

CHAPTER III

RESEARCH METHODOLOGY

This chapter presents the research methodology of the research, including research design, research site and participants, data collection and procedures, and data analysis. Each subchapter will be explained in more detail as follows.

3.1 Research Design

This research aimed to determine how electronic books used with the SQ3R technique affect students' reading comprehension in the classroom. The research used is quantitative research design to analyze, investigate, and find out how the electronic book can influence students' reading comprehension for junior high school. Quantitative has been employed because it is appropriate to conduct this research. According to Burrell and Gross (2017), quantitative research aims to find a particular group of people, known as the population, and sample it by observing or measuring it. Cresswell and Cresswell (2014) stated that a quantitative research design aims to see the relationship between related variables in which variables are formed into a hypothesis.

Furthermore, a pre-experimental design with pre-test and post-test was conducted in this research to comprehend the causes and effects of using an electronic book on students' reading comprehension for junior high school. Cresswell and Cresswell (2014) define pre-experimental design as a research design that does not have a control group as a comparison; thus, this design is for an experimental group only.

Based on the design carried out by Cresswell and Cresswell (2014), the pre-experimental design pre-test, treatment, and post-test are described as follows.

Table 3. 1 Pre-Experimental Design

	Pre-Test	Treatment	Post-Test
Group A	O1	X	O2

Description:

Group A : Experimental Group (One of 7th Grade Classroom)

O1 : Pre-test (before using the electronic book)

X : Treatment

O2 : Post-test (after using the electronic book)

3.2 Research Hypothesis

To answer the questions in this research, it is necessary to have a hypothesis that aims to see the interim results of the research questions. In this research, there are two hypotheses, namely the null hypothesis (H₀) and the alternative hypothesis (H₁).

H₀ : There is no significance between the pre-test and post-test results on the use of electronic books in improving students' reading comprehension.

H₁ : There is a significance between the pre-test and post-test results on the use of electronic books in improving students' reading comprehension.

3.3 Research Population and Sample

This research was conducted in one of the junior high schools in Bandung - West Java. The sample in this research was 7th-grade junior high school students. The research involved 30 students who willingly participated in the research. The reason for choosing participants at this location was that the students already used technology such as mobile phones in the learning process. In selecting samples, this research used one of the non-probability sampling, namely convenience sampling. Convenience sampling is a method of selecting participants as a sample who are willing to provide an answer related to a research question (Cresswell, 2012). Moreover, for the convenience of the participants, the researcher used a pseudonym and will not include the actual names of participants and school to maintain confidentiality.

3.3.1 Population

The population in this research had one classroom 7th-grade from junior high schools in Bandung city. One of the characteristics of a school for this research

was using technology (e.g., a mobile phone device) in the learning process. The use of technology in the learning environment allows the students to use Epic electronic books in the classroom.

3.3.2 Sample

The researcher selected students who had never used an electronic book as a learning medium in selecting the samples. In addition, students could learn with a visual learning style. As stated by the Ministry of Education, Culture, Research, and Technology (2022), in phase D, students can use spoken, written, and visual texts in English. In addition, students were proficient in digital literacy, in which they could utilize technology as a learning support tool; thus, it was easier for them to use the electronic device in reading comprehension.

3.4 Research Variables

The variables in this research were dependent and independent. According to Cresswell and Cresswell (2014), independent variables can affect the dependent variable. In this research, the independent variable was used in the Epic electronic book app as teaching media in the experimental group. According to Cresswell and Cresswell (2014), dependent variables are variables the independent variable has influenced. In this research, the dependent variable was students' reading comprehension results using the electronic book app as teaching media in the experimental group.

3.5 Research Tool

Epic: Kids' Books and Reading Application

In this research, the research tool used as an electronic book was the Epic application. The Epic application is an electronic book that provides a visual display of the book. Each book in the app ranges from 2-12 years old. In addition, the Epic app also has various types of books such as picture books, comics, read-to-me, videos, and audiobooks. To conduct research on students' reading comprehension, the researcher only used picture books and dictionary look-up to help students' reading comprehension activity.

Figure 3. 1 Electronic Book Example



Figure 3.1, it showed an example of a story in the Epic book application. The title of the book is All About Cats by Monica Filipina. The appearance of the story presented to readers in this application is similar to a physical book where readers can swipe the next page right to the left.

