post-test control group design of the research is represented as follows:

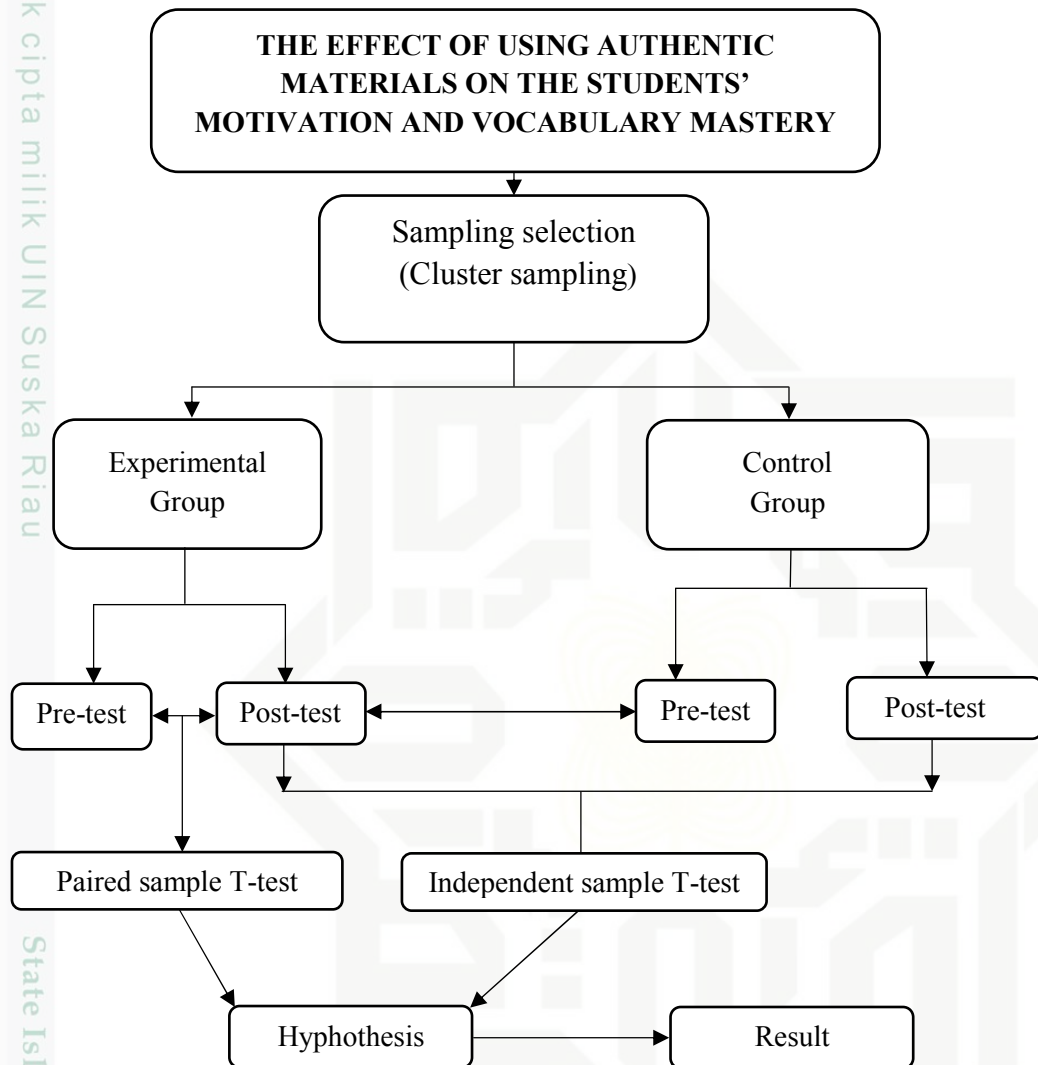
<i>Experimental group</i>	$O_1 \ X \ O_2$

<i>Control group</i>	$O_3 \ O_4$

Letter X is a treatment, in this case using authentic materials. O_1 and O_3 are observations *before* treatment or usually known as a pre-test, O_2 and O_4 are the observations *after* the treatment or usually known as a post-test. The difference between O_1 and O_2 or $O_2 - O_1$, and O_3 and O_4 or $O_4 - O_3$) are assumed as the effect of the treatment.

