CHAPTER III

METHODOLOGY OF RESEARCH

A. Form of Research

In accordance to Creswell (2012: 3), research is a process of steps used to collect and analyze information to increase our understanding of topic or issue. It means that research is such a scientific activity which has steps required for solution to be solved based on a problem. In achieving the main goal of this research, an experimental research design is the appropriate method to implement. The goal of experimental research is to investigate the cause and effect between the variables employed.

Since this research focused to find out the effectiveness of teaching technique in SMP Negeri 1 Anjongan by implementing a strategy of teaching reading, a pre-experimental design is considered as the suitable form to be applied in this research. According to Singh (2006: 141), pre-experimental design is research design that consists of comparing of a single group under two different sets of conditions. This means, pre-experimental design does not have control group to compare with the experimental group.

In conducting this research, there was only one group to be researched as the experimental group. In accordance with Ary *et al* (2010: 303), experimental design involves three steps. They are arranging a pre-test to measure the dependent variable, implementing the treatment to the sample, and arranging a post-test to measure the dependent variable. Furthermore, to table out how the procedure worked in this research, the researcher described the form of pre-experimental design below:

Table 3.1

Design of One Group Pre-test and Post-test

Pre-test	Treatment	Post-test
Y1	**X**	**Y2**

Taken by Ary *et al* (2010: 303)

Based on the table 3.1 above, the procedure of this research could be tabled out:

a. Pre-test (Y1) was delivered firstly which was purposed to find out dependent variable‟s original state or pre-condition and situation before the treatments are implemented.
b. After the result of the pre-test was acknowledged, the independent variable considered as treatment (X) was applied in hope to give an effect to the result of the pre-test.
c. Lastly, the post-test (Y2) was delivered after the treatment implemented that was aimed to find out what kinds of changes which affect the dependent variable caused by the independent variable.

B. Population of Research

Generally, a population means the entire mass of observations, which is the parent group from which a sample is to be formed (Singh, 2006: 82). Relating with this research, it can be meant that population is the entire group of observations which is intended for forming a sample for the sake of collecting data of the research.

Since the proficiency chosen in this research was reading comprehension, the population was taken refered to the eighth grade students of SMP Negeri 1 Anjongan. The reason why the researcher decided the eighth grade students as the population was due to reading

is one of the activities in English class which needs a great struggle in comprehending the reading texts. The eighth grade students are also able to read and comprehend English texts since they have passed and experienced the first year in the school which means they are in the intermediate stage in learning English in junior high school. It is such gorgeous for them to receive a new experience in English reading class. Furthermore, having them to get an appropriate strategy is greatly essential.

The overall population of this research was described as follow:

Table 3.2
The Distribution of Research Population

No	Class	Number of students
1	VIII A	32
2	VIII B	30
3	VIII C	32
4	VIII D	31
5	VIII E	30
Total		**155**

Taken from School Office of SMP Negeri 1 Anjongan

C. Sample and Sampling of Research

Referring to Singh (2006: 82), sample is individuals from the population in such a way that every individual has the equal chance to be taken into the sample population. Then, the researcher concluded that sample is representing the population. In this research, sample was taken through cluster random sampling technique.

The way of cluster random sampling technique gets the sample is in accordance with Cohen *et al* (2007: 112) who states that the researcher can select a specific number of schools and test all the students in those selected schools. This implies that the population will be devided into

several groups called clusters, then they will be the samples randomly chosen from the population. In addition, cluster sampling involves the random selection of naturally occurring groups and then the selection of individual elements from the chosen groups. This can be understood that the researcher has to choose randomly a class and it will refer to the sample of this research.

Furthermore, the researcher picked out the sample randomly and selected which eighth grade setudents class that would be employed as the sample of this research. It was done by writing each of them on a piece of rolled paper and placing them into a box. Next, one of the papers was selected randomly by the researcher. The chosen class was VIII B, that comprises of 30 students, which finally became the sample of this research.

D. Technique and Tools of Data Collection

For collecting data purpose of this research, the technique utilized was measurement. In reference to Creswell (2012: 683), measurement means that the researchers observe and records the scores on an instrument. The measurement is employed to measure the students' score before and after the treatment of this researchs.

It is acknowledged crucial to choose appropriate measuring instrument after deciding the technique of data collection for the succesful research. To measure the students performance in this research, an achievement test used as the tool of data collection. As explained by Ary *et al* (2010: 201), test is a set of stimuli presented to an individual in order to elicit responses on the basis of which a numerical score can be assigned. Finally, the researcher measured the performance of the sample in this research by using instruments in form of pre-test and post-test. Those were intended to measure the

achievement of reading comprehension of the students before and after CORI was implemented as the strategy to teach.

The pre-test and post-test employed in this research were in form if objective reading test. They comprised of several narrative texts with forty questions of multiple choises. For each questions, there were four options to choose as the answer. What to be measured in the test were reading comprehension' aspects. They were main idea, factual information, meaning of vocabulary, reference, and inference.