3.6 Research Instruments

The research instruments in this research included tests (pre-test, treatment, and post-test), questionnaire, and interview. the tests instrument aimed to see the result of students' pre-test and post-test. In addition, the questionnaire instruments aimed to see the students' perspective on the use of the electronic books with SQ3R technique on students' reading comprehension. Moreover, the interview instruments aimed to see the students' perspective on the use of the electronic books with SQ3R technique on students' reading comprehension with three levels score (higher, middle, and lower).

3.6.1 Test

In test instruments, a pre-test, treatment, and post-test approach was utilized. In the pre-test and post-test stages. This research provided different descriptive text for each stage during the pre-test, treatment, and post-test. This approach allowed

for a thorough examination of the results before and after administering the treatment.

Pre-Test

The researcher gave a text without visual pictures to do reading comprehension individually for the students. After reading the text, the researcher asked the students to fill in some questions based on the text. It aimed to find out how far they understand the contents of the text that has been read. The type of questions was adapted from Hibbard and Wagner (2003). The questions were divided into two categories: general information and developing an interpretation of the text.

Treatment

The students were required to download the electronic book which Epic application. However, if their device is out of storage, they could access it through a website. During a treatment, the students read one of the texts provided by the researcher on the Epic electronic books app. The students were given a treatment: access and use of the electronic book for reading comprehension activity with the SQ3R (Survey, Question, Read, Recite, Review) technique. In addition, the researcher also adds some material about descriptive text in the process of learning.

Post-Test

The students were given a post-test after they were familiar with the app and understood the story's context in reading comprehension with the SQ3R technique. In the post-test, the students had to answer some questions related to the text. The type of questions was adapted from Hibbard and Wagner (2003). The type of questions divided into two categories: general information of the text and developing an interpretation of the text.

3.6.2 Questionnaire

The questionnaire instrument was designed to investigate students' reading comprehension in the learning process by using the electronic book. The questionnaire was adopted from Jeong (2012) with 13 closed-ended questions. The questionnaire used four options likert scale strongly agree (4), agree (3), disagree (2), and strongly disagree (1) (Sugiyono, 2016). According to Sugiyono (2015),

the Likert scale is used to get firm answers from respondents' attitudes and perceptions of the research variable. The researcher transformed the questionnaire into Bahasa Indonesia to the respondents.

3.6.3 Interview

The interview was used to support the data on the use of electronic books on students' reading comprehension. The interview session was conducted through a voice call on WhatsApp by using structured interviews. According to Sugiyono (2015), structured interview is a data collection method which provides systematic questions to interview the respondent. The types of questions asked to respondents were using close-ended questions. The structured interview questions used close-ended questions to the interviewees (Sugiyono, 2015). In addition, the researcher interviewed three respondents individually—the selected respondents in this research from the tests and questionnaire results.

3.7 Data Collection Procedure

Data collection is the process of how researchers collected the data to answer the question in the research. There were some instruments to conduct the data namely pilot test, test, questionnaire, and interview. These instruments were described in more details as follows.

3.7.1 Pilot Test

Before the pre-test and post-test instruments were assigned to the sample, the researcher would test the instruments using a pilot test. According to Creswell (2014), the pilot test aims to determine the validity of an instrument. The pilot test was used to determine whether the pre-test and post-test questions were valid and reliable (see appendix A). IBM SPSS would measure the validity and reliability of questions. This pilot test has been given to participants not used as the experimental group in this research.

3.7.2 Test

Administering Pre-Test

In the pre-test section, each student had a text without using visuals. After they finished reading the text individually, the students were required to answer the

10 questions provided by the researcher. The type of questions adopted from Hibbard and Wagner (2003) (see appendix B).

