CHAPTER III
RESEARCH METHODOLOGY

This chapter describes the procedures of the study in order to figure out the answer of the questions previously stated in chapter one. The discussion includes method and strategy of the research, population and sample, instruments, data collection, and data analysis.

3.1 Formulation of problems

This study mainly investigated the use of SQ3R in teaching students' reading comprehension. Thus, the research problems were formulated into two following questions:

1. Is the use of SQ3R strategy effective in teaching students' reading comprehension?

2. What are students' responses towards SQ3R strategy in learning reading comprehension?

3.2 Research Method

In the research entitled *The Use of SQ3R in Teaching Students' Reading Comprehension*, the researcher chose an experimental study as it was appropriate with the research problem. By experiment method, the researcher carried out some treatments to gain the objective of the research.

The aim of the research was to find out whether or not teaching using SQ3R strategy is effective in improving student's reading comprehension. Thus,

the study used experimental design with the pre-test and post-test control group design. Time constraint was the main reason why the researcher used this design.

This study investigated the use of SQ3R strategy in improving students reading comprehension. The strategy was implemented to the students in the experimental group in order to find out the effectiveness of the strategy as compared to the students' in control group who were treated in conventional strategy. The experimental design in this study is described as follows.

Table 3.1
Experimental Design

Group	Pre-test	Treatment	Post-test
Experimental Group (A)	O_1	X1,X2,X3,X4,X5	O_2
Control Group (B)	O_1	--------------------	O_2

(Creswell, 2003)

Notes

O_1 : pre-test of experimental and control groups

X : treatment for the experimental group

O_2 : post-test of experimental and control groups

From the table above, it can be seen that both of the classes were given pre-test in the beginning of the research. Afterwards, the experimental group was given the treatment for five times. After the treatment, post-test was given to both groups. This is to find out whether the students who were treated by using SQ3R could achieve higher scores than those who were taught using other methods.

3.2.1 Variable

There are three variables in this study. The first is the independent variable, the second is the dependent variable, and the last is the intervening variable.

Hatch and Farhady (1982:15) state that an independent variable is the major variable which is investigated; a dependent variable is the variable which is observed and measured to determine the effect of the independent variable; and an intervening variable is a number of variables which cannot be measured or manipulated.

In the research, the dependent variable is the improvement of students' reading comprehension. The independent variable is the effectiveness of SQ3R strategy in improving students' reading comprehension. The intervening variable is any factor whose effects has not been measured but theoretically may or may not be part of that process.

3.2.2 Population and Sample

The population of the research was the tenth grade students of one SMA in Cimahi. Two classes were chosen as the sample of the research; Class X3 was taken as the experimental group, and Class X4 was elected as the control group. They were chosen based on purposive sampling method, considering that both of the classes had same scores for the English placement test, thus they had equal achievement at that time, said by English teacher in the SMA. The number of the sample was 62 students. It consists of 31 students for each class.

3.3 Hypothesis

Hypothesis is a tentative statement about the outcome of the research (Hatch & Farhady, 1982). Sugiyono (2008) also defines hypothesis as a tentative answer of the research problem. This study begins with null Hypothesis (H_o) where both classes were conducted; experimental and control classes are similar. Coolidge (2000) states that the hypothesis of this study was appropriate to be stated as follows:

$$H_0: \mu_1 = \mu_2$$

$$H_A: \mu_1 \neq \mu_2$$

Notes:

H_0: null hypothesis

H_A: alternative or research hypothesis

μ_1: control group

μ_2: experimental group

It means that there is no difference of reading skill between experimental group (class using SQ3R in learning reading comprehension) and control group (class using group discussion method in learning reading comprehension). By using null hypothesis, every possibility of the study can be shown. If the hypothesis is rejected, it can be concluded that experiment works. Meanwhile, if the hypothesis is accepted, the experiment does not work. Therefore, the null hypothesis in this study is the use of SQ3R strategy which is not effective in improving students' reading comprehension. Alternative or research hypothesis (**H_A**) is the opposite of null hypothesis. The alternative hypothesis states that the

use of SQ3R strategy in teaching reading is effective to improve the students' reading comprehension.

