CHAPTER IV
RESEARCH FINDING AND DISCUSSION

Having gained the whole needed data, the analysis which refers to the statistical data analysis was done to find out whether or not there is a difference of students' achievement on speaking descriptive text between students that was taught by "Who is in the Class Strategy" and those that was taught by without using "Who is in the Class Strategy". The gathered data was analyzed by employing statistical tool of t-test formula to respond to the objective of the study.

Before testing the hypothesis that is to compare the difference of students' academic achievement, pre-requisite test was done first, they are normality and homogeneity test. First analysis focuses on the result of pre-test. Second analysis represents the result of post-test that was done both in experimental and control class.

A. First Analysis

Before the sample is determined, a homogeneity test should be conducted by choosing two classes with cluster random sampling. Before testing the hypothesis that is to compare the difference of students' academic achievement using t-test formula, there is a pre-requisite test to know the legality of the sample. Here, the normality and homogeneity test are employed.

1. Normality Test.

   It is used to know the normality of the data that is going to be analyzed whether both groups have normal distribution or not. Calculation result of x^2 is compared with x^2_{table} by 5% degree of significance. If x^2 is lower than $x^2_{table,}$ the distribution list is normal. The normality test uses formula $X^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$ where *i* show the sequence classification.

   Based on the previous score of X A students, they reached the maximum score 78 and minimum score 63. The stretches of score were 15. So, there were 6 classes with length of classes 3. From the computation of

frequency distribution, it was found ($\sum f_i x_i$) = 1654, and ($\sum f_i x_i^2$) = 114280. So, the average score ($\bar{x}$) was 68.92 and the standard deviation (S) was 3.56. After counting the average score and standard deviation, table of observation frequency was needed to measure Chi-square (x^2).

Table 1. Normality test of previous score of X A

Class Interval	Limit class	Z for the limit class	Opportunities for Z	Size classes for Z	Ei	Oi	$\frac{(Oi-Ei)^2}{Ei}$
63.00 - 65.00	62.50	-1.80	0.4642	0.1329	3.1899	3	0.011
66.00 - 68.00	65.50	-0.96	0.3313	0.2847	6.8329	9	0.687
69.00 - 71.00	68.50	-0.12	0.0466	0.3124	7.4977	6	0.299
72.00 - 74.00	71.50	0.73	0.2658	0.1756	4.2156	4	0.011
75.00 - 77.00	74.50	1.57	0.4415	0.0505	1.2125	1	0.037
78.00 - 80.00	77.50	2.41	0.4920	0.0074	0.1779	1	3.800
	80.50	3.25	0.4994				
					χ^2	=	4.8463

Ei : expected frequency
Oi : observation frequency

Based on the Chi-square table (x^2_{table}) for 5% alpha of significance with dk 6 – 3 = 3, it was found x^2_{table} = 7.81. Because of $x^2 < x^2_{table}$, the initial data of X A class was distributed normally.

While from the previous score of X B students were found that the maximum score 78 and minimum score 62. The stretches of score were 16. So, there were 6 classes with length of classes 3. From the computation of frequency distribution, it was found ($\sum f_i x_i$) = 1632, and ($\sum f_i x_i^2$) = 111276. So, the average score ($\bar{x}$) was 68.00 and the standard deviation (S) was 3.61. After counting the average score and standard deviation, table of observation frequency was needed to measure Chi-square (x^2).

Table 2. Normality test of previous score of X B

Class Interval	Limit class	Z for the limit class	Opportunities for Z	Size classes for Z	Ei	Oi	$\frac{(Oi-Ei)^2}{Ei}$
62.00 - 64.00	61.50	-1.80	0.4641	0.1303	3.1271	3	0.005
65.00 - 67.00	64.50	-0.97	0.3338	0.2787	6.6888	8	0.257

68.00 - 70.00	67.50	-0.14	0.0551	0.3107	7.4557	8	0.040
71.00 - 73.00	70.50	0.69	0.2556	0.1805	4.3321	3	0.410
74.00 - 76.00	73.50	1.52	0.4361	0.0546	1.3103	1	0.073
77.00 - 79.00	76.50	2.35	0.4907	0.0086	0.2057	1	3.067
	79.50	3.18	0.4993				
					χ^2	=	3.8516

Based on the Chi-square table (x^2_{table}) for 5% alpha of significance with dk 6 – 3 = 3, it was found x^2_{table} = 7.81. Because of $x^2 < x^2_{table}$, the initial data of X B class was distributed normally.

