CHAPTER III

PRESENTATION AND ANALYSIS OF THE DATA

The writer divides this chapter into two sub chapters. The first sub chapter is presentation and analysis of quantitative data. The writer describes the data from pre-test and post-test scores of both groups: the experimental group and the control group, and also the writer describes the quantitative analysis of pre-test and post-test scores by using t-test.

3.1 Presentation and Analysis of Quantitative Data

3.1.1 Data Presentation of Pre-Test and Post-Test Scores

Before doing the treatment, the writer conducted a pre-test that was given to both groups. The pre-test was answering questions (there are 25 questions). The data of this analysis are presented into six tables. The first table describes the pre-test scores of both groups. Then, in the second table we can see the differences of the post-test scores from both groups, the experimental group and the control one. The third table is the increased scores of the experimental group. The fourth table is the increased scores of the control group. And the fifth table is the value of d and d^2.

The table below is a reference of the pre-test scores of experimental and control group. In this case there are four columns. The number of the respondents is 30 students. They are divided into 2 groups; the experimental group and the control one.

Table 1

Pre-Test Score of The Experimental and The Control Group

Experimental Group		Control Group	
Respondent	Score	Respondent	Score
1	35	1	45
2	20	2	30
3	50	3	55
4	30	4	35
5	45	5	25
6	30	6	30
7	35	7	30
8	60	8	40
9	35	9	35
10	40	10	50
11	40	11	30
12	35	12	40
13	50	13	20
14	30	14	40
15	40	15	45
Σ	575	Σ	550
Mean	38.33		36.66

From the table we can see that the total pre-test score of the experimental group is 575, while the control group is 550. It means, the pre-test score of the experimental group is higher than the pre-test score of the control group. Whereas the mean of the first group is 38.33, while the mean of the second group is 36.66.

It means that the mean of the experimental group is also higher than the mean of the control group.

After both groups were given pre-test, the experimental group and the control group were given treatment. Treatment refers to anything done to both groups in order to measure its effect. In conducting the treatment, the writer used some different ways to teach *nouns* to the students. For the experimental group, the respondents were provided with fifteen sets of computer along with the software for each participant, while the control group was not. The experimental group and the control group were both assisted by the writer. In the experimental group, the writer was only there to introduce the software and how to deal with it, and the learning process would be then taken place by the interaction between the students and the computer, though some translations were still delivered to the students since the explanations in the CD-ROM are all in English. While in the control group, the writer did the traditional way in explaining the Nouns, by using oral communication and whiteboard. The oral communication was done both in English and Bahasa Indonesia.

After giving the treatment, the writer gave post-test to both groups. The post-test was given in order to know the progress made by the students after they had been given the treatment. The post-test was the same as the pre-test. It consisted 25 questions.

The result of the post-test is shown in Table 2, which is a reference of the post-test scores of the experimental and the control group. Here, there are also four columns that are divided into the number of the respondents of the

experimental group, the score of the experimental group, the number of the respondents of the control group, and the score of the control group. The writer also includes the *mean* for both groups to make the comparison with the first table (pre-test score).

Table 2

Post-Test Score of The Experimental and The Control Group

Experimental Group		Control Group	
Respondent	Score	Respondent	Score
1	75	1	70
2	60	2	65
3	85	3	80
4	75	4	60
5	85	5	50
6	80	6	70
7	70	7	55
8	90	8	65
9	75	9	70
10	85	10	85
11	80	11	55
12	65	12	65
13	90	13	45
14	65	14	70
15	80	15	70
Σ	1160		975
Mean	77.33		65

From the table above, we can see that the post-test total score of the experimental group is 1160, and the post-test total score of the control group is 975. From the data, we can say that the post-test score of the experimental group is higher than that of the control group. Moreover, it can also be seen that there is significant difference from the mean score of the experimental group and that of the control group. The mean score for the first group is 77.33, and the mean score for the second group is 65.

3.1.2 Quantitative Analysis

In the quantitative analysis, the writer uses t-test analysis. It is based on the problem which is comparative which describes the characteristic difference between two or more variables (Riduwan, 1997:165). This t-test analysis is used to verify whether there is a significant influence of the using of Computer Assisted Instruction (CAI) towards children's noun achievement or not.

There are four assumptions that have to be met before using t-test. First is that the measurement is made on interval scale. Interval scale is a scale that shows the interval between one data with the others which have the same size. The interval scale for this study is the scores reached by both groups – the experimental group and the control one.