3.4   Data collection

3.4.1   Research Instrument

According to Sugiyono (2009), research instrument is the tool used to measure something that we observe. To obtain the data for answering the research questions, two kinds of instrument were used; (1) Pre-Test and Post-Test was used to answer the research question about the effectiveness in using SQ3R strategy in teaching reading, (2) Questionnaire was used to discover the responses of the students toward the use of SQ3R strategy in reading comprehension, (3) Interview was used to know the responses of the students toward the use of SQ3R strategy in reading comprehension. The instruments are elaborated in the next sections.

3.4.1.1 Test

The pre-test was conducted in the first meeting for 80 minutes. This test was aimed to discover the students' previous ability in reading. Then, the post-test was conducted in the last meeting for 80 minutes. The aim of the post-test was to find out the differences between two groups after the treatment was given.The test items of the post-test were not the same as the pre-test but the difficulty of level was similar.

3.4.1.2 Questionnaire and Interview

The questionnaires and interview were aimed to find out the students' perceptions toward SQ3R strategy in reading comprehension. The questionnaire and interview were conducted in the last meeting after the students finished their post-test. There were 10 question in the questionnaire and 3 questions in interview.

The writer used questionnaires and interview to know the students' responses toward SQ3R strategy in reading comprehension. Also, it was aimed to know the SQ3R's benefit for students and to identify students' difficulties of implementing the strategy in reading.

3.5   Research Procedure

In this study, there were several steps in taking the data required. The following steps were: preparing the lesson plan, preparing the teaching material, administering pilot test, administering pre-test, adapting the treatment (using the SQ3R) in teaching reading for experimental group and teaching reading with conventional method for control group, administering post-test and administering questionnaires.

3.5.1   Preparing the Lesson Plans

There were five lesson plans to implement during the treatment sessions. Those lesson plans were designed for eight meetings. The first and last meetings were allocated for the pre-test and post-test, while the rest five meetings were allocated for the treatment sessions.

3.5.2 Teaching Materials

There were five texts shown in this study taken from Developing English Competencies Book for Grade X. The materials were about Descriptive Text and News Item. Those text were "Pyramid", "Seeing Hawaii in Cruising Style", "Niagara Waterfall", "Seven Killed in Accident on Jalan Sultan ", and "Pertamina Adds to Kerosene Supply".

3.5.3 Administering Pilot Test

Before conducting pre-test and post-test, the test items should be tried out in terms of their validity and reliability (Brown, 1988). Try-out was implemented to 20 non samples student from X5 of one SMAN in Cimahi. However, the class was still in the same level and population as the experimental and control group. The test consisted of thirty eight questions. The result of the tried out test is presented in Appendix B.

3.5.4 Pre-Test

The pre-test was given to the experimental and control classes after its validity and reliability have been measured. Pre-test was conducted before the treatment, precisely on the 10th of January for experimental group and control class.

3.5.5 Treatment

After the pre-test, the teaching and learning process was conducted to both groups. This was handled by the researcher herself. Due to the limited time, the treatment was conducted based on the schedule presented in Table 3.3.

Table 3.2
Topic List of Each Meeting

Meetings	Date	Sub Topic	Note
	January 10th	**Pre-Test**	Given to Experimental and control groups
1st meeting	January 10th	Seven killed in accident on Jalan Sultan	Given to Experimental and control groups
2nd meeting	January 12th	Seven killed in accident on Jalan Sultan	Given to Experimental and control groups
3rd meeting	January 17th	Pertamina Adds to Kerosene Supply	Given to Experimental and control groups
4th meeting	January19th	Pyramid	Given to Experimental and control groups
5th meeting	January 24th	Niagara waterfall	Given to Experimental and control groups
6th meeting	January 26th	Seeing Hawaii in Cruising Style	Given to Experimental and control groups
	January 31st	**Post-Test**	Given to Experimental and control groups
	January 31st	**Questionnaire Interview**	Given to Experimental groups

The SQ3R strategy was used to teach Class X3 as the experimental group. The treatment had been conducted for three weeks in which the teacher presented some reading comprehension assignments. The topics were chosen based on the syllabus. Due to the limited time, there were two meetings in a week. Every meeting took 40 minutes. Overall, the treatment was only conducted in five meetings.

