

CHAPTER III

RESEARCH METHODOLOGY

A. Research Design

The type of research design was Quasi-Experimental research that was aimed to test an idea (or practice or procedure) to determine whether it was influence an outcome or dependent variable.¹⁶

In addition, an experiment was the quantitative approach that provides the greatest degree of control over the research procedures.¹⁷ In this research, the writer used quasi-experimental design with nonequivalent control group which was an appropriate one to this research in order to find out the significant effect of using the Cognitive Academic Language Learning Approach (CALLA) Toward the Students' English Achievement at the first grade of SMPN 17 Pekanbaru.

In this research, the writer used two classes; one class was an experimental group which was treated by CALLA and another one was as a control group was taught by using non CALLA. For both experimental and control groups, pre-test and post-test were administered to the students. Pre-test was given at the beginning of the teaching learning in order to identify the students' English mastery. Then, the experimental group was given a treatment by using CALLA strategy and the control group using non CALLA.

¹⁶Jhon.w.cresswell. 2008 *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research* . (New Jersey: Pearson Education) p.299

¹⁷L.R Gay. 2000. *Educational Research Competencies for Analysis and Application*. Six Ed. (New Jersey: Prentice-Hall).p.15

During the treatment, the writer was accompanied by an observer, and at last, both groups were given post-test at the end of the teaching learning processes in order to determine the effect of using CALLA strategy toward students' English achievement. The model of the research design is illustrated as follows:¹⁸

TABLE III.I

The Research Design

Group	Pre-test	Treatment	Post-test
Experimental group	Test 1	X	Test 2
Control Group	Test 1	–	Test 2

B. The Location and the Time of the Research

The research was conducted at the first grade students of SMPN 17 PEKANBARU, located on Pembangunan street PEKANBARU, and it was conducted for six meetings within two months (March and April 2013).

¹⁸ John W. Creswell, *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research Ed 3rd*, (Lincoln: Pearson Education International, 2008),

C. The Subject and Object of the Research

Based on the title of the research, the subject of the research was the first grade students of SMPN 17 PEKANBARU, Riau Province. The object of this research was the effect of using CALLA strategy toward students English achievement.

D. The Population and the Sample of the Research

The population of this research was the first grade of students SMPN 17 Pekanbaru in the academic year 2012/2013. It consisted of seven classes and the number of students of each class was 40 students. The total numbers of the first grade students of SMPN 17 Pekanbaru were 280 students.

Table III.2

**The total population of the first grade students of
SMPN 17 Pekanbaru**

No	Class	Number of Students
1	VII 1	40
2	VII 2	40
3	VII 3	40
4	VII 4	40
5	VII 5	40
6	VII 6	40

7	VII 7	40
Total		280

The population above is large to be taken as a sample of the research. Based on the limitation of the research, the researcher took only two classes after using cluster sampling technique. The following table was the sample of the research which consisted of 40 students of VII 5 as experimental group, and 40 students of VII 6 for control group.

Table III.3

The Total Sample of the Research

No	Class	Male	Female	Total Number of Student
1	VII 5	26	14	40
2	VII 6	24	16	40
	Total	50	30	80

E. The Technique of Data Collection

In order to get the data to support this study, the researcher used the technique as follows :

1. Test

To find out the effect of using Cognitive Academic Language Learning Approach toward the students' English achievement at the first grade of

SMPN 17 Pekanbaru, the researcher administered the test to assess students' English achievement. The test was done into two stages. The first was pretest done before doing the treatment. The second was posttest done after doing the treatment. The researcher took the total score from the result of the students' English achievement test. The classification of the students' score is shown below.¹⁹

Table III.4

The Classification of Students' Score

Score	Categories
80 – 100	Very good
66 – 79	Good
56 – 65	Sufficient
40 – 55	Less
30 – 39	Fail

F. Validity and Reliability of Instrument Test

1. Validity

According to Brown²⁰, a test is method of a measuring a person's ability, knowledge, or performance in a given domain. According to Gronlund (in Brown), Validity is the extent to which inferences made

¹⁹Suharsimi Arikunto. *Dasar-Dasar Evaluasi Pendidikan*. (Jakarta: Bumi Aksara. 2009). p. 245

²⁰H. Douglas Brown, *Op.Cit*, p.26

from assessment result are appropriate, meaningful, and useful in terms on the purpose of the assessment. According to Hughes²¹, a test is said to be valid if it measures accurately what it is intended to measure. Based on some expert above, the writer concludes that a test can be said valid if it is really measured person's ability appropriately. Furthermore, Gay states that there are three kinds of validity. They are content validity, criterion-related validity, and construct validity²².

