CHAPTER III

RESEARCH METHOD

This chapter presents the detail information dealing with the research method. There are seven parts. They are research design, subject of the study, variable of the research, research instrument and data collection method, validity and reliability testing, normality and homogeneity testing, and data analysis.

A. Research Design

This research was an experimental research conducted by using quantitative approach with quasi-experimental design exactly in nonrandomized control group, pretest-posttest design. The design was chosen because randomization was not needed in both the experimental and control group. According to Ary, et al (2010: 316) nonrandomized control group pretest-posttest design is usually used in education research which there are existing classes schedule that could not be changed and doing randomization to conducting research. This design is suitable for this research because it is conducted in a public school with the fix schedule. In other words the researcher could have permission before conducting the research.

The reseracher avoided to use flip coin, although subjects cannot be rondomly assigned (Ary, 2010: 316). Hence, the researcher used a flip coin to determine which one was the experimental group or the control group. The classes that should be chosen is appearing to be similar (Ary, 2010: 316). The researcher

gave the test for both groups to measure the students' ability in reading comprehension. After the pre-test finished, the researcher gave the students treatments in the experimental group, and in the control group the treatment was not needed. After all, the students were given the post-test in both the experimental group and the control group.

Table 3.1   Nonrandomized Control group, pretest-posttest design. Ary, *et al* **(2010:316)**

Group	Pre test	Independent Variable	Post test
A	Y_1	X	Y_2
B	Y_1	-	Y_2

Based on design 1, group A was the experimental group (X TKRO 1). The group was given pre-test (Y_1), the treatments by using SQ4R (Survey, Question, Read, Recite, Reflect, Review), and post-test (Y_2). Group B was control group (X TKRO 3). The group was given pre test (Y_1), treatment without using SQ4R, and post test (Y_2).

B. Population and Sample

1. Population

    The population of the study was the students of tenth graders of SMKN 1 Bandung including all programs such as AKL (Akuntansi dan Keuangan Lembaga) or accounting, TKRO (Teknik Kendaraan Ringan Otomotif) or vehicle engineering, TEI (Teknik Elektronika dan Industri) or electronica and industry engineering, TKJ (Teknik Komputer Jaringan) or computer engineering, OTKP (Otomatisasi dan Tata Kelola

Perkantoran) or management of office, and TBSM (Teknik Bisnis Sepeda Motor) or business of motorcycle engineering. The tenth graders consist of 20 classes. To sum up, the total population was 720 students.

2. Sample

In choosing the sample, the researcher used two classes, one as the experimental group and the other as the control group. Two classes reecomended by the English teacher were X TKRO 1 and X TKRO 3. X TKRO 1 was chosen as the experimental group and X TKRO 3 was chosen as the control group. Thus, the total of sample is 69 students (35 students from the experimental group and 34 students from the control group).

The sample was taken in term of purposive sampling which the research sample was done by taking some subjects based on certain purposes. The English teacher recommended both classes, because they had the same average score. That was why, the researcher used purposive sampling.

C. Variables of The Research

The researcher used two variables in this study which was independent variable and dependent variable. Independent variable represented the output or effect, or was tested to see if it was effect of teaching using SQ4R. Dependent variable represented the input or causes, or were tested to see if there were the causes. Dependent variable on this study was reading comprehension ability.

D. Research Instruments

An instrument is a tool for measuring, observing, or documenting quantitative data (Creswell, 2008: 14). In this study, the researcher used tests as the instrument of collecting data. The materials were taken from English books in title *"Bahasa Inggris edisi revisi 2016 untuk SMA/MA/SMK Kelas X"* and *"Creative English"*. Brown (994: 253) states that a test has a purpose of measuring a test measures a person's ability or knowledge.

The tests were given into two sections. Firstly was pre-test. Secondly was post-test. The researcher used pre-test meant that the test was administered before students taughy by using SQ4R and post-test which meant that the test was administered after students taughy by using SQ4R but in between pre-test and post-test, the researcher gave truly treatments for twice to students by implementing SQ4R in the experimental group. Before, conducting pre-test and post-test, the researcher held try out test in order to measure the validity and reliability of the instrument. In this case, in holding try out, the researcher chose ten students that were not involved during the research process.

