CHAPTER III

RESEARCH METHODOLOGY

III.1. Research Design

The research was a mixed methods research design. Creswell and Clark (2011) stated a mixed methods research design is a procedure for collecting, analyzing, and "mixing" both quantitative and qualitative methods in a single study or a series of studies to understand a research problem. This design was chosen because it was appropriate to do in school context. Moreover, it was appropriate to the purpose of this study in which this research was conducted to find out the effect of using Cognitive Academic Language Learning Approach (CALLA) on students' speaking and writing skills.

To apply this research, in quantitative method, quasi-experimental design was used that two groups of samples were chosen, one group as an experimental class and one group as a control class. The pretest was given to the students in control class and experimental class before any treatment was given. The treatment was given to the experimental class, and then posttest was administered to both of the classes in order to determine the progress happened to both groups. Creswell (2008) stated the design as follows:

Table 3.1
Design of the Study

Class	Pretest	Treatment	Posttest
Experimental	X	X	X
Control	X	-	X

(Gay, 2012)

III.2. Time and Location of the Research

This research was conducted toward eighth grade students of SMP Muhammadiyah 2 Pekanbaru which was located in Pekanbaru on Jalan Teuku Bey, Marpoyan. It was carried out from July to September 2017.

III.3. Population and Sample of the Research

The population of this research was the eighth grade students of SMP Muhammadiyah 2 Pekanbaru. The total population was 119 students which are divided into 4 classes. The description can be seen in the table below.

Table III.2
Total number of the grade VIII SMP
Muhammadiyah 2 Pekanbaru

No.	Classes	Number of Students
1	VIII.Binsus A	17
2	VIII Binsus B	17
3	VIII. 1	20
4	VIII. 2	22
5	VIII. 3	21
6	VIII. 4	22
	Total	119

Based on the population in 2017, cluster random sampling was used to decide the samples that involved in this research. Gay (2012) stated that cluster random sampling randomly select groups, not individuals. In deciding which class became the experimental class and control class, lottery was used that is by writing the classes on small piece of papers then they were put in a small cup. After shaking it, two pieces of paper were taken. The first chosen paper acted as experimental class and the second one as control class. It was based on the school setting in doing observation.

Table III.3
The Total Sample of the Research

No	Sample	Number of Students		Total
		Male	Female	
1	VIII. Binsus A (Experimental Class)	13	4	17
2	VIII. Binsus B (Control Class)	5	12	17
Total of the Participants				34

III.4. Data Collection Technique

a. The Instruments

The instruments used to collect the data were divided into instruments for quantitative method and instruments for qualitative method. Speaking and writing pretest posttest were administered to the students as the instrument for obtaining quantitative data. In speaking test, students were asked to choose one of the provided animal pictures and describe the animal based on the guideline (What pet do you keep at home? How does it look like? How do you treat your pet?). Meanwhile, in writing test, students were also asked to choose one of the animal pictures and write a descriptive paragraph about it by following the descriptive text generic structure and general guideline (What pet do you keep at home? How does it look like? How do you treat your pet?).

According to Hughes (1967), in speaking and writing tests, the components to be measured are pronunciation, grammar, vocabulary, fluency, and comprehension. Meanwhile, the written test was administered to the students to examine their writing ability, which the components are

grammar, vocabulary, mechanics, fluency and form (organization). The instruments of qualitative method consisted of observation checklist, lesson plans and teacher journal. Observation checklist was used in order to monitor the teaching activity and to make sure teacher and students applied the CALLA in correct order. Lesson Plan was used to record the teaching and learning process meeting done by teacher and students in applying CALLA, and the teacher journal was used as the recording of important learning process situation changes and the improvement of students' motivation and interest in learning English.

b. **Pupils scoring conversion**

According to ministry education (UNICEF) 2017, students' scoring conversion is consisted by 8 levels as below:

Pupil scoring conversion		
1	90-above	Excellent
2	85-89	Very good
3	80-84	Good
4	75-79	Sufficient
5	65-74	Average
6	45-64	Fairly poor
7	20-44	Poor
8	Below 20	Very poor

III.5. The Validity and Reliability of the Instruments

a. **Validity**

Howit and Cramer (2005) stated that validity refers to whether a measure actually measures what it is supposed to measure. It means that the validity of the test is the extent to which inference made from assessment results was appropriate, meaningful, and useful in terms of the

purpose of the assessment. Moreover, Cohen et al (2007) stated that in a quantitative data validity must be improved through careful sampling, appropriate instrumentation, and appropriate statistical treatments of the data. It meant that an instrument is constructed appropriately as the purpose of measurement.