In this research, the writer used content validity. Content validity is if a test actually samples the subject matter about which conclusions are to be drawn, and if it requires the test taker to perform the behavior that is being measured²³. Finally, the writer determined the validity by referring to the material that was given to the students based on the students' text book. In other words, the test given to the students was based on the material that they had learned.

2. Reliability

Reliability is the measuring of test that is consistent and dependable²⁴. It means the test should consistently measure the person's ability. Furthermore, Brown states that there two scoring process in reliability. They are inter-rater reliability and intra-rater reliability. Inter-rater reliability occurs when two or more scores yield inconsistent scores

²¹ Arthur Hughes, *Op. Cit.*, p.26

²² L. R. Gay and Peter Airasian, *Educational Research Competencies for Analysis and Application Sixth Edition* (New Jersey: Pearson Education, 2000), pp. 163-167.

²³ H. Douglas Brown, *Op. Cit.*, p. 22.

²⁴ *Ibid.*, p.20

of the sae test. Intra-rater reliability is a common occurrences for classroom teachers because of the nuclear scoring criteria, bias toward particular ‘good’ and ‘bad’ students, or simple carelessness.

In this research, the writer used inter-rater reliability. It means that the scores of the test is evaluated more than one person. The students’ English Achievement are evaluated by two raters.

G. The Research Procedure

1. Procedures of collecting data for experimental group

Three procedures were administered to collect the data.

a. Pre-test

Pre-test was given to the student before conducting of the teaching and learning process using CALLA strategy. It was used to measure the student English mastery of four language skills: listening, speaking, reading and writing as well as English language component.

b. Treatment

In the treatment, the students were taught by using the Cognitive Academic Language Learning Approach (CALLA) strategy. Teacher taught and explained the English lesson integratedly of four language skills and language components by using the procedure of CALLA strategy with the procedure: pre activities, whilst activities and post activities as they were stated at Chapter II.

c. Post-test

Post-test was conducted to the students of the experimental group after applying the treatment by using CALLA strategy. The result of the post-test was compared with the pre-test result in order to determine the effect of the CALLA strategy toward the student English Achievement after conducting 8 meetings of the CALLA strategy.

2. Procedures of collecting data for control group

a. Pre-test.

Pre-test was administered to the student of the control group before they were taught by using conventional strategy. The pre-test given to the students of the control group was similar to those of experimental group.

b. Teaching by using non CALLA

The students were taught in teaching and learning process of four language skills and language component by using conventional strategy with the same topics and materials given to the experimental group.

c. Post-test

Post-test was administered to the student of the control group after being taught for eight meetings by using conventional strategy. The result of the post-test was compared with the pre-test result in order to compare their English achievement of four language skills and language component.

H. The Technique of Collecting Data

The technique of collecting data was administered by using; pre-test and post-test to the students. In teaching and learning process, they were taught based on the KTSP curriculum. If the students are able to achieve to goal, this means that assessment of student ability needs to be correlated with purposes of achievement. According to Hughes, there are many techniques that can be assessed to the students' English achievement but in this cases, the writer used multiple choices test. Multiple choices technique is a technique that is designed by using four options of choice and the respondece only choose one correct answer based on the question. In this research, the writer provided thirty questions for the respondent. They were based on the indicators of the Student English achievement in operational concept. There were six indicators of four language skills (listening, speaking, reading and writing) and language components (grammar and vocabulary) for English achievement, and each indicator was provided by five questions.

I. The technique of Data Analysis

In order to analyze the students' English achievement, the writer used minimum standard score of English subject in SMPN 17 Pekanbaru that is 65. It means, for those who obtain the English score < 65 , meaning that they do not pass the minimum standard score, while for those who obtain score ≥ 65 , they pass minimum graduated score.