E. Validity and Reliability

There were two important aspects in determining the quality of established quantitative measures. Those were validity and reliability. In this research, it was needed to measure the test used to measure students' reading comprehension

ability. To know whether the test could be used effectively, the researcher should measure both its validity and reliability.

1. Validity Testing

   A test is valid if it can measure the ability tested. For example reading test measures reading ability (Brown, 2004: 22). In the other words, validity testing is measurement which make the instrument results are suitable and value (Brown, 2004: 22). In determining validity, there are 3 types as follows:

   a. Content Validity

      The indicators which are the representatives of establishing domain of content are the criteria in maintaining content validity (Ary, 2010: 226). The researcher made ten indicators in the tests of both test 1 and test 2 which were in the form of multiple choices. Test 1 was used for pre-test and test 2 was used for post-test. Multiple choice was one of test that was objective in which the right or wrong answers are based on the scoring key. If the students did not answer the same answer like the scoring key, it was absolutely wrong and it could not be influenced by the decisions of the test takers (Ary, 2010: 201).

      The content validity should refer to "Kurikulum 2013 revisi 2017" or 2013 curriclum revised 2017 which based on standard competence in the syllabus mentioned in point 3.4. The materials of tests were adapted by the researcher from the main competence and the basic competence which was applied in tenth graders of vocation school

(see appendix 4). So, in content validity, the researcher made ten indicators of the test based on the main competence and the basic competence from syllabus in both test 1 and test 2.

In the test 1, the indicators that were tested in numbers would be explained in the table 3.2:

Table 3.2   Indicators used in content validity of test 1

No	Indicators	Number of question
1	Finding inference	8
2	Identifying spesific information	2, 19
3	Finding reference	9, 20
4	Find the setting of time and place	6, 13, 16, 5
5	Find main idea from the text	14, 15, 7,12
6	Mention words belong to adjective that exist in the text	10
7	Mention which paragraph that indicate description	3, 17
8	Mention which paragraph that indicate identification	11
9	Mention several V_1 based on the text	4, 18
10	Mention the author purpose in writing the text	1
Total of questions		20

In addition, in the test 2 the researcher used the same indicators in the same numbers. The difference with the test 1 was that the researcher provided different text for the post-test.

Table 3.3   Indicators used in content validity of test 2

No	Indicators	Number of question
1	Finding inference	8
2	Identifying spesific information	2, 19
3	Finding reference	9, 20
4	Find the setting of time and place	6, 13, 16, 5
5	Find main idea from the text	14, 15, 7,12
6	Mention words belong to adjective that exist in the text	10
7	Mention which paragraph that indicate description	3, 17
8	Mention which paragraph that indicate identification	11
9	Mention several V_1 based on the text	4, 18
10	Mention the author purpose in writing the text	1
Total of questions		20

b. Face validity

   The important type of validity called scientific process is face validity (Isnawati, 2012:29). Meanwhile, according to Brown (2004: 26), a test called having face validity is a test look like, such as the look which can be seen and measured by senses. By those theories, it can be concluded that the instrument in case was test should appropriate to students' level. In this study, the researcher ensured it by consulting to experts. The experts were the English teacher of SMKN 1 Bandung and the researcher's advisor on conducting thesis.

c. Construct Validity

   In determining construct validity, it only concerned with the measures of physical construct such as ability, attitude, feeling, self esteem in which by test scores (Ary, 2010: 231). According to Brown (2004: 25), construct validity is explaining a certain phenomenon in the world which is attempted in certain theory. Based on those theories, it

could be concluded that construct validity was theory used to contruct test should appropriate with what will be tested. In this research, the researcher found the theories of reading which were suitable for students' need which would be used to test students' reading comprehension ability. For example assessments are multiple choice, matching task, editing tasks, picture cued tasks and gap filling task. The researcher took only multiple choice to test students' reading comprehension ability. For contruct validation in this reseach could be seen on blue print (see appendix 6).

2. Reliability Testing

According to Idawati (2014: 18), reliability is dependability and consistency. Hence, the same opinion come from Brown (2004) that was stated that a test should be consistent and dependable (Brown, 2004: 200). In other words, the test should be consistent showed almost same score or even the same whenever it takes.

