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CHAPTER III RESEARCH METHODOLOGY

3.1 Research Design

Gay (1996) states causal-comparative research is sometimes treated as a type of descriptive research since it too describes conditions that already exist. Based on the purpose and objective of study, research questions and significance of study that have been mentioned before, this research will be proposed as causal comparative research. Charles (1998) in Johnson (2015) says “Causal-comparative research strongly suggests cause and effect.... “.Causal-comparative research, however, also attempts to determine reasons, or causes, for the current status of the phenomena under study. (P.321) Causal-comparative studies attempt to establish cause-effect relationships, correlation studies do not. (P.322). Causal-comparative and experimental research both attempt to establish cause-effect relationships; both involve group comparisons. (P.16).

In lined with Gay, Fraenkel in Fraenkel & Wallen, (1996) state that Causal-comparative research involves comparing (thus the "comparative" aspect) two groups in order to explain existing differences between them on some variable or variables of interest. The only difference between causal-comparative and experimental research is that the groups being compared in causal-comparative research have already been formed, and any treatment (if there was a treatment) has already been applied. Of necessity, the researcher must examine

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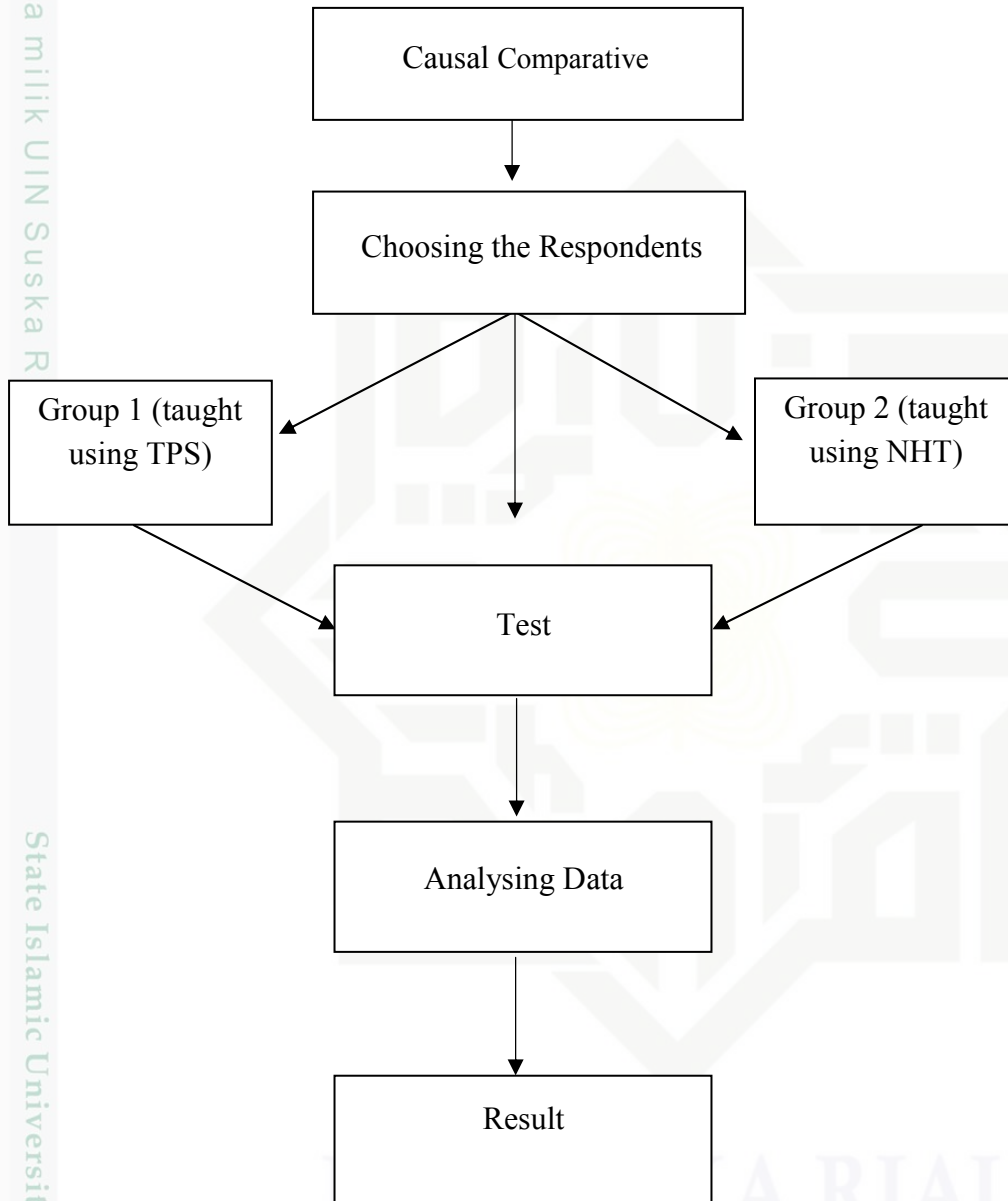
The records of the two groups to see if he or she can offer a reasonable explanation for (i.e., what "caused") the existing differences between the two groups“.

According to experts' definitions above, it can be concluded causal comparative study is a study that designed to compare two groups that have applied certain treatments, so the treatments have been applied already by both of them completely. The purposes of the comparison are to find out the causes and effects of certain treatment or condition on those groups or to explain the reason of the differences between them. In the light of previous definition, it can be described that there are two groups that going to be samples of this study, in addition, based on the title before, students reading comprehension is the dependent variable, and reading strategies are independent variables; Think-Pair-Share strategy is Independent variables 1 and Number Head Together strategy is independent variable 2, and the clearest understanding proposes by Gay (2000:353), as shown as follows:

Table III.1 Research Design

Group 1	: the class who taught using TPS Strategy
Group 2	: the class who taught using NHT Strategy
X ₁	: Independent variable 1 (Think Pair Share Strategy)
X ₂	: Independent variable 2 (Numbered Heads Together Strategy)
Y	: Reading Comprehension

Scheme III.2. Research Procedure



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3.2 Location and Time of the Research

This research was investigated at SMPN 4 Tambang, it is located at Jl. Suka Karya Tarai Bangun Kampar Regency. The time to conduct this research was within a two months starting from January to February 2017. It is in second semester of academic year 2016/2017.