In analyzing the data, the researcher used scores of pre-test and post-test of experimental and control groups. This score was analyzed statistically. Both descriptive and inferential statistic. In this research, the researcher used these formulas:

1. Independent sample t-test

To find out whether there is significant difference or there is no significant difference between two or more variables can be analysed by using Independent Sample t_{test} .²⁵Gay added that the t-test for independent sample is used to determine whether there is probably a significant difference between the means of two independent samples.²⁶Independent sample t-test was used to find out the results of the first and second hypoyheses. They were as follow:

- a) To find out whether there was significant difference of students English achievement before giving the treatment by using Cognitive Academic Language Learning Approach (CALLA) for experimental class and non treatment for control class.
- b) To find out whether there was significant difference of students English achievement after giving the treatment by using Cognitive Academic Language Learning Approach (CALLA) for experimental class and non treatment for control class.

²⁵Hartono, *Statistik Untuk Penelitian* (Pekanbaru: Pustaka Pelajar, 2010), p.177-9

²⁶L.R Gay, *Op.cit*, p. 484.

In this research, the writer analyzed by using SPSS 16.

The formula was as follows:

$$t_o = \frac{M_x - M_y}{\sqrt{\left(\frac{SD_x}{\sqrt{N-1}}\right)^2 + \left(\frac{SD_y}{\sqrt{N-1}}\right)^2}}$$

Where:

t_0 = Table Observation

SD = Standard Deviation

M_x = Mean of variable x and

M_y = Mean of variable y

SD_x = Standard deviation of experimental group

SD_y = Standard deviation of control group

N = The Number of respondent

The t-table has the function to see if there is a significant difference among the mean of the score of both experimental and control group. The t-obtained value is consulted with the value of t-table at the degree of freedom (df) = (N1+N2)-2 which is statistically hypothesis:

Ha: $t_o > t\text{-table}$

Ho: $t_o < t\text{-table}$

Ha is accepted if $t_o > t\text{-table}$ or there is effect after giving the treatment Cognitive Academic Language Learning Approach (CALLA) toward students' English achievement.

H_0 is accepted if $t_o < t\text{-table}$ or there is no effect after giving the treatment Cognitive Academic Language Learning Approach toward students' English achievement.

2. Paired sample t-test or Non-independent Sample t- t_{test}

Non-independent sample t- t_{test} is known also as Paired-Sample t_{test} . The researcher used this formula to obtain the result of the third hypothesis that was to find out whether there was significant effect of using Cognitive Academic Language Learning Approach (CALLA) toward Students' English Achievement at the first grade students of SMP Negeri 17 Pekanbaru. L.R Gay states that t test for non independent samples is used to compare groups that are formed by some type of matching or to compare a single group's performance on a pre- and posttest or on two different treatments²⁷.

In this time, the writer used pre-test and post-test score of the experimental class in order to find the significant effect of using Cognitive Academic Language Learning Approach (CALLA) toward Students English Achievement at the first grade students of SMP Negeri 17 Pekanbaru. To obtain the data, the writer used SPSS 16. The formula of paired-sample t_{test} :

²⁷L.R Gay, Op.cit, p. 488.

$$t = \frac{\bar{D}}{\frac{\sum D^2 - \frac{(\sum D)^2}{N}}{N(N-1)}}$$

D : Gain Score ($D=X_2-X_1$)

The t-table has the function to see if there is a significant difference among the mean of the score of both pretest and posttest. The t-obtained value is consulted with the value of t-table at the degree of freedom (df) = $N-1$ which is statistically hypothesis:

Ha: $t_o > t\text{-table}$

Ho: $t_o < t\text{-table}$

Ha is accepted if $t_o > t\text{-table}$ or there is significant effect after giving the treatment Cognitive Academic Language Learning Approach (CALLA) toward Students English Achievement.

Ho is accepted if $t_o < t\text{-table}$ or there is no significant effect after giving treatment Cognitive Academic Language Learning Approach (CALLA) toward Students English Achievement.

Afterward, it is better to find the coefficient effect of T-test by following formula²⁸:

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

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

Where:

kp : Coefficient effect

r² : Coefficient

²⁸Ridwan, *Rumus dan Data Dalam Analisa Statistika*. (Bandung: Alfabeta, 2008), p.125