The second assumption is about the population. In this study, the population or the respondents are chosen based on the purposive sampling method. Purposive sampling is used since the writer has certain purpose. Since the writer wants to know the effect of teaching nouns by means of Computer Assisted

Instruction on the children's structure achievement, then he chose randomly thirty students from SCS English and Computer Course to be divided into two groups – the experimental group and the control one.

The third assumption is that the standard deviation for both groups should approximately equal. From the formula $Sd = \sqrt{\frac{\sum X^2 - \frac{(\sum X)^2}{n}}{n-1}}$, it is then calculated and the result is that the standard deviation for group I (Experimental Group) is 9.94, and the standard deviation for group II (Control Group) is 9.57. So, the standard deviations for both groups are approximately equal.

The fourth assumption is that the population from which samples have been drawn is normally distributed. This is calculated faster by using a computer.

After meeting all assumptions, the next step is to verify the tenability of the hypotheses. The writer calculated the data of the pre-test and the post-test of both groups by using t-test. First, based on the result of the pre-test and the post-test of both groups, the writer calculated the increased score obtained from these two groups, one of which was taught Nouns through Computer Assisted Instruction, and the other was taught without using Computer Assisted Instruction method. The result is presented in the following table (Table 3 and Table 4).

Table 3 shows the increased score of the experimental group that consists of 15 respondents. The table is divided into four columns: the number of the respondents, the pre-test score, the post-test score, and the increased score. It also includes the total score of all respondents.

Table 3

The Increased Scores of The Experimental Group

Respondent	Pre-Test	Post-Test	Increased Score
1	35	75	40
2	20	60	40
3	50	85	35
4	30	75	45
5	45	85	40
6	30	80	50
7	35	70	35
8	60	90	30
9	35	75	40
10	40	85	45
11	40	80	40
12	35	65	30
13	50	90	40
14	30	65	35
15	40	80	40
			Σ 585

Table 4 shows the increased score of the control group. The table is also divided into four columns: the number of the respondents, the pre-test score, the post-test score, and the increased score of the control group. It also includes the total score of all respondents.

Table 4

The Increased Scores of The Control Group

Respondent	Pre-Test	Post-Test	Increased Score
1	45	70	25
2	30	65	35
3	55	80	25
4	35	60	25
5	25	50	25
6	30	70	40
7	30	55	25
8	40	65	25
9	35	70	35
10	50	85	35
11	30	55	25
12	40	65	25
13	20	45	25
14	40	70	25
15	45	70	30
			Σ 425

From the two tables shown above, we can see that the experimental group who was taught nouns by using Computer Assisted Instruction obtained higher increased score than that who was taught nouns without using Computer Assisted Instruction. The experimental group obtained significant progress with the highest score that reaches 50 and many of them have increased scores more than 30. While the highest increased score of the control group only reaches 40, and the lowest one is 25.

To make the result of the research more valid, the writer uses the t-test formula, which is:

$$t = \frac{d}{Sd\sqrt{n}}$$

Notes:

t = the value of t or t-test score

d = deviation average

Sd = standard deviation or variance

n = the total number of the respondents

Since the deviation average and the standard deviation are not yet known, the writer will first calculate the deviation average by using the following formula:

$$d = \frac{\sum d}{n}$$

Notes:

$\sum d$ = the total sum of d

n = the total number of the respondents

Next, the writer will calculate the value of the standard deviation by using formula as follows:

$$Sd = \sqrt{\frac{\sum d^2}{n-1}}$$

Since there is no value of d and Sd, the writer will calculate them first. To be noticed, *d* is obtained from the subtraction of the increased score from the experimental group and the control group. The result is shown in the following table:

Table 5

The Value of d and d^2

Respondent	Experimental Group	Control Group	d	d^2
1	40	25	15	225
2	40	35	5	25
3	35	25	10	100
4	45	25	20	400
5	40	25	15	225
6	50	40	10	100
7	35	25	10	100
8	30	25	5	25
9	40	35	5	25
10	45	35	10	100
11	40	25	15	225
12	30	25	5	25
13	40	25	15	225
14	35	25	10	100
15	40	30	10	100
	Σ 585	Σ 425	Σ 160	Σ 2000