3.3 Subject and Object of the Research

The subject of the research was the Seventh Grade students of SMPN 4 Tambang, and the object of this study is comparison of using Think-Pair-Share strategy and Number Head Together strategy on students' reading comprehension.

3.4 Population and Sample

3.4.1 Population

The population of this research was students of SMP N 4 Tambang. There are 12 classes, each class consists of 25 to 32 students, and the total number of the population is 360. (based on the data of administration SMP N 4 Tambang in the academic year 2016/2017. The data can be seen from following chart:

Table III.3 Population of the Seventh Grade of SMPN 4 Tambang

No	Class	Male	Female	Number of Students
1	VII. A	15	17	32
2	VII. B	16	16	32
3	VII. C	15	17	32
4	VII. D	15	17	32
5	VII. E	16	16	32
6	VII. F	15	17	32
7	VII. G	16	16	32
8	VII. H	16	16	32
9	VII. I	13	15	28
10	VII. J	14	12	26
11	VII. K	12	13	25
12	VII. L	13	12	25
TOTAL				360

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3.4.2. Sample

Regarding on the research design, Cluster sampling is used to determine sample of this study, as Gay (2000) states for cluster sampling randomly selects groups, not individual. All the members of selected groups have similar characteristics. There are two classes that are chosen, they are:

Table III.4 Sample of the Research

No	Sample	Male	Female	Total
1	VII. K	12	13	25
2	VII. L	12	13	25
	Total	24	26	50

3.5 Technique of Collecting Data

The data was collected by using Test. The test was used to investigate students reading comprehension. Before conducting the test, there was a treatment for each group, then for the following meeting, the teachers gave brief explanation about Think-Pair-Share strategy and Number Head Together strategy to the students, and then, they comprehended the text given by using that strategies under teacher's guidance. Hughes (2003, p.43) said that there are many techniques that can assess the students' reading comprehension; one of them is multiple choice techniques. In line with this statement, multiple choices were used by the researcher and it was designed by using four answer options (a, b, c, and d). and



the student chose one of the correct answers. The test consisted of five passages where each of the passage consists of five questions related to the passages of reading comprehension test. Each reading text had been considered the time and the procedures of TPS Strategy and NHT Strategy reading text. The duration of time was 100 minutes. The tests were taken from the students' textbook and internet materials.

3.5.1 The Validity of Instrument

Before collecting the data, the researcher tried to test the items that should be ideally to test. The purpose of test is to find out the quality of the test items. As stated in Brown (2000:22) that a test is method of a measuring a person's ability, knowledge, or performance in a given domain. 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 find out the validity of the items of test, it was used Split-Half formula by using SPSS 20 version by looking at the corrected item - total correlation (correlation between score item and score total item = r_{counted}) in table Item-Total Statistics.

To know whether the test valid or not, the value of r_{counted} must be compared with r_{table} . For example, the number of students was 10. The degree of freedom is $25-2=23$, r_{table} on $df=23$ are 0,3961 (5%).

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If the value of $r_{\text{counted}} > r_{\text{table}}$ = valid,

If the value of $r_{\text{counted}} < r_{\text{table}}$ = invalid.

3.5.2 The reliability of Instrument

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 (Cohen:2000).

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

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Table III.5 Ccriteria Coefisien of Reliability

Coefficient 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

3.6 Data Analysis Technique

3.6.1 Independent sample t-test

In relation to research design, there was two groups that be compared, so that, the test that used was” independent sample t-test “. Pallant (2010) strengthens that T-tests are used when you have only two groups (e.g. males/females) or two time points (e.g. pre-intervention, post-intervention). In addition, to find out whether there is significant difference or there is no significant difference between two or more variables can be analyzed by using Independent Sample t test, Gay (2000) adds that the t-test for independent sample used to determine whether there was probably a significant difference between the means

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of two independent samples. Independent sample t-test was used to test the first and second hypotheses. They are as follow:

- a. To find out whether or not there is a difference on students' reading comprehension before being taught by using Think Pair Share Strategy for group 1 and Number Head Together for group 2.
- b. To find out whether or not there is a difference on students' reading comprehension after being taught by using Think Pair Share Strategy for group 1 and Number Head Together for group 2

The criteria of hypothesis are:

- a. H_a is accepted if $p > 0.05$.
- b. H_0 is accepted if $p < 0.05$.

3.6.2 Nonindependent Sample t_{test}

Nonindependent sample t_{test} is known also as Paired-Sample t_{test} . This formula will be used to obtain the result of the third and fourth hypotheses:

- a. To find out whether or not there is a significant influence of using Think Pair Share Strategy on students' reading comprehension for group 1

- b. To find out whether or not there is a significant influence of using Number Heads Together Strategy on students' reading comprehension for group 2?

Gay and Airasian (2003:488) 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 posttest or on two different treatments. In this time, pre-test and post-test scores of group 1 and group 2 in order to find the significant influence of using Think Pair Share Strategy on students' reading comprehension for group 1 and to find out the significant influence of using Numbered Heads Together Strategy on students' reading comprehension for group 2. To analyze the data, the writer will use SPSS 20.

H_a is accepted if significant 2-tailed < 0.05

H_o is accepted if significant 2-tailed < 0.05

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