CHAPTER IV
RESULT AND DISCUSSION

A. Description of Data

In this chapter the writer would like to present the description of data obtained. As the writer explained in the previous chapter that the population in this research were 175 students of first grade in MAN Cikeusal and the sample were 25 students of X MIA as experimental class and 25 students of X IIS as control class.

In this research, the writer did an analyze of quantitative data. The data is obtained by giving test to the experimental class and control class. The test divided two types are pre-test and post-test. Pre-test was given before treatment and post-test was given after treatment. On the test, students should pronounce in front of the class according the instructions or questions by the writer.

The writer identified some result to find out the effect of Quantum teaching method in improving students' speaking skill. They are the score of students before treatment, the score students after treatment and the differences between pre-test and post-test score of students. The writer describes the data in experimental and control class as below:

1. Experimental Class

The researcher describes the result of pre-test in the experimental class by the table as follow:

Table 4.1
The students' score of pre-test at the experimental class

NO	RESPONDENT	CRITERIA					SCORE
		A	G	V	F	C	
1	AS	2	18	16	8	19	63
2	DF	2	24	16	8	15	65
3	DAA	2	12	16	8	19	57
4	ES	2	18	16	10	19	65
5	HH	2	24	16	8	15	65
6	LK	2	18	16	8	19	63
7	LPM	2	24	16	8	15	65
8	MN	2	18	16	8	19	63
9	NEY	2	24	16	8	19	69
10	NE	2	24	16	8	19	69
11	NL	2	18	16	8	19	63
12	NR	2	18	16	8	19	63
13	RZ	2	18	16	8	19	63
14	RFP	2	24	16	8	19	69
15	SL	2	18	12	8	15	55
16	SM	2	18	16	8	19	63
17	SM	2	24	16	8	19	69
18	SN	2	24	16	8	19	69
19	SNK	2	18	12	8	15	55
20	SR	2	18	16	8	19	63
21	SM	2	18	16	8	19	63
22	RM	2	12	16	8	15	53
23	RR	2	18	12	6	15	53
24	RZ	2	24	16	8	19	69
25	WH	2	18	16	8	15	59
N= 25	TOTAL						∑X = 1573
	AVERAGE						M = 62,92

Note:

A. : Accent

G. : Grammar

V. : Vocabulary

F. : Fluency

C. : Comprehension

Mean of Pre-test:

X = $\frac{\sum X}{N} = \frac{1573}{25} = 62{,}92$ (the mean of pre-test experimental class is 62,92)

While the result of post-test in experimental class got better score. The result of post-test in experimental class described by table below:

Table 4.2
The students' score of post-test at the experimental class

NO	RESPONDENT	CRITERIA					SCORE
		A	G	V	F	C	
1	AS	2	24	12	10	19	67
2	DF	2	30	24	12	19	87
3	DAA	2	24	24	10	19	79
4	ES	3	30	24	12	23	92
5	HH	2	18	20	8	19	67
6	LK	3	30	24	10	23	90
7	LPM	3	30	20	10	23	86
8	MN	2	24	20	10	19	75
9	NEY	3	30	20	12	23	88
10	NE	3	30	24	10	19	86
11	NL	2	24	16	8	19	69
12	NR	2	24	20	10	23	79
13	RZ	2	18	16	10	19	65
14	RFP	3	30	24	10	23	90
15	SL	2	24	20	10	29	85
16	SM	3	30	24	12	23	92
17	SM	2	24	20	10	23	79

18	**SN**	**2**	**24**	**20**	**8**	**23**	**77**
19	**SNK**	**2**	**18**	**12**	**8**	**19**	**59**
20	**SR**	**2**	**24**	**20**	**10**	**19**	**75**
21	**SM**	**3**	**30**	**24**	**10**	**19**	**86**
22	**RM**	**2**	**18**	**12**	**8**	**19**	**59**
23	**RR**	**2**	**18**	**12**	**8**	**19**	**59**
24	**RZ**	**2**	**24**	**24**	**10**	**23**	**83**
25	**WH**	**2**	**18**	**20**	**8**	**19**	**67**
N= 25	**TOTAL**						**∑X = 1942**
	AVERAGE						**M = 77,64**