Test as the instrument to measure students' speaking and writing skills in descriptive text should be valid. As an instrument that measured the students' achievement, it must have content validity. The standard level of difficulty used is > 0.30 and < 0.70. It means that the test is accepted if the level of difficulty is between 0.30 and 0.70 and rejected if the level of difficulty is below 0.30 which means too difficult, and over 0.70 which means too easy. The validity of the test in this research was computed by using SPSS program 22.0.

b. **Reliability**

Reliability actually refers to a variety of concepts that have little in common at first sight. Reliability is really about *consistency* in response to slightly different measures of the same thing made at the same time (Howit & Cramer, 2005). This kind of accuracy is reflected in obtaining of similar results when measurement is repeated on different occasion or with different instrument or by different person. The standard reliability between 0.0 – 0.20 is low reliability, 0.21 – 0.40 is sufficient reliability, 0.41 – 0.70 is high reliability, and > 0.70 is very high reliability.

III.6. Data Analysis Technique

SPSS statistical analysis was used to analyze the data of students' pretest and posttest of experimental and control classes. The results of pretest and posttest were analyzed by using independent sample t-test and paired sample t-test. Julie (2010) stated that independent samples t-test is used for comparing the mean scores of two different groups of people or conditions. Independent sample t-test was used to determine the difference on students' writing pretest mean score between experimental and control groups and students' writing posttest mean score between experimental and control group. Paired sample t-test was used for comparing the mean score for the same group of people on two different occasions, or for matching pairs. Paired sample t-test was used to determine the differences of students' writing pretest and posttest in experimental and control group. In order to determine how strong the effect to the students' ability, the data were analyzed using eta square. The analysis of data used SPSS 20 version.

a. Independent sample t-test

To determine whether there was significant difference or there was no significant difference between two or more variables was analysed by using Independent Sample t_{test}. Gay (2000) added that the t-test for independent sample is used to determine whether there id probably a significant difference between the means of two independent samples. Independent sample t-test was used to find out the results of the first and second hypotheses. They are as follow:

1. To determine whether there is significant difference of students speaking skill by using CALLA for experimental class and non treatment for control class.

2. To determine whether there is a significant difference of students' writing skill by using CALLA for experimental class and non treatment for control class.

3. To analyze the final-test scores of experimental group and control group.

Moreover, the result of the analysis is Null Hypothesis (Ho) is accepted if sig. value $\geq \alpha$, and Alternative Hypothesis (Ha) is accepted if sig. value $< \alpha$, where $\alpha = 0.05$.

b. **Paired Sample t-Test**

Paired Sample t-Test is known as Non-independent sample t-test. Gay (2000) stated that t-test for non independent samples is used to compare groups that are formed by some types of matching or to compare a single group's performance on a pre-test and post-test or on two different treatments. In this time, the writer used to find out whether there was significant effect before and after using CALLA on students' speaking and writing skills. They are as follow:

1. To determine whether there is significant difference of students speaking and writing skills by using CALLA.

2. To find out whether there is a significant difference of speaking and writing skills after giving the treatment by using CALLA.

3. To analyze the final-test scores of experimental group and control group.

Moreover, the result of the analysis is Null Hypothesis (Ho) is accepted if sig. value ≥ α, and Alternative Hypothesis (Ha) is accepted if sig. value < α, where α = 0.05.

Afterward, it was better to find the coefficient effect of T-test by following formula:

$$r^2 = \frac{t^2}{t^2 + n - 1}$$

$kp = r^2 \ x \ 100\%$

Where:

Kp   :   Coefficient effect

r^2 :   Coefficient

Afterward, it was better to find the effect size of T-test by following formula:

$$\tilde{\eta}^2 = \frac{t^2}{t^2 + n - 1}$$

$eta \ squared = \tilde{\eta}^2 \ x \ 100\%$

Where:

eta squared   :   Coefficient effect

$\tilde{\eta}^2$:   Coefficient