Table 3. 2 The Text for Pre-Test

Mark Lee, My Nephew
<p>I have six nephews. Mark is the smartest one in which he remembers things. His full name is Mark Lee and our family calls him Mark. He is the second child of two siblings. He is five years old and he attends Jakarta International School.</p> <p>Mark has great memories. For example, he remembers when I ask him about his childhood birthday, something which I can't find, and also he can speak Korean a little bit because he always watches K-Pop NCT videos. He is such a fast learner.</p> <p>Mark has good physical appearances. He has undercut hair, a sharp nose, and big eyes. Besides that, he is very handsome and he is tall. Everyone thinks he is an idol.</p> <p>Mark always comes to my sweet home during holidays. We usually spend time together by playing a game. I'm so happy to have him in my life.</p>

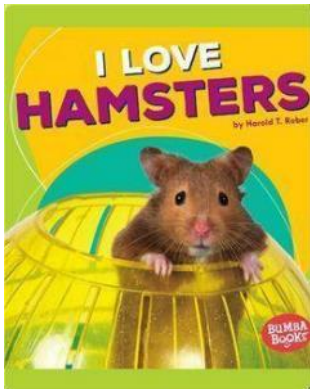
Treatment

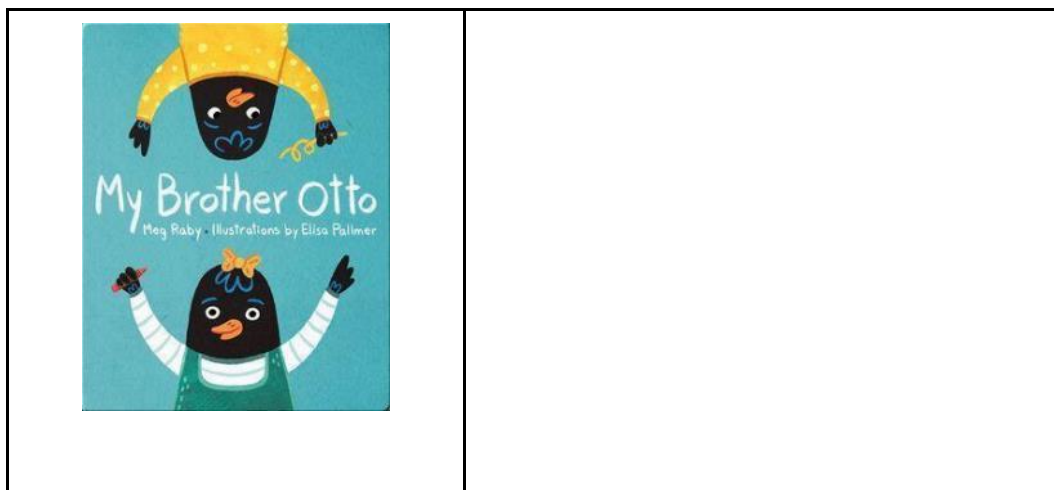
In the treatment section, the researcher implemented the electronic book to the students. Before carrying out reading comprehension activities with the application, the researcher provided a tutorial on how to operate it. Then, after the students understand how the app works, the researcher provides one of the texts about descriptive text. After determining the text to be read, students could start reading comprehension with the SQ3R technique. During treatment, students are able to ask questions or discuss it with their friends. During the treatment, students should identify the text by using the SQ3R technique.

1. Survey: The students were asked to look at the title and content of the text in the cover first. In this stage, the students were expected to be able to imagine what will happen in the text.

2. Question: The students read the questions that have been provided by the researcher.
3. Read: In answering the questions, the students can read the text that has been given comprehensively.
4. Recite: After the students carry out reading activities to find the answers to the questions given by the researcher. They can answer the questions by using their own words.
5. Review: The students should answer the questions that have been provided by the researcher.

Table 3. 3 SQ3R Technique Worksheet for Students

The title of the text	SQ3R Worksheet
<p>I Love My Hamster by Harold Rober</p> 	<p>SQ3R Survey Question Read Recite Review</p> <p>Name: _____ Date: _____</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Survey Answer the following questions before reading the text.</p> <ul style="list-style-type: none"> • What is the title of the text? • Describe a picture or graphic included in the text. </div> <div style="width: 45%;"> <p>Recite Write short summary of the text by your own words.</p> </div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Question Before start reading, write some questions you have about the text.</p> <ul style="list-style-type: none"> • Where the author buy hamster's food? • Why does a pet hamster need a cage? </div> <div style="width: 45%;"> <p>Review Answer each question that you have made.</p> </div> </div> <p>Read Look for answer to your questions as you actively read the text. Please read carefully and it is important to take the time to reread.</p>
<p>My Brother Otto by Meg Raby</p>	<p>SQ3R Survey Question Read Recite Review</p> <p>Name: _____ Date: _____</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Survey Answer the following questions before reading the text.</p> <ul style="list-style-type: none"> • What is the title of the text? • Describe a picture or graphic included in the text. </div> <div style="width: 45%;"> <p>Recite Write short summary of the text by your own words.</p> </div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Question Before start reading, write some questions you have about the text.</p> <ul style="list-style-type: none"> • What is Otto's full name? • What outfit does Otto often use? • When Finn and Otto go to Pineswood Park? </div> <div style="width: 45%;"> <p>Review Answer each question that you have made.</p> </div> </div> <p>Read Look for answer to your questions as you actively read the text. Please read carefully and it is important to take the time to reread.</p>