Note:

A. : Accent

G. : Grammar

V. : Vocabulary

F. : Fluency

C. : Comprehension

Mean of Post-test:

X = $\frac{\sum X}{N} = \frac{1942}{25} = 77{,}69$ (the mean of post-test experimental class is 77,69)

Table 4.3
The difference score between pre-test and post-test at experimental class

NO	RESPONDENT	Pre-test	Post-test
1	AS	63	67
2	DF	65	87
3	DAA	57	79
4	ES	65	92
5	HH	65	67
6	LK	63	90
7	LPM	65	86
8	MN	63	75
9	NEY	69	88
10	NE	69	86
11	NL	63	69
12	NR	63	79
13	RZ	63	65
14	RFP	69	90
15	SL	55	85
16	SM	63	92
17	SM	69	79
18	SN	69	77
19	SNK	55	59
20	SR	63	75
21	SM	63	86
22	RM	53	59
23	RR	53	59
24	RZ	69	83
25	WH	59	67
N = 25	TOTAL	∑X = 1573	∑X = 1941
	AVERAGE	M = 62,92	M = 77,64

From the table 4.1 above showed that the result of students' pre-test score at the experimental class. The data showed the maximum score was 69 and the minimum score was 53. There

was one student who got maximum score and there were two students who got minimum score. The average score of pre-test in experimental class was 62,92.

From the table 4.2 above showed that the result of students' post-test score at the experimental class. The data showed the maximum score was 92 and the minimum score was 59. There was one student who got maximum score and one student who got minimum score. The average score of post-test in experimental class was 77,64.

From the table 4.3 showed the difference result of pre-test and post-test at the experimental class. It got the significant improvement after giving treatment using quantum teaching method, it was seen from the average of the post-test better than pre-test 62,92 < 77,64.

2. Control Class

The writer describes the result of pre-test in the control class by the table as follow:

Table 4.4
The students' score of pre-test in the control class

NO	RESPONDENT	CRITERIA					SCORE
		A	G	V	F	C	
1	ASH	2	18	16	8	19	63
2	AD	2	12	16	8	15	53
3	DP	2	18	16	8	19	63
4	KN	2	18	12	8	19	59
5	MR	2	18	16	10	19	65
6	ND	2	12	16	8	15	53
7	NI	2	24	16	8	19	69

8	**NPK**	**2**	**18**	**12**	**8**	**15**	**55**
9	**NR**	**2**	**18**	**16**	**8**	**19**	**63**
10	**RH**	**2**	**24**	**16**	**8**	**19**	**69**
11	**RK**	**2**	**18**	**12**	**8**	**19**	**59**
12	**SR**	**2**	**18**	**16**	**8**	**15**	**59**
13	**SH**	**2**	**12**	**16**	**8**	**15**	**53**
14	**SN**	**2**	**18**	**16**	**8**	**19**	**63**
15	**SN**	**2**	**18**	**16**	**8**	**15**	**59**
16	**SH**	**2**	**12**	**16**	**8**	**15**	**53**
17	**SJ**	**2**	**24**	**16**	**8**	**19**	**69**
18	**SL**	**2**	**18**	**16**	**8**	**15**	**59**
19	**UT**	**2**	**12**	**16**	**8**	**15**	**53**
20	**VHS**	**2**	**18**	**16**	**8**	**19**	**63**
21	**YM**	**2**	**12**	**12**	**8**	**15**	**49**
22	**YN**	**2**	**18**	**16**	**8**	**15**	**59**
23	**YG**	**2**	**12**	**16**	**8**	**15**	**53**
24	**YY**	**2**	**12**	**16**	**8**	**15**	**53**
25	**ZK**	**2**	**12**	**16**	**8**	**19**	**57**
N= 25	**TOTAL**						**∑X = 1473**
	AVERAGE						**M = 58,92**