According to Seliger and Shohamy (1989) in Parmjit Singh, Chan Yuen Fook, Gurnam Kaur Sidhu (2006 : 117), one group of pre-test and post-test experimental design is efficient as it controls not only the loss of subjects but also controls a number of extraneous variables which affect the homogeneity.

Figure III.1
The scheme of research design



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III.2. The location and time of the research

The research was conducted at SD Negeri 6 Bengkalis in Bengkalis Subdistrict from December to February the academic year 2016 / 2017.

III.3. The population and sample of the research

The population of this research was the sixth grade students of SD Negeri 6 Bengkalis Sub-district in the academic year 2016 / 2017. It consisted of two classes: Class VI.A and class VI.B. The number of students of class VI.A was 20 students and class VI.B was 20 students. The total number of students was 40 students. All students were taken as the sample. Arikunto (2006) said that if the population was less than 100, it's better to take all individuals within population.

Table III.1

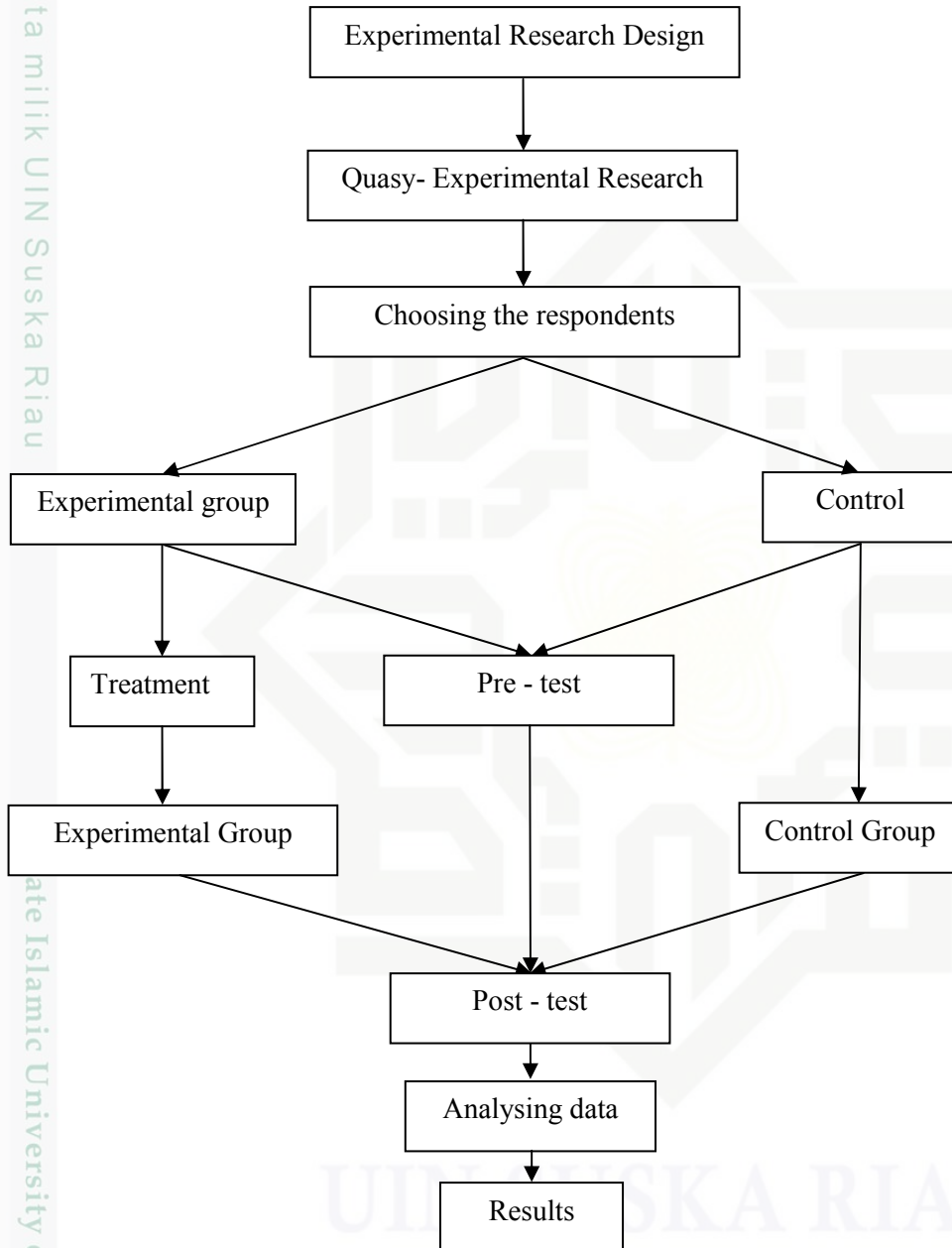
The total population of the sixth grade students of SD Negeri 6 Bengkalis