The compatible formula to calculate the reliability of the tests for the research is by using Crobach's Alpha in SPSS 16. The reliability was based on:

1. If α score $> r_{table}$ in score signification 5% so the test items were reliable.

2. If α score $< r_{table}$ in score signification 5% so the test items were not reliable.

Table 3.5 SPSS Reliability Result of test 1 (pre-test)

Reliability Statistics

Cronbach's Alpha	N of Items
,965	20

Table 3.6 SPSS Reliability Result of test 2 (post-test)

Reliability Statistics

Cronbach's Alpha	N of Items
,966	20

The result of reliability test for the questions by using Cronbach's Alpha in test 1 was 0,965. Meanwhile in test 2 was 0,966. It meant that the score was bigger than score of r_{table} 0,632. Therefore, it meant that all the tests were reliable and consistent, so it could be used as research instrument.

To describe the result of Crobach Alpha, the researcher used standart of Goerge and Malley (as cited in A. Gliem and Rosemary R. Gliem, 2003) who argue the requirements bellow:

a) If $0,9 > \alpha > 1,0$; means that it is excellent.

b) If $0,8 > \alpha > 0,89$; mean that it is good.

c) If $0,7 > \alpha > 0,79$; means that it is acceptable.

d) If $0,6 > \alpha > 0,69$; means that it is questionable.

e) If $0,5 > \alpha > 0,59$; means that it is poor.

f) If $\alpha < 0,5$; means that it is unacceptable.

From the the result of calculating reliability by using SPSS, the number was more than 0,9. It meant that the test included to an excellent reliability.

F. Normality and Homogeneity Testing

1. Normality Testing

Normally testing is used to determine whether a data is distributed normally or not. According to Pauk (as cited in Razali and Wah, 2011:22), test of normally can be divided into two types which are theory driven methods and descriptive statistics. Theory driven methods include the normality test such as Saphiro Wilk, Kolmogorov Smirnov, and AD test. Meanwhile, descriptive statistics include the normality testing such as Skewness and Kurtosis. Furthermore, according to Ashad et. al (as cited in Razali and Wah, 2011:22), normality test is categorized into four major categories. They are Chi-Square types, Moment Ratio techniques, test based on Correlation and test based in Empirical Distribution Function (EDF).

For testing the normality of the data, the researcher used the formula of Kolmogorov Smirnov test. Kolmogorov Smirnov test is originally used for sample size of more than 50 (Notobroto and Oktavian, 2014: 134). Based on the theory, the researcher used Kolmogorov Smirnov test because the sample of this research was bigger than 50. The researcher used SPSS 16.0 to calculate the normality testing of data with significance

value 0,05.The data had normal distribution if the significance is bigger than 0.05, besides the data did not have normal distribution if the significance is lower than 0.05.

The result of normality testing can be seen on appendix (see appendix 7). The result found that the significance of pre experimental variable was 0,091 and pre control variable was 0,060. The results were more than 0,05. Based on the explanation before, if the significance was bigger than 0,05 the data was normal distribution. So, the conclusion was data had normal distribution.

After the analysis data was normal distribution, the next analysis was homogeneity testing.

2. Homogeneity test

Homogeneity test was intended to show that two or more groups of data samples came from populations having the same variance. The researcher used lavene with SPSS to know the homogeneity. Based on Gastwirth et al (2009: 343), Levene is used to know homogeneity test. The interpretation of the result whether the data were homogeneous or not were based on the level significant 0,05. If the result is higher than 0,05, H_0 is not rejected or data were homogeneous. Meanwhile, if the result was lower than 0,05, H_0 was rejected or the data were not homogeneous.

According to the result of homogeneity testing, the significance of group was 0,962 which was bigger than 0,05 (see appendix 7). So, the

conclusion was the variance value in the class sample based on tests score was homogeneous.

3. **Data Collection Methods**

In order to get the data, the researcher conducted pre-test and post-test but in between pre-test and post-test, the researcher gave truly treatments for twice to students by implementing SQ4R in the experimental group. The way of collecting data was presented as follows:

1. Pre test

Pre-test was administered before students taughy by using SQ4R (Survey, Question, Read, Recite, Reflect, Review) that was conducted on November, 10th 2017. The aim of pretest was to know the students comprehension ability in reading. That was why, the researcher used multiple choice as kind of test to avoid subjectivity that possibly affects in unreliability. The multiple choice consisted of 20 item questions with the duration of doing the test was 45 minutes.