Before the pre-test and post-test were given to the sample, their validity was checked firstly. According to Cohen, *et al* (2007: 113), validity is an important key to effective research. If a piece of research is invalid then it is worthless. Validity is thus a requirement for both quantitaive and qualitative or naturalistic research. Put simply, validity is purposed to increase the accuracy and usefulness of greater confidence in the research findings.

The type of validity used by the researcher was content validity. Based on Cohen, *et al* (2007: 163), content validity is achieved by making professional judgement about the relevance and sampling of the contents of the text to particular domain. It is concerned with coverage and representativeness rather than with patterns of response or scores. Coming from this explanation, it could be concluded that a researcher asked the professional to validate or make a judgement about the relevance of the test. Then, the researcher asked a lecturer of English department of IKIP-PGRI Pontianak to validate the test that was utilized by the researcher.

E. Data Analysis

In order to answer the research questions and to test the hypothesis of research, the procedures of data analysis are required. The researcher used both statistical analysis software and manual approach in analyzing

the data. To analyze the data, the researcher used computer software SPSS Ver. 16, while the following formulas are going to be used in manual approach:

1. **Test of Validity**

   Validity is an important key to ensure the instrument validity in collecting data. According to Muijs (2004: 66) content validity refers to whether or not the content of manifest variables (e.g, items of a test or questions of a test) is right to measure the latent concept (self-esteem, achievement, attitude) that we are trying to measure.

   Based on the result of calculation with the SPSS 16.0 application by comparing the value of r with the value of r table, the value of r table for N = 30, and the significance level of 5% is 0.361. From the 40 questions tested, all the questions proved to be valid and suitable to be used in research.

2. **Test of Reliability**

   In this case, the researcher checked the reliability of the test to determine whether the test as the source of data collecting tool can be trusted and consistent or not. According Surjaweni (2014: 193) that reliability testing can be carried out jointly on all items or question terms in the questionnaire research. The basic decision making in reliability testing is a follow:

   a. If the Cronbach's Alpha value is >0.60 then the test or questionnaire is declared reliable or consistent.
   b. If the Cronbach's Alpha value is <0.60 then the test or questionnaire is declared to be unreliable or inconsistent.

   The result of computing the data into SPSS 16 was showed as follow:

Table 3.3

Reliability Statistic

Cronbach's Alpha	N of items
.970	40

The reliability test was carried out by comparing the Cronbach's Alpha number with the value of r table, the value of r table for N = 30, with a significance level of 5% was 0.361. Can be seen from the reliability test result using the SPSS 16, the Cronbach's Alpha value is 0.972. It can be concluded that all test are reliable or consistent.

3. Students' Individual Score of Pre-test and Post-test

a. Students' Individual Score of Pre-test

To analyze the students' individual score of pre-test ($X_{1)}$, the researcher used the formula as follow:

$$\mathbf{X_1 = \frac{A_1}{N_1} X\ 100}$$

Note:
X_1 = an student's individual score of pre-test
A_1= the students' right answer of pre-test
N_1= the number of test items of pre-test

(Taken by Cohen, 2007: 423)

b. Students' Individual Score of Post-test

To analyze the students' individual score of post-test ($X_{2)}$, the researcher used the formula as follow:

$$\mathbf{X_2 = \frac{A_2}{N_2} X\ 100}$$

Note:
X_2 = an student's individual score of post-test
A_2 = the students' right answer of post-test
N_2 = the number of test items of post-test

(Taken by Cohen, 2007: 423)

4. Students' Means Score of Pre-test and Post-test

a. Students' Mean Score of Pre-Test

To analyze the students' mean score of pre-test ($\bar{X}_1$), the researcher used the formula as follows :

$$\mathbf{X_1} = \frac{\sum X_1}{N_1}$$

Note:

X_1 = the students mean score of pre-test
$\sum X_1$ = Sum of all test scores of pre-test
N_1 = Numbers of students of pre-test

(Taken by Singh, 2006:138)

b. Students' Mean Score of Post-test

To analyze the students' mean score of post-test ($\bar{X}_2$), the researcher used the formula as follows:

$$\mathbf{X_2} = \frac{\sum X_2}{N_2}$$

Note:

X_2 = the students mean score of post-test
$\overline{\sum X_2}$ = The students mean score of post-test
N_2 = Numbers of students of post-test

(Taken by Singh, 2006:138)

3. Student's Interval Score of Pre-test and Post-test

After calculating student's mean score of pre-test and post-test the researcher calculated student's interval score of pre-test and post-test by using formula as follows:

$$\overline{D} = \overline{X_2} - \overline{X_1}$$

Note:

$\overline{D}$= Student's interval score of pre-test and post-test
$\overline{X_2}$= Student's mean score of post-test
$\overline{X_1}$= Student's mean score of pre-test

(Taken by Cohen et al, 2007: 423)

4. Analysis of The Students' Standard Deviation

The researcher analysed students' standard deviation score by using the formula as follow:

$$\mathbf{SD} = \sqrt{\frac{\sum (X_i - \bar{X})^2}{n-1}}$$

Note :

$\sum$: to sum

X_i : *i*th value of the variable X

n : number of items

SD : Standard Deviation

(Taken by Khotari, 2004 : 135)

5. T-test

To analyse whether the result of treatment is effective or not, the researcher will use computer software SPSS Ver. 16.0. T-test for dependent sample is a test used to compare sample's means before and after treatment.