Administering Post-Test

In the post-test section, the students have been given some questions related to the story which was provided by the researcher. To see their reading comprehension ability, the researcher gave another text to the students and 10 questions to fulfill by them. The type of questions adopted from Hibbard and Wagner (2003) (see appendix C).

Table 3. 4 The Text for Post-Test

<p style="text-align: center;">My Cat, Choco</p> <p>I have a cat. His name is Choco. Choco has beautiful hair. The hair colors are white and orange. I brush Choco's hair with a cat comb often. I want Choco's hair to keep soft and clean. Also, Choco has sharp blue eyes and he can catch a bird so fast.</p> <p>Choco likes to go outside. He always runs and jumps high. Sometimes, we play catch a small ball or just walk on the bridge. Choco is such a good player.</p> <p>Choco is a big cat. The weight is around 6 kilograms. I always feed Choco with Whiskas three times a day. Choco likes to drink fresh milk too. Sometimes, I go to the veterinarian to check Choco's body. Choco's body is overweight, so I need to take good care of my cat.</p>
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3.7.3 Questionnaire

The questionnaire was used as supporting data in this research. According to Creswell (2012), Questionnaire is one of collecting data for a survey which is

filled out by the respondent to return and complete to the researcher. The questionnaire has been made by the researcher to investigate students' reading comprehension by using the electronic book in the process of learning. The questionnaire was distributed and collected to thirty students. The questionnaire consisted of 14 questions was adopted from Jeong (2012). In addition, the questionnaire aimed to know the students' perspective during the treatment section by using electronic books.

Furthermore, the researcher spread the questionnaires to the respondents with Bahasa Indonesia due to avoid misunderstanding for the students during treatment (see appendix D).

3.7.4 Interview

In collecting the data, the interview session was conducted through a voice call WhatsApp by using structured interviewed – open-ended questions with a length of around 10 minutes. In addition, the researcher interviewed three respondents individually. The selection of respondents in this research was observed by looking at the students' score in pre-test and post-test and questionnaires. The first respondent who has higher score in pre-test to post-test, the second respondent who has middle score in pre-test to post-test, the third respondent who has lower score in pre-test and post-test, (see appendix E).

3.8 Data Analysis

To analyze the result of the research with pre-experimental design with pre-test and post-test for one group, the research used IBM the Statistical Package for the Social Sciences (SPSS) with the significance level set at 5% and 1%.

3.8.1 Pilot Test

Pilot test data analysis in the research used IBM SPSS with 30 respondents. In the analysis, it showed the result of the validity and reliability tests, both pre-test and post-test.

3.8.1.1 Validity

According to Sugiyono (2015), Validity is the result of the accuracy between the data that occurs and the data owned by the researcher where the data

does not differ between the data reported and the data obtained. In testing the validity of the pre-test and post-test in this research. The research used IBM SPSS with the Pearson correlation coefficient formula. In addition, there were two ways to look at the results of the analysis in the Pearson correlation coefficient formula, with significance values at 5% and 1%

1. Analysis of Pre-Test Data

Validity test data analysis for the pre-test consisted of 20 questions. The 20 questions were tested using IBM SPSS with the Pearson correlation formula. The results of calculations using descriptive statistics regarding the results of the pre-test validity test (see appendix F)

Based on the results of validity of pre-test, 14 out of 20 questions have validity with a significant value of less than 0.5 and 0.1. In addition, the significance value of the 14 valid r-count questions in Table 4.1 is higher than 5% and 1% for 30 respondents. Therefore, of 20 pre-test questions tested on respondents, the researcher only took 10 of the 14 valid questions. The questions for one group at one of the Bandung City Middle Schools in (see appendix G).