2. Homogeneity Test.

It is used to know whether experimental group and control group, that are decided, come from population that has relatively same variant or not. If calculation result of F is lower than F_{table} by 5% degree of significance, Ho is accepted. It means both groups have same variant.

Table 3. Homogeneity test of previous score

Variance Sources	X A (Experimental)	X B (Control)
Sum	1654	1632
n	24	24
$\overline{x}$	68.92	68.00
Variance (s^2)	12.6884	13.0435
Standart deviation (s)	3.56	3.61

By knowing the mean and the variance, the similarity of the two variants from the previous score between X A and X B class was able to test. The computation of the test of homogeneity as follows:

$$F = \frac{Vb}{Vk}$$

$$= \frac{13.04}{12.69} = 1.0280$$

On α= 5% with df numerator (nb - 1) = 24 - 1 = 23 and df denominator (nk - 1) = 24 - 1 = 23, it was found F_{table} = 2.31. Because of $F < F_{table}$, it could be concluded that both X A and X B class had no differences. The result showed both groups had similar variants (homogeneous).

B. Second Analysis

This analysis will answer the research question "How is the effectiveness of active learning through "Who is in the Class Strategy" for teaching speaking descriptive text?". We can conclude "Who is in the Class Strategy" is effective when the result of post test of the experimental group (using "Who is in the Class Strategy") and control group (without using "Who is in the Class Strategy") has significant differences.

Before the hypothesis was tested, the hypothesis pre-requisites which contained of normality test and homogeneity test was analyzed. Second analysis dealt with normality test, homogeneity test, and t-test (test of difference two variants) in pre-test and post-test.

1. The Data Analysis of Pre-test

   a. Normality Test of Pre-test of the Experimental Group

      The research result shows that X A students in the experimental group before they were taught speaking descriptive text using "Who is in the Class Strategy" could reach the maximum score 60 and minimum score 35. The stretches of score were 25. So, there were 6 classes with length of classes 5. From the computation of frequency distribution, it was found ($\sum f_i x_i$) = 1235, and ($\sum f_i x_i^2$) = 64675. So, the average score ($\overline{x}$) was 51.5 and the standard deviation (S) was 7.0. After counting the average score and standard deviation, table of observation frequency was needed to measure Chi-square (x^2).

Table 4. Normality test of pre-test of the experimental group

Class Interval	Limit class	Z for the limit class	Opportunities for Z	Size classes for Z	Ei	Oi	$\frac{(Oi-Ei)^2}{Ei}$
35.00 - 39.00	34.50	-2.43	0.4924	0.0359	0.863	1	0.022
40.00 - 44.00	39.50	-1.71	0.4564	0.1162	2.789	2	0.223
45.00 - 49.00	44.50	-1.00	0.3402	0.2299	5.518	3	1.149
50.00 - 54.00	49.50	-0.28	0.1103	0.2786	6.686	6	0.070
55.00 - 59.00	54.50	0.44	0.1683	0.2067	4.962	7	0.837
60.00 - 64.00	59.50	1.15	0.3750	0.0939	2.255	5	3.342
	64.50	1.87	0.4690			24	
					χ^2	=	5.644

Based on the Chi-square table (x^2_{table}) for 5% alpha of significance with dk 6 – 3 = 3, it was found x^2_{table} = 7.81. Because of $x^2 < x^2_{table}$, the initial data of experimental group was distributed normally.

b. Normality Test of Pre-test of the Control Group

The research result shows that X B students in the control group before they were taught speaking descriptive text without using "Who is in the Class Strategy" could reach the maximum score 60 and minimum score 35. The stretches of score were 25. So, there were 6 classes with length of classes 5. From the computation of frequency distribution, it was found ($\sum f_i x_i$) = 1210, and ($\sum f_i x_i^2$) = 62250. So, the average score ($\bar{x}$) was 50.4 and the standard deviation (S) was 7.4. After counting the average score and standard deviation, table of observation frequency was needed to measure Chi-square (x^2).