Cohen, Manionn, & Morrison (2007 :543) stated that the t-test is used to discover whether there are statistically significant differences between the means of two groups, using parametric data drawn from random samples with a normal distribution. In experimental research, t-test is used to compare two groups randomly assigned on a pre-test and post-test.

The significance score has a role to measure the difference between pre-test and post-test score. In order to analyze the score, the researcher utilized t-test correlated samples formula that would be written below:

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

Note:

t = t ratio

$\overline{D}$ = Average Difference

ΣD^2 = difference Scores squared, then summed

$(\Sigma D)^2$ = difference Scores summed the squared

N = Number of Pairs

(Taken by Ary et al, 2010: 177)

6. Testing Hypothesis

The hypothesis testing used to prove whether there is a significant differences in teaching reading comprehension by using the treatment. Researcher used T-test to examine hypothesis, there are two formulas to examine hypothesis. Therefore, by using T-test and T Distribution table to find significant differences. The hypothesis in the form of Null Hypothesis (H0) and Alternative Hypothesis (Ha). The conclusion is gained as follow:

a. If t-obtain is higher than t-table ($t\text{-}_{obtain} \geq t\text{-}_{table}$) it means that alternative hypothesis (Ha) is accepted and the null hypothesis (H0) and is rejected. Therefore, the CORI (Concept-Oriented Reading Instruction) strategy is effective for teaching reading comprehension.

b. If t-obtain is lower than t-table $t\text{-}_{obtain} < t\text{-}_{table}$, it means that the null hypothesis (H0) is accepted and alternative hypothesis (Ha) was rejected. Therefore, the CORI (Concept-Oriented Reading Instruction) strategy is not effective for teaching reading comprehension.

7. Calculating Effect Size of Treatment

The effect size of the treatment was analyzed by comparing the t-value of pre-test and post-test. the formula to know the effect of treatment is written below:

$$ES = \frac{X2 - X1}{SD}$$

Where:

ES = Effect Size

X_2 = the mean of post-test

X_1 = the mean of pre-test

SD weighted = the average standard deviation of both test

(Taken by Creswell, 2012: 195)

Effect size is the measurement of effect from a variable to the other variable. According to Cresswell (2012 : 188), "effect size is a means for identifying the practical strength of conclusion about group differences or about the relationship among variables in a quantitative study. Another researchers, Cohen, Manion and Morrison (2007 : 293) state that the effect size is a measure of the degree to which a phenomenon is present or the degree to which a null hypothesis is not supported. In conclusion, the effect size is use to determine the strength of the effect of the treament. The researcher used Cohen's effect size which the formula of the effect size is as follow:

$$d = X_2 - X_1 / SD$$

Note :

d :Cohen's *d* effect size

X_2 : Mean score of posttest

X_1 : Mean score of pretest

SD :Standard deviation

Table 3.4

Qualification of Effect Size

Value of Effect Size	Qualification
0 – 0.20	Weak Effect
0.21 – 0.50	Modest Effect
0.51 – 1.00	Moderate Effect
>1.00	Strong Effect

Taken by Cohen et al (2007: 521)

In the purpose of determining the result of the effect size of the treatment, the researcher consulted the result by looking at the table of qualification of the effect size based on the table 3.4 below:

Based on the table 3.4 above, the researcher can elaborate: (1) if the value of effect size is among 0 – 0.20, it means the qualification of effect size is weak; (2) if the value of effect size is among 0.21 – 0.50, it means the qualification of effect size is modest; (3) if the value of effect size is among 0.51 – 1.00, it means the qualification of effect size is moderate; (4) if the value of effect size is more than 1.00, it means the qualification of effect size is strong.

F. The Implementation of Research

In this current research, the research on applying CORI strategy in the purpose to find outits effect toward the students reading comprehension. Before it was conducted, a procedure was required to

create the research on path and systematical to gain the time effciency and strictness of the research. As stated by Creswell (2012: 22), since quantitative studies are the traditional mode of research, carefully worked out procedure and rules exist for the research. The procedure of this research was as follow:

1. First, the researcher asked one of English lecturers of IKIP-PGRI Pontianak as the validator to check the validity of the test.
2. Second, a lesson plan constructed by the researcher. Lesson plan is another important instrument in this research. It acts as the teaching guide for the researcher in delivering the treatment to the sample. There was a lesson plan for two meetings.
3. Next, the researcher distributed a pre-test to the sample of the research and the researcher would study the sample's real condition and situation by administering pre-test.
4. Then, after twice treatment stages, the researcher utilized a post-test to gather the post treatment stage data to be analyzed.
5. Lastly, after all of the steps had been conducted, the researcher then analyzed the data to answer the research questions and to table out which hypothesis was accepted. Then the researcher would compile the findings into a beautiful thesis.