There were 10 out of the 14 which had validity with a significant value of less than 0.5 and 0.1 SPSS result which was given to the students in the pre-test section. One until five questions is a type of general information of the text and sixth until ten questions is a type of inferential questions of text (see appendix G).

2. Analysis of Post Test Data

Validity test data for the post-test consisted of 20 questions. The 20 questions were tested using the IBM SPSS which consisted of 30 respondents using the Pearson correlation formula. Following are the results of calculations using descriptive statistics regarding the results of the post-test validity test (see appendix H).

There were 12 out of 20 questions which had validity with a significant value of less than 0.5 and 0.1. In addition, the significance value of the 12 valid r-count questions in table 4.1 is higher than 5% and 1% for 30 respondents. Therefore, out of 20 pre-test questions that have been tested on respondents, the

researcher only took 10 of the 12 valid questions. The following are the questions presented for one group at one of the Middle Schools in Bandung (see appendix I).

There were 10 out of 14 questions valid questions based on the SPSS result which was given to the students in the pre-test section. One until five questions is a type of general information of the text and sixth until ten questions is a type of inferential questions of text (see appendix I).

3.8.1.2 Reliability

According to Khoiri (2018), reliability is a measurement of an instrument where if the results of the instrument have the same value when used at different times, the instrument has a high level of reliability. To see consistency in this research instrument, researchers will use the Cronbach alpha reliability test. According to Sujarweni (2014), an instrument is reliable if the Cronbach alpha value is more than 0.06.

1. Analysis of Pre-Test Data

Table 3. 5 Pre-Test Questions Reliability

Reliability Statistics	
Cronbach's Alpha	N of Items
.866	20

Based on Table 3.5, the results of Cronbach's Alpha on the number of item questions as many as 20, have a value of .866, which is reliable. The result is in line with the statement in the previous chapter: Sujarweni (2014) stated that an item is reliable if the Cronbach Alpha value is more than 0.6. In addition, table 3.6 shows each question item with a reliability value of more than 0.6.

Table 3. 6 Each Questions Reliability

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q01	16.47	7.982	.237	.876
Q02	16.20	8.786	.000	.869
Q03	16.30	7.528	.696	.850
Q04	16.33	7.195	.793	.845
Q05	16.37	7.344	.632	.853
Q06	16.27	8.064	.456	.860
Q07	16.33	7.747	.478	.860
Q08	16.23	7.978	.751	.854
Q09	16.23	8.806	-.049	.873
Q10	16.50	7.707	.333	.872
Q11	16.27	7.582	.816	.848
Q12	16.20	8.786	.000	.869
Q13	16.30	7.321	.831	.845
Q14	16.37	7.206	.706	.849
Q15	16.27	8.064	.456	.860
Q16	16.23	7.978	.751	.854
Q17	16.23	7.978	.751	.854
Q18	16.27	8.064	.456	.860
Q19	16.23	8.806	-.049	.873
Q20	17.20	8.786	.000	.869

2. Analysis of Post-Test Data

Table 3. 7 Post-Test Questions Reliability

Reliability Statistics	
Cronbach's Alpha	N of Items
.763	20

Based on table 3.7 the results of Cronbach's Alpha on the number of item questions as many as 20 have a value of .763 which has a reliable value. This is in line with what was explained in the previous chapter that according to Sujarweni (2014) stated that an item is declared reliable if the Cronbach alpha value is more than 0.6. In addition, table 3.8 showed each question item that has a reliability value of more than 0.6.

Table 3. 8 Each Questions Reliability

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q01	16.1667	8.420	.156	.763
Q02	16.1667	8.420	.156	.763
Q03	16.2000	7.614	.598	.736
Q04	16.2333	7.702	.465	.743
Q05	16.2000	7.683	.554	.738
Q06	16.1667	7.592	.756	.731
Q07	16.3000	7.390	.524	.736
Q08	16.2000	7.545	.642	.733
Q09	16.1333	8.878	-.182	.774

Q10	16.2000	7.545	.642	.733
Q11	16.2000	7.683	.554	.738
Q12	16.2667	8.754	-.082	.783
Q13	16.2667	8.271	.137	.767
Q14	16.3000	7.803	.328	.753
Q15	16.4000	7.834	.254	.761
Q16	16.2667	7.582	.474	.741
Q17	16.2333	8.047	.279	.756
Q18	16.4000	7.697	.309	.756
Q19	16.1333	8.395	.269	.758
Q20	16.4667	8.395	.028	.784

3.8.2 Pre-Test and Post-Test Analysis

3.8.2.1 Normality Test

A normality test aimed to determine whether this research's pre-test and post-test instrument data were normally distributed. The steps in using the Shapiro-wilk normality test are as follows.