Table 5. Normality test of pre-test of the control group

Class Interval	Limit class	Z for the limit class	Opportunities for Z	Size classes for Z	Ei	Oi	$\frac{(Oi-Ei)^2}{Ei}$
35.00 - 39.00	34.50	-2.16	0.4847	0.0537	1.289	1	0.065
40.00 - 44.00	39.50	-1.48	0.4310	0.1417	3.401	3	0.047
45.00 - 49.00	44.50	-0.80	0.2893	0.2397	5.753	4	0.534
50.00 - 54.00	49.50	-0.12	0.0496	0.2600	6.241	6	0.009
55.00 - 59.00	54.50	0.55	0.2105	0.1809	4.343	5	0.100
60.00 - 64.00	59.50	1.23	0.3914	0.0807	1.937	5	4.841
	64.50	1.91	0.4722			24	
					χ^2	=	5.596

Based on the Chi-square table (x^2_{table}) for 5% alpha of significance with dk 6 – 3 = 3, it was found x^2_{table} = 7.81. Because of $x^2 < x^2_{table}$, the initial data of control group was distributed normally.

c. Homogeneity Test of Pre-test

Table 6. Homogeneity test of pre-test

Variance Sources	Experimental (X A)	Control (X B)
Sum	1235	1210
n	24	24

$\overline{x}$	51.46	50.42
Variance (s^2)	48.8678	54.1667
Standart deviation (s)	6.99	7.36

By knowing the mean and the variance, the similarity of the two variants in the pre-test between experimental and control group was able to test. The computation of the test of homogeneity as follows:

$$F = \frac{Vb}{Vk}$$

$$= \frac{54.17}{48.87} = 1.1084$$

On α= 5% with df numerator (nb - 1) = 24 - 1 = 23 and df denominator (nk - 1) = 24 - 1 = 23, it was found F_{table} = 2.31. Because of $F < F_{table}$, it could be concluded that both experimental and control group had no differences. The result showed both groups had similar variants (homogeneous).

d. The Average of Similarity Test of Pre-test of Experimental and Control Group

After counting standard deviation and variance, it could be concluded that both group have no differences in the test of similarity between two variances in pre-test score. To differentiate whether the students' results of speaking descriptive text in experimental and control group were significant or not, t-test was used to test the hypothesis. The formula is:

$$t = \frac{\overline{X}_1 - \overline{X}_2}{s\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

Where:

$$S = \sqrt{\frac{(n_1 - 1)S_1^{\ 2} + (n_2 - 1)S_2^{\ 2}}{n_1 + n_2 - 2}}$$

Based on table 6. Homogeneity test of pre-test, first S had to be found out by using the formula above:

$$s = \sqrt{\frac{(24-1)\,48.87 + (24-1)\,54.17}{24+24-2}} = 7.17755$$

$$t = \frac{51.46 - 50.42}{7.17755\sqrt{\frac{1}{24} + \frac{1}{24}}} = 0.503$$

After getting t-test result, then it would be consulted to the critical score of t_{table} to check whether the difference is significant or not. For α = 5% with dk 24 + 24 - 2 = 46, it was found $t_{table(0.95)(46)} = 1.68$. Because of $t < t_{table}$, it could be concluded that there was no significance of difference between the experimental and control group. It meant that both experimental and control group had same condition before getting treatments.