NO	KIND OF CLASS	CLASS	NUMBER OF STUDENTS
1	EXPERIMENTAL	6.A	20
2	CONTROL	6.B	20
TOTAL			40

Source: The administrator of SDN 6 Bengkalis

III.4. Research procedures

Figure III.2



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III.5. Research instruments

The researcher used a test for instrument to collect the desired data. There were two types of test administrated. The first was a *pre-test* that was administered to determine the preliminary data about students' motivation and vocabulary mastery, The second was the *post-test* that was administered to know the results of students learning achievement after using authentic materials.

The researcher took the total scores from the results of the students' vocabulary test with the following classifications.

Table III.2
The Classification of Students' Scores
Nunan 1991

Score	Categories
81 – 100	Very Good
61 – 80	Good
41 – 60	Fair
21 - 40	Poor
0 – 20	Very Poor

III.6. Data collection technique

III.6.1 Questionnaire

In addition to the tests, the data were collected using a set of questionnaire to find out the factors that affected the students' motivation and vocabulary mastery. The statements in the questionnaire described the problems of students' motivation by using authentic materials in teaching English by suing Likert Scale.

The typical Likert scale is a 5- or 7-point ordinal scale used by respondents to rate the degree to which they agree or disagree with a statement. In an ordinal scale, responses can be rated or ranked, but the distance between responses is not measurable. Thus, the differences between “always,” “often,” and “sometimes” of a frequency response of the Likert scale are not necessarily equal. In other words, one cannot assume that the difference between responses is equidistant despite the number assigned to the responses.

Table III.3
Likert Scale

1	2	3	4	5
Very poor	Poor	Mediocare	Good	Very good
Never	Really	Sometimes	Often	Always
Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree

III.6.2. Test

The test was given to the students in order to know the students' vocabulary mastery by using authentic materials. The data were collected using a pre-test and a post-test.

- a. A pre-test was given to find out the students' motivation and vocabulary mastery before the treatment.
- b. A post-test was given to find out the improvement made after the treatment.

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Table III.4
Research Design
(Hatch and Farhady, 1982)

Groups	Pre-test	Treatment	Post-test
Experimental	TE ₁	X	TE ₂
Control	TC ₁	-	TC ₂

TE₁ : Pre-test for the experimental group

TE₂ : Post-test for the experimental group

X : Treatments

TC₁ : Pre-test for the control group

TC₂ : Post-test for the control group.

III.6.3. Observation

The observation was carried out to obtain the percentage of using authentic materials of students' motivation and vocabulary mastery in the teaching and learning process.

III.7. Data analysis technique

To analyze the data of the students' English achievement, the researcher used minimum standard scores of English subject at SD Negeri 6 Bengkalis that is 70. It means that those who obtained the English score of <70, it means that they did not pass the minimum standard score, while for those who obtained the score of ≥ 70 , they passed minimum passing score.

To analyze the data, the researcher used the scores of the pre-test and the post-test of the experimental and the control groups. The scores were analyzed

statistically both using descriptive and inferential statistics by employing the following formula:

III.7.1. Independent sample t-test

To find out whether there was a significant difference or there was no significant difference between two or more variables was analysed by using Independent Sample t_{test} (Hartono, Statistik Untuk Penelitian (Pekanbaru: Pustaka Pelajar, 2010), p.177-9). Gay argues that the t-test for independent sample is used to determine whether there is probably a significant difference between the means of two independent samples (Op.cit, p. 484). Independent sample t-test was used to find out the results of the first and second hypotheses as in the following:

- a). To find out whether there was a significant difference of students' motivation and vocabulary mastery before being given the treatment by using authentic materials to the experimental class and non treatment to control class.
- b). To find out whether there was significant difference of students' motivation and vocabulary mastery after being given the treatment by using authentic materials to the experimental class and non treatment to the control class. The following formula was used to analyze the data:

$$t_o = \frac{M_x - M_y}{\sqrt{\left(\frac{SD_x}{\sqrt{N-1}}\right)^2 + \left(\frac{SD_y}{\sqrt{N-1}}\right)^2}}$$