- Looking at the two hypotheses with a significance level of 0.05.
 - H₀ : The results of the difference in pre-test and post-test values are normally distributed.
 - H₁ : The results of the difference in pre-test and post-test values are not normally distributed.
- Analyze the difference between the pre-test and post-test scores by means of the post-test scores minus the pre-test scores on IBM SPSS; so that a new variable will emerge, namely the result of the difference in the value of the two instruments. After that, these variables can be tested for normality using IBM SPSS.
- If the results show a significant value of less than 0.05 then the null hypothesis can be not rejected or the data is normally distributed (symmetric). If the significant value is more than 0.05, the normality of the data is not normally distributed (not symmetrical).

3.8.2.2 Paired Sample t-Test

In analyzing the pre-test and post-test data, the research used a paired sample t-test. The paired sample t-test is a type of test that is used on the same subject. However, it has a different treatment. This paired sample t-test is used to analyze whether the pre-test and post-test values have the same or different values. To analyze the data by paired sample t-test, this research will use IBM SPSS. The steps in analyzing the paired sample test.

1. Looking at the two hypotheses with a significance level of 0.025
 - H0 : There is a significance between the pre-test and post-test results on the use of the electronic book in improving students' reading comprehension.
 - H1 : There is no significance between the pre-test and post-test results on the use of the electronic book in improving students' reading comprehension.
2. Analysis using paired sample t-test with IBM SPSS.
3. If the results of the paired sample t-test between the pre-test and post-test have different and significant values, then the researcher continued the effectiveness test. However, if the results of the pre-test and post-test are different but not too significant, the researcher would not continue the effectiveness test.

3.8.2.3 Effectiveness Test

The effectiveness test in this research was used to determine if the results between the pre-test and post-test values had a significant value. Researchers continued to test the effectiveness by using N-Gain with the formula:

$$N\ Gain = \frac{Posttest\ score - Pretest\ score}{Ideal\ score - Pretest\ score}$$

The steps in analyzing the N-Gain score are as follows.

1. Make a new variable from the results of the post-test minus the pre-test and the ideal score minus the pre-test score. The ideal score in this research is worth 100. After that, the results of the N-Gain score can be found. The results of the N-Gain score are transferred in percent form.
2. The division of the N-Gain score is divided into three categories, namely high, medium and low categories.

Table 3. 9 N-Gain Score of The Effectiveness Test

N-Gain Value	Description
$g > 0.7$	High
$0.3 \leq g \leq 0.7$	Medium
$g < 0.3$	Low

(Hake, R. R., 1999)

3. After analyzing the N-gain score, the researcher conducted a descriptive analysis to see the frequency and percent of the N-gain score.
4. Then, to see the effectiveness, the N-gain percent is used using descriptive analysis. To categorize the effectiveness of N-Gain taken from Hake (1999).

Table 3. 10 Percentage N-Gain Score

N-Gain Effectivity Categories	
Percentage	Description
<40	Ineffective
40-55	Less effective
56-75	Quite effective
>76	effective

(Hake R. R., 1999)

3.8.3 The Questionnaire Analysis

The questionnaire analysis in this research was used by IBM SPSS with descriptive statistics - frequencies. The descriptive statistics – frequencies were used for each statement of 14 questionnaires. The result of each statement

3.8.4 The Interview Analysis

The researcher analyzed the results of the interview data in this research by transcribing each respondent into written form. The audio recording was translated from Indonesian to English. In addition, the researcher analyzed each category. This finding interprets the factors on students' experiences in using electronic books with the SQ3R technique as supporting data in this research.

3.9 Concluding Remarks

This chapter has discussed the research design by pre-experimental design which consist of research hypothesis, research population and sample, research variables, research tool, data collection procedures, and data analysis. The next chapter presents the research findings and research discussions.