2. The Data Analysis of Post-test

   a. Normality Test of Post-test of the Experimental Group

      From the research result of X A students in the experimental group after they were taught speaking descriptive text by "Who is in the Class Strategy", was found that the maximum score 85 and minimum score 60. The stretches of score were 25. So, there were 6 classes with length of classes 5. From the computation of frequency distribution, it was found $(\sum f_i x_i) = 1640$, and $(\sum f_i x_i^2) = 113300$. So, the average score $(\bar{x})$ was 68.3 and the standard deviation (S) was 7.3. After counting the average score and standard deviation, table of observation frequency was needed to measure Chi-square (x^2).

Table 7. Normality test of post-test of the experimental group

Class Interval	Limit class	Z for the limit class	Opportunities for Z	Size classes for Z	Ei	Oi	$\frac{(Oi-Ei)^2}{Ei}$
60.00 - 64.00	59.50	-1.21	0.3861	0.1865	4.475	6	0.520
65.00 - 69.00	64.50	-0.52	0.1997	0.2630	6.311	7	0.075
70.00 - 74.00	69.50	0.16	0.0633	0.2368	5.684	4	0.499
75.00 - 79.00	74.50	0.84	0.3001	0.1362	3.269	4	0.163
80.00 - 84.00	79.50	1.52	0.4364	0.0500	1.200	2	0.533
85.00 - 89.00	84.50	2.21	0.4864	0.0117	0.281	1	1.840
	89.50	2.89	0.4981			24	
					χ^2	=	3.630

Based on the Chi-square table (x^2_{table}) for 5% alpha of significance with dk 6 – 3 = 3, it was found x^2_{table} = 7.81. Because of $x^2 < x^2_{table}$, the data of experimental group after getting treatment was distributed normally.

b. Normality Test of Post-test of the Control Group

Based on the research result of X B students in the control group after they got usual treatment in teaching speaking descriptive text, they reached the maximum score 75 and minimum score 50. The stretches of score were 25. So, there were 6 classes with length of classes 5. From the computation of frequency distribution, it was found ($\sum f_i x_i$) = 1515, and ($\sum f_i x_i^2$) = 96575. So, the average score ($\bar{x}$) was 63.1 and the standard deviation (S) was 6.4. After counting the average score and standard deviation, table of observation frequency was needed to measure Chi-square (x^2).

Table 8. Normality test of post-test of the control group

Class Interval	Limit class	Z for the limit class	Opportunities for Z	Size classes for Z	Ei	Oi	$\frac{(Oi-Ei)^2}{Ei}$
50.00 - 54.00	49.50	-2.13	0.4834	0.0722	2.453	1	0.861
55.00 - 59.00	54.50	-1.35	0.4113	0.1967	6.688	3	2.033
60.00 - 64.00	59.50	-0.57	0.2146	0.2997	10.190	8	0.471
65.00 - 69.00	64.50	0.22	0.0851	0.2555	8.686	6	0.830
70.00 - 74.00	69.50	1.00	0.3406	0.1218	4.140	4	0.005

75.00 - 79.00	74.50	1.78	0.4624	0.0324	1.102	2	0.731
	79.50	2.56	0.4948			24	
					χ^2	=	4.931

Based on the Chi-square table (x^2_{table}) for 5% alpha of significance with dk 6 – 3 = 3, it was found x^2_{table} = 7.81. Because of $x^2 < x^2_{table}$, the data of control group after getting treatment was distributed normally.

c. Homogeneity Test of Post-test

Table 9. Homogeneity test of post-test

Variance Sources	Experimental (X A)	Control (X B)
Sum	1640	1515
n	24	24
$\overline{x}$	68.33	63.13
Variance (s^2)	53.6232	40.8967
Standart deviation (s)	7.32	6.40

By knowing the mean and the variance, the similarity of the two variants in the post-test between experimental and control group was able to test. The computation of the test of homogeneity as follows:

$$F = \frac{Vb}{Vk}$$

$$= \frac{53.62}{40.90} = 1.3112$$

On α= 5% with df numerator (nb - 1) = 24 - 1 = 23 and df denominator (nk - 1) = 24 - 1 = 23, it was found F_{table} = 2.31. Because of $F < F_{table}$, it could be concluded that both experimental and control group had no differences. The result showed both groups had similar variants (homogeneous).