After obtaining the total value of d and d^2, then the writer calculates the value of d :

$$d = \frac{\sum d}{n}$$

$$d = \frac{160}{15}$$

$$d = 10.7$$

After obtaining the value of *d*, the writer then calculates the standard deviation, with formula as follows:

$$Sd = \sqrt{\frac{\sum d^2}{n-1}}$$

$$Sd = \sqrt{\frac{2000}{14}}$$

$$Sd = 11.95$$

Then, after obtaining the value of *d* and *Sd*, the writer calculates the t-test scores:

$$t = \frac{d}{Sd / \sqrt{n}}$$

$$t = \frac{10.7}{11.95 / \sqrt{15}}$$

$$t = \frac{10.7}{3.08}$$

$$t = 3.47$$

Here, we have already got the t-value. In order to know the accepted hypothesis, the writer compares the t-value with the t-table distribution. To obtain the value in the t-table, the writer takes the level of significance 95% since the writer cannot guarantee that this study is 100% correct. This means that the level of significance that is denoted by the Greek letter d = 100% - 95% = 5%, or in other words, the writer states the significance level to be 0.05.

Then, the writer calculates the degree of freedom by using the formula:

$$df = n - 1$$

$$= 15 - 1$$

$$= 14$$

From the critical table the writer gets:

$$t-table = t_{n-1};\frac{\alpha}{2}$$

$$= t_{14};\frac{0.05}{2}$$

$$= t_{14};0.025$$

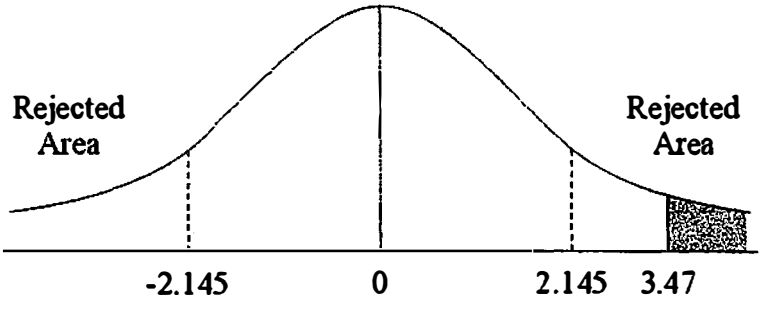
$$= 2.145$$

In obtaining the accepted hypothesis, the writer draws a diagram of sample space. Hays (1994:191) states that sample space is the set of possible values of the sample statistic. It is divided into two parts, and they are called the acceptance region and the rejection region. Hereafter, the result of t-test is presented in the following diagram:

Figure 1

The Diagram of Acceptance and Rejection Area

Diagram



Note: Ho is rejected here because t-value is in the rejected area

The diagram above shows that the t-value, which is 3.47, does not lie between the negative value (-2.145) and the positive value (2.145). It means that the t-value is outside the accepted region. In other words, statistically null hypothesis (Ho) is rejected and the alternative hypothesis (Hi) is accepted. Thus, this study shows that there is significance difference in teaching English Nouns by using Computer Assisted Instruction to children's structure achievement.

The t-test is used to determine whether two means are significantly different at selected probability level. The strategy of the t-test is to compare some difference between the means of the pre-test and that of the post-test with the number of the students. Gay states that the t-test involves forming the ratio of these two values (the pre-test and post-test value). This means the numerator for the t-test is the sum of difference between the means that has been divided by the number of samples ($d = \frac{\sum d}{n}$). And the denominator is the chance difference which would be expected if the null hypothesis were true the standard error of difference between two means (Gay, 1987:390). From the statement mentioned above, the writer can elaborate the formula as follows:

$$t = \frac{d}{Sd / \sqrt{n}}$$

$$d = \frac{\sum d}{n}$$

The t-ratio determines whether the observed different (d) is sufficiently larger than the difference which would be expected by chance (Sd), after the numerator is divided by the denominator. The resulting t-value is compared to the

appropriate t-table value (depending upon the probability level and the degrees of freedom). The formula for degrees of freedom for the t-test for dependent samples is n-1 (the number of students minus 1). In this study, because the t-value 3.47 is greater than the t-table value (2.145), the null hypothesis (Ho) is rejected. If the Ho is rejected, Hi (the alternative hypothesis) is automatically accepted. This means that there is a significance difference in teaching English Nouns by using computer to children's structure achievement.

CHAPTER IV

CONCLUSION