2. Treatment

The treatment in this study was using SQ4R implemented twice to students after they did pre-test. The treatments were held on November 17th and 24th. The experimental group learned English lesson exactly in descriptive text by using SQ4R for two weeks, 135 minutes per week. The researcher explained the points of material before going through SQ4R method, such as the definition, the purpose, generic structure, and language

features of descriptive text. The researcher made ten points of descriptive text that the students should remember to make them easily practice SQ4R method.

In the control group, the class was conducted by the classroom teacher based on the teachers' lesson plan without using SQ4R. Besides, in the experimental group, the researcher attempted to explain the SQ4R to the students and guide them in using the method during the first week. Furthermore in the last week, students implemented the method independently. Furthemore, the researcher used six steps of SQ4R, and chose group discussion to adapt 2013 curriculum or K13 indicated by group discussion. Each group consisted of 4 students. The treatment was explained as follows:

a. Survey

In the first meeting of treatment, students were guided to do skimming over the text title or heading, main ideas, and examine the picture of descriptive text. They did the activity of survey in group discussion. The purpose of this step was to get general idea. In the second meeting of treatment, students in the same group did skimming like the first meeting but in different text and they did it independently without the direction from the teacher.

b. Question

Each group developed their questions which they could answer when they were reading the text. Students used WH questions to help

them develop questions. In this step, each member of group wrote down the questions in their note based on the discussion with their group members. The purpose of the questions were to establish a basic for more understanding text or material before students read a whole of the text. The students did the same activity either the first meeting or second meeting of the treatment.

c. Read

In the first meeting and the second meeting, students read the text carefully. Each member read the text with keeping questions in mind to seek the answer. In this step, students could not take a note while reading.

d. Recite

In this stage, the students discussed the answers of questions based on their reading activity earlier. Each group had the same answers. Then, each member should write down the answers in their note. If they could not find the answers, they could look back and reread the text. In the first meeting, teacher guided the students to write down not only the answers but also summarize the text. The same activity happened in the second meeting.

e. Reflect

In the first meeting of treatment, teacher guided the students to make relation between their note and their available knowledge that they had with their group. In this steps, students were forced to do

self-reference and critical thinking. Indirectly, they actually tried to memorize the information that they had written in the previous steps. The students did the same activity in both the first meeting and second meeting of the treatments.

f. Review

In the first meeting, each groups read the note that they had made. The same activity happened in the second meeting of treatment but in this step quiz was added. Teacher provided some questions, and the students who could answer the questions would get point from the teacher. The purpose of this step was to make students learn in reciprocal process.

3. Post test

The researcher administered the post test on November, 25th 2017. The number of questions was the same like in pre test. There were 20 numbers in the same indicators that had the same level of difficulty. For the duration was also the same, that was 45 minutes for doing multiple choices.

4. **Data Analysis**

The researcher used quantitative method in collecting data from the instrument tests. In addition, data was analyzed by using statistical technique which was z test. Z test was chosen because the sample was large. Z test was used if number of the two samples were more than 30 (Brasel and Neideen, 2007: 94). The same opinion came from Kaur (2014). According to Kaur (2014: 735), z test

is used if the sample size is not less than 30 and normally distributed. So, the requirements of using z score were data are normally distributed, the population standard deviation was known and the samples must be bigger to 30.

Based on Massey and Miller, if the researcher could not find the population standard deviation, the researcher could change it to be sample standard deviation. There were two level significances that usually used in z test, they are 0,05 equal 1,96 and 0,01 equal 2,58 (Kaur, 2014: 735).

The formula for z test for comparing two means from independent samples as follows:

$$z = \frac{(x1 - x2)}{\sqrt{\frac{s1^2}{n1} + \frac{s2^2}{n2}}}$$

The steps in comparing two means of z score:

1. State both null hypothesis and alternative hypothesisi

2. Find the crucial value(s) in z table.

3. Compute the test value

4. Make descision whether the researcher has to reject or not reject the null hypothesis

5. Make interperetation.