3. The Hypothesis Test

After counting standard deviation and variance, it could be concluded that both group have no differences in the test of similarity between two variances in post-test score. To differentiate whether the students' results of speaking descriptive text in experimental and control group after getting treatments were significant or not, t-test was used to test the hypothesis. To

see the difference between the experimental and control group, the formula that was used is:

$$t = \frac{\overline{X}_1 - \overline{X}_2}{s\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

Where:

$$S = \sqrt{\frac{(n_1 - 1)S_1^{\ 2} + (n_2 - 1)S_2^{\ 2}}{n_1 + n_2 - 2}}$$

Based on table 9. Homogeneity test of post-test, first S had to be found out by using the formula above:

$$s = \sqrt{\frac{(24 - 1)\ 53.62 + (24 - 1)\ 40.90}{24 + 24 - 2}} = 6.87459$$

$$t = \frac{68.33 - 63.13}{6.87459\sqrt{\frac{1}{24} + \frac{1}{24}}} = 2.624$$

After getting t-test result, then it would be consulted to the critical score of t_{table} to check whether the difference is significant or not. For α = 5% with dk 24 + 24 - 2 = 46, it was found $t_{table(0.95)(46)} = 1.68$. Because of $t > t_{table}$, it could be concluded that there was significance of difference between the experimental and control group. It meant that experimental group was better than control group after getting treatments.

Since the obtained t-score was higher than the critical score on the table, the difference was statistically significance. Therefore, based on the computation there was a significance difference between teaching speaking descriptive text using “Who is in the Class Strategy” and teaching speaking descriptive text without using “Who is in the Class Strategy” at the tenth grade students of MA NU Nurul Huda Semarang. Teaching speaking descriptive text using “Who is in the Class Strategy” is more effective than teaching

speaking descriptive text without using “Who is the class Strategy”. It can be seen from the result of the test where the students that were taught using “Who is in the Class Strategy” got higher scores than the students that were taught without “Who is in the Class Strategy”.

C. Discussion of Research Finding

The data were obtained from the students’ achievement scores of the speaking test. They were pre-test and post-test scores from the experimental and control group. The average scores of test for experimental group was 51.5 (pre-test) and 68.3 (post-test). The average scores of test for control group was 50.4 (pre-test) and 63.1 (post-test). The following was the simple tables of pre-test and post-test students’ average score.

Table 10. Pre-test and post-test students’ average score of experimental and control group

Group	The Average Score of Pre-test	The Average Score of Post-test
Experimental	51.5	68.3
Control	50.4	63.1

Based on the result of the pre-test before “Who is in the Class Strategy” was implemented, the speaking skill of students in descriptive text was lower than after “Who is in the Class Strategy” was implemented. After getting “Who is in the class Strategy” treatment and post-test was conducted, it was found that there were significant differences between experimental group and control group where the post-test score of experimental group was higher. The improvement of the students who were taught using “Who is in the Class Strategy” is higher than the improvement of students who were taught without using “Who is in the Class Strategy”. It can be seen the mean pre-test score of control group was 50.4, and in the post-test was 63.1, while the mean of pre-test score of experimental group was 51.5 and in the post-test was 68.3.

The testing hypothesis indicates that the experimental group was significantly higher than the control group. The mean score of the experimental

group was 68.3 and the control group was 63.1, and the difference between the two means was 5.2. The t-test score showed that *t* is higher than t_{table} (2.624 > 1.68) with a = 5%.

The result of the data analysis showed that the students who were taught by using “Who is in the Class Strategy” have been improved their speaking skill in descriptive text than the students who were taught without using “Who is in the Class Strategy”. The students who were taught by using “Who is in the Class Strategy” can be more active in the process of teaching speaking descriptive text and they can produce words actively. The most important is the students can enjoy the learning process so that the students can absorb the material easily. It meant that the application of active learning through “Who is in the Class Strategy” is effective for teaching speaking descriptive text.