CHAPTER III

RESEARCH METHOD

3.1 Research Design

The researcher employed a quantitative approach in this study to determine the impact of media pop-up cards on reading comprehension. Kowalcyzk (2016) defined quantitative research methods as techniques that rely on statistics to explain the findings. The researcher primarily gathers quantitative data for a quantitative investigation. Quantitative data that are expressed clearly and used in quantitative analyses to anticipate the outcome of research inquiries are required (Fahmeena Odetta Moore, 2016).

The researcher conducted quantitative research based on experimental research. The most effective quantitative method for determining probable cause and effect is experimental (Creswell, John W.2012). A quasi-experimental design was used with a total of two groups: an experiment group and a control group. The experimental group will receive treatment using pop-up cards, while the control group will receive no treatment and will only be taught using a textbook. Both groups will also be given pre-test and post-test. However, the pre-test and post-test materials were the same for both the experimental groups and the control group.

3.2 Research Population and Sample

3.2.1 Population

According to Creswell (2012) a population is a group of individuals who have the same characteristic. The population of this research was taken from the students of grade eighth of SMPN 13 Kota Serang which has eighth classes from 8A-8H. The total number of the eighth class was 314 students.

3.2.2 Sample

The sample is part of the number and characteristics of the population that have been analyzed. The sample is a subgroup of the target population that the authors plan to generalize to the target population (Creswell, 2012:141). Because the population is too large, the researcher must do sampling. The researcher used a random sampling technique.

The random sampling technique is one of the sampling techniques where all individuals in the population both individually and in groups are given the same opportunity to be selected as members of the data sample (Sohibun & Ade, 2017:122). The random sampling technique is the process of selecting several samples at random from a larger group (sampling population) which is the basis for predicting a sample taken.

Based on the random sampling, class VIII D was selected as the control group and class VIII C as the experimental group, each group consists of 30 students. The experimental group received treatment by using pop-up card, while the control group did not used pop-up card and taught using a textbook. However, the pre-test and post-test materials were the same for both the experimental groups and the control group.

3.3 Data Collection Technique

3.3.1 Pre-test

The researcher gave the pre-test about recount text to the students before being given treatment. This aims to determine the basic reading comprehension of students before being given treatment and also the average value of students. The test is carried out by giving multiple choice questions. Students answer the questions on the answer sheet. Then the researcher conducted an assessment based on their answers on the test. (Appendix 1)

3.3.2 Post-test

After treatment, a post-test was given to determine the results of students' reading comprehension after being taught using Pop-up card medium. The researcher drew conclusions based on the outcomes of the students' post-test by comparing their scores before and after treatment (Appendix 1).

3.4 Data Analysis Technique

3.4.1 Validity Test

Pearson Product Moment Correlation was used in this research and this applied the computer program on SPSS 26 version to know validity of the test which consist of 45 item multiple choice. The researcher gave the try-out of the test to students from the different sample. The way to determine whether an item is valid or not is by compare between r count and r table. Furthermore, to know the criteria of validity as follows:

If r count > r table : It indicate the items is valid

If r count < r table : it indicate the items is not valid

3.4.2 Reliability Test

The reliability of measuring instrument is a degree of consistency with which measures whatever it is measuring (Ary, et.al, 2009:236). In order to get reliability in this research, the researcher used Spearman Brown formula in SPSS 26 version program.

3.4.3 Normality Test

The normality was used to know whether the distribution of score each group in pre-test and post-test was normal or not. In this research, the researcher

used computation by using SPSS 26 version program. The test of normality employed are The Shapiro-Wilk formula. The test criteria is as follows:

If the value (p) > significant (α = 0.05) it means the data is normally distributed.

If the value (p) < significant (α = 0.05) it means the data is not normal.

3.4.4 Homogeneity Test

A homogeneity test used to know the similarity of the populations. To calculate the data, the researcher was used the SPSS Statistics version 26 with Levene Statistic. It is compared with the sig. value and p-value then specify whether the data homogeneous or not with the following criteria:

1. Significant level of = 0.05
2. If sig. value > 0.05 then the data homogeneous
3. If sig. value < 0.05 then the data is not homogeneous.

3.4.5 Hypothesis Test

The data was analyzed using thet_{test} by the researcher. It was used to compare the reading comprehension abilities of two groups of students. The first group consists of students who are taught using Pop-up Card media, while the second group consists of students who are not taught using Pop-up Card media.

The result was calculated by the researcher using the SPSS 26 version program. The following are the hypothesis testing criteria:

a. Ho is accepted if Sig. > α = 0.05

b. Ha is accepted if Sig. < α = 0.05

3.4.6 The Effect Size (r)

The effect size independent t test, according to Coolidge (2000:151), refers to how strongly the independent variable effects the dependent variable. The following formula was used by the researcher to calculate the value of effect size (r):

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

Where:

r : effect size

t^2 : t count from the calculation of t test

d.f : degree of freedom

To calculate the value of effect size (r), the researcher used these steps as follow:

1. Calculate the value if effect size (r) by using this formula:

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

2. Interpret the value of effect size (r) by seeing this scale:

Table 3 1 Effect Size

Effects Size	r count
Small	0.100
Medium	0.234
Large	0.371

(Coolidge, 2000:151)

3.5 Research Procedure

There are several procedures that researcher need to do in collecting data:

1. The researcher conducted preliminary research by observing.
2. Determine which classes the experimental and control groups belong to.
3. Created experimental and control group materials and testing.
4. Give the experimental group treatment by teaching reading comprehension with pop-up cards, whereas the control group is taught reading with textbooks.
5. Examine the reading comprehension post-test and pre-test findings.
6. Draw conclusions from the analysis results to answer research questions.
7. Created a report on the post-test and pre-test results.