There are three steps in this strategy. The first is *Teacher Presentation*. In every meeting, the teacher presented and explained the material, modeled the

SQ3R strategy, assessed students' understanding by giving them some questions and preparing answers and explanations to students' problems, then distributing assignment for each group.

The second step is *group discussion*. After explaining the material, the teacher explained the rules of discussion and allowed the students to work with their group to share about the material that was previously taught by the teacher. Most often, this involved students' discussion about how to make questions based on the text, how to answer the questions based on the questions that they had made before and how to review or summarize the text. They should write down their work in the SQ3R worksheet.

The third step is *Individual Quiz*. After finishing the group discussion, teacher gave a task for each student. Students were not permitted to help one another during the quiz. This individual quiz was given soon after teacher presentation and team study.

The teaching and learning procedure for the control group was carried out by using a conventional way. Teacher explained the materials to the students. Afterwards, students discussed the text based on their group and shared what they had read in front of class. Finally, the teacher asked students to do the quiz individually after doing the discussion.

3.5.6 Post-Test

Post-test was given to both groups at the end of the treatment in order to find out the result of the whole treatments, to see (if any) the differences between the two groups after the treatment. The test was conducted on January 31st, 2012.

3.5.7   Questionnaires and Interview

Questionnaires were distributed to the experimental class in the end of the treatment to find out students responses about the use of SQ3R method which in turn would show the strategy's strengths and weaknesses. Afterwards, an interview was given to experimental group as well in order to get additional information and to clarify information contained in questionaires.

3.6   Data Analysis

3.6.1   Data Analysis on Pilot Test

The data from the pilot test were analyzed to measure the validity, reliability, level of difficulty, and discrimination of the instrument.

3.6.1.1 Analyzing Validity

The instrument validity was examined by item analysis. Therefore, the process of calculation was named as validity index. To calculate the validity of each item, this study used Anates.

Then, the index validity of each item was interpreted with the following criteria:

Table 3.3
r Coefficient Correlation (Validity)

Raw score	Interpretation
0.8 – 1.0	Very high
0.6 – 0.8	High
0.4 – 0.6	Moderate
0.2 – 0.4	Low
0.0 – 0.2	Very Low

(Arikunto, 2006)

3.6.1.2 Analyzing Reliability

Hatch & Farhady (1982) state that reliability is the extent to which test procedures reveal a consistent result when administered under similar condition. The process was computed by Anates.

The reliability of each item was interpreted with the following criteria:

Table 3.4
Category of Coefficient Correlation of Reliability

Coefficient Correlation	Interpretation
0.0 – 0.20	Low
0.20 – 0.40	Moderate
0.40 – 0.70	High
0.70 – 1.00	Very High

(Arikunto, 2006)

3.6.1.3 Analyzing Difficulty Level

Difficulty level was used to measure how far the test items were relevant with the participants' ability. It was also aimed to investigate whether it was too easy or too difficult for the participants. It can be analyzed using item difficulty index or facility value.

Therefore, the items with facility value around 0.500 were considered to be ideal, with an acceptable range around 0.250 to 0.750 (Fulcher & Davidson, 2007).

The following is the formula of difficulty index:

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

Where:

FV   = Facility/ Index of difficulty
R   = the number of correct answer
N   = the number of students taking the test
(Heaton, 1955:178)

Table 3.5
Index of Difficulty

Index of Difficulty	Interpretation
0.00 – 0.30	Difficult
0.30 – 0.70	Moderate
0.70 – 1.00	Easy

(Arikunto, 2006)

3.6.2   Data Analysis on Pre-test

The pre-test and post-test were given to the experimental and control groups. A hypothesis was started at the alpha level at 0.05. The data were collected through pre-test and post-test computed one by one using IBM SPSS Statistics 19.0 for Windows. The steps used in analyzing pre-test and post-test were normal distribution test, homogeneity variance, and independent t-test. The details of statistical procedures are as follows:

3.6.2.1 Normal Distribution Test

Normal distribution was calculated before t-test. This test was aimed to measure whether the distribution of pre-test and post-test scores were normal or not. The statistical calculation of normality test used Kolmogorov-Smirnov by following four steps below:

1. setting the hypothesis, H_0= the scores between experimental and control groups which normally distributed

2. setting the level of significance (p) at 0.05

3. analyzing the normality distribution by Kolmogorov-Smirnov test

4. comparing scores between test result and level of significant value. If Asymp. Sig>0.05, the null hypothesis is not rejected. It means the sample scores are normally distributed. In contrast, if Asymp. Sig<0.05, the hypothesis is rejected it means the scores are not normal.