Where:

t_0 = Table Observation

SD = Standard Deviation

M_x = Mean of variable x and

M_y = Mean of variable y

SD_x = Standard deviation of experimental group

SD_y = Standard deviation of control group

N = The Number of respondent

The t-table has the function to see if there is a significant difference among the mean of the score of both experimental and control groups. The t-obtained value is consulted with the value of t-table at the degree of freedom (df) = $(N_1+N_2)-2$ which is statistically hypothesis:

H_a : $t_0 > t$ -table

H_o : $t_0 < t$ -table

H_a was accepted if $t_0 > t$ -table or there was an effect after giving the treatment of authentic materials on students' motivation and vocabulary mastery.

H_o was accepted if $t_0 < t$ -table or there was no effect after giving of the authentic materials on students' motivation and vocabulary mastery. Paired sample t-test or Non-independent Sample t- t_{test}

Non-independent sample t- t_{test} is known also as Paired-Sample t_{test} . The researcher used this formula to obtain the result of the third hypothesis that was

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to find out whether there was a significant effect of using authentic materials on the motivation and vocabulary mastery of the sixth grade students of SDN 6 Bengkalis. L.R Gay states that t-test for non independent samples is used to compare groups that are formed by some type of matching or to compare a single group's performance on a pre- and post test or on two different treatments (Op.cit, p. 488). At that time, the writer used the pre-test and the post-test scores of the experimental class in order to find out the significant effect of the authentic materials on the motivation and vocabulary mastery of the sixth grade students of SDN 6 Bengkalis. To obtain the data, the writer used SPSS 16 with the formula of paired-sample t_{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 difference among the mean of the score of both pretest and posttest. 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 : $t_o < t\text{-table}$

H_a was accepted if $t_o > t\text{-table}$ or there was a significant effect after giving the treatment authentic materials on the students' motivation and vocabulary mastery.

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Ho was accepted if $t_o < t\text{-table}$ or there was no significant effect after giving treatment authentic materials on the students' motivation and vocabulary mastery.

Afterward, it was better to see the effect size of T-test by applying following formula:

$$r^2 = \frac{(t)^2}{(t)^2 + (n_1 + n_2 - 2)}$$

t = t from independent sample t-test

n = the number of students

III.8. Validity and reliability test

III.8.1. The validity of instrument

Validity is an important key to effective research. If a piece of research is invalid then it is worthless. The concept of validity has been around for a long time. Kelly (1927: 14, in Weir, 2005:12) noted, 'The problem of validity is that of whether a test really measures what it is supposed to measure'.

Before collecting the data, the researcher tried to test the items that would be ideally tried out. The purpose of the try out was to know the quality of the test items. Brown (2000:22) that a test is a method of measuring a person's ability, knowledge, or performance in a given domain. Validity is the extent to which inferences made from assessment result are appropriate, meaningful, and useful in terms on the purpose of the assessment.

The researcher analyzed the points of difficulty level and discrimination index by using a formula (Heaton, 1975:178).

$$FV = \frac{R}{N} \times 100\%$$

Where :

FV : The index of difficulty

R : The number of correct answer

N : The number of respondents

III.8.2. The reliability of instrument

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

To find out the reliability of the test the following formula was used; the discrimination index of an item indicated the extent to which the item differed between the students, separating the more able students from the less able. The following formula was used and taken from Heaton (1975: 164):

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

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 tests

S^2 : The standard deviation of all the test scores

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Table III.5
Criteria Koefisin Of Reliability

Koefisien reliabilitas	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

III.9. A module of activities

Before the process was performed, the researcher carried out a short training

In this chapter the researcher wrote a draft of the module as follows:

1. Teacher conveys competence to be achieved.
2. Teacher presents a video.
3. Teacher asks the students about the video.
4. Teacher makes group whose members are heterogeneous consist of 5 students.
5. The teacher asks the students to find out the authentic materials using an observation sheet.
6. Each group presents the words in front of the class.
7. The student asks his/her friends to read the words together.
8. The teacher asks the students to collect the observation sheet individually.
9. Conclusion.

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