3.6.2.2 Homogeneity of Variance

The homogeneity of variance test used Levene test in SPSS Statistics 19.0 for Windows program. The steps were as follows:

1. setting the hypothesis, H_0=data between the two groups are homogenous

2. setting the level of significance (p) at 0.05

3. measuring the homogeneity variance using Levene's test

4. comparing the result of Levene's test and alpha level of significance

If Asymp. Sig. <0.05, the null hypothesis is rejected, it infers that the two groups were not equal. Meanwhile, if Asymp. Sig>0.05, the null hypothesis is accepted, it infers that the variance data of the two groups are equal; the data are homogenous.

3.6.2.3 Independent t-test

The independent t-test was used to analyze the differences between two groups' means. In this study, the independent sample test was calculated by the computation of SPSS Statistics 19.0. The steps were as follows:

1. setting the hypothesis, H_0= there is no significant difference between the students' vocabulary scores in experimental and control groups

2. setting the level of significance (p) at 0.05 with two-tailed of significance

3. calculating t-test scores using SPSS Statistics 19.0

4. comparing t-obtained and t-critical. If t-obtained > t-critical, there is a significant difference between two groups. It means that the null hypothesis is rejected. Meanwhile, if t-obtained < t-critical, there is no significant difference between the two groups. It means that the null hypothesis is not rejected.

3.6.3 Post-test Data Analysis

The data collected from posttest of both groups were analyzed using the same procedure as pretest which involved Independent t-test, normal distribution test, and variance homogeneity test. It could be known then whether there was a difference between the reading scores of control and experimental group.

Moreover, the effect size computation was conducted to check the level of effect of the treatments after t-test was done by using SPSS Statistics 19.0 from independent t-test of post-test. The effect size was used to determine how significant the impact of the treatments to the experimental group's scores. Effect

size has positive correlation to its value. The larger effect size value is the larger

impact of treatment will be (Coolidge, 2000). The formula of effect size is:

$$r = \sqrt{\frac{t^2}{t^2 + df}}$$

Where:

r = effect size
t = t obt or t value from the calculation of independent t test
df = N 1 + N2 – 2 (degree of freedom)

Value of effect size is interpreted by the following scale:

Table 3.6
Scale of Effect Size

Effect Size	r value
Small	.100
Medium	.243
Large	.371

(Coolidge, 2000:151)

3.6.4   Data Analysis on Questionnaires and Interview

The questionnaire consisted of 10 statements. Each statement had five

various alternatives options that should be chosen by the students. The researcher

used *Likert scale* with typical five-level Likert item format as follows:

1. Strongly disagree (STS: *Sangat Tidak Setuju*)

2. Disagree (TS: *Tidak Setuju*)

3. Undecided/Neither agree nor dissagree (TT: *Tidak Tahu*)

4. Agree (S: *Setuju)*

5. Strongly agree (SS: *Sangat Setuju*)

One of the statements in the questionnaire was "*Saya lebih bersemangat dan termotivasi untuk belajar reading dengan menggunakan SQ3R.*" (Students find that the use of SQ3R encourages and motivates them to learn reading comprehension.)

The result of questionnaires was put in percentage below.

$$p = \frac{F \times 100}{N}$$

Note:

P   = Percentage
F   = Frequency
N   = Response
100   = Constant

After the questionnaire was given, interview was used to collect additional information from the students to support the questionnaire that students had answered. The questions were in Indonesian in order to help students express their feeling more easily. The researcher used standardized open-ended interview to some respondents. One of the examples of interview was *"Manfaat apa yang kamu dapat dari teknik SQ3R terutama dalam pembelajaran reading?"* (What are the advantages of using SQ3R strategy in reading class? The findings and discussions of the present study are elaborated in the following chapter.