Note:

A. : Accent

G. : Grammar

V. : Vocabulary

F. : Fluency

C. : Comprehension

Mean of Pre-test:

X = $\frac{\sum X}{N} = \frac{1473}{25} = 58,92$ (the mean of pre-test control class is 46,92)

While the result of post-test in control class got better score. The result of post-test in control class described by table below:

Table 4.5
The students' score of post-test in the control class

NO	RESPONDENT	CRITERIA					SCORE
		A	G	V	F	C	
1	ASH	3	24	16	10	19	72
2	AD	2	18	16	10	15	61
3	DP	2	18	16	10	19	65
4	KN	2	24	12	8	19	65
5	MR	2	24	16	10	19	71
6	ND	2	18	16	10	15	61
7	NI	3	24	16	10	19	72
8	NPK	2	18	16	10	15	61
9	NR	2	24	16	10	19	71
10	RH	3	24	20	10	15	72
11	RK	2	24	12	10	19	67
12	SR	2	18	16	10	19	65
13	SH	2	18	16	8	19	63
14	SN	2	24	16	10	19	71
15	SN	3	24	16	10	19	72
16	SH	2	24	20	8	15	65
17	SJ	2	30	20	10	19	81
18	SL	2	24	16	10	15	67
19	UT	2	24	16	8	19	69
20	VHS	2	18	20	10	19	69
21	YM	2	18	20	8	19	67
22	YN	2	18	16	8	15	59
23	YG	2	18	16	8	15	59
24	YY	2	24	20	10	15	71
25	ZK	2	18	16	8	19	63
N= 25	TOTAL						∑X = 1679
	AVERAGE						M= 67,16

Note:

A. : Accent

G. : Grammar

V. : Vocabulary

F. : Fluency

C. : Comprehension

Mean of Post-test:

X = $\frac{\sum X}{N} = \frac{1679}{25} = 67{,}16$ (the mean of post-test control class is 67,16)

Table 4.6
The difference score between pre-test and post-test at the control class

NO	RESPONDENT	Pre-test	Post-test
1	ASH	63	72
2	AD	53	61
3	DP	63	65
4	KN	59	65
5	MR	65	71
6	ND	53	61
7	NI	69	72
8	NPK	55	61
9	NR	63	71
10	RH	69	72
11	RK	59	67
12	SR	59	65
13	SH	53	63
14	SN	63	71
15	SN	59	72
16	SH	53	65
17	SJ	69	81

18	**SL**	**59**	**67**
19	**UT**	**53**	**69**
20	**VHS**	**63**	**69**
21	**YM**	**49**	**67**
22	**YN**	**53**	**59**
23	**YG**	**53**	**59**
24	**YY**	**59**	**71**
25	**ZK**	**57**	**63**
N = 25	**TOTAL**	**∑X = 1473**	**∑X = 1679**
	AVERAGE	**M = 58,92**	**M = 67,16**

From the table 4.4 above showed that the result of students' pre-test score at the control class. The data showed the maximum score was 75 and the minimum score was 49. There was one student who got maximum score and there were one student who got minimum score. The average score of pre-test in control class was 61,2 .

From the table 4.5 above showed that the result of students' post-test score at the control class. The data showed the maximum score was 81 and the minimum score was 59. There were two students who got maximum score and there was two students who got minimum score. The average score of pre-test in control class was 67,16 .

From the table 4.6 above showed the difference result of pre-test and post-test at the control class got the significant improvement after giving treatment without using quantum teaching, it was seen from the average of the post-test better than pre-test 61,2 < 67,16.

B. Data Analysis

1. Experimental Class

The writer analysis the data by comparing students' score in pre-test and post-test in the experimental class. The students' improvement score caused the writer used quantum teaching in teaching speaking. If seen from the students' improvement score, it means that used quantum teaching was success in improving students' speaking. The writer describes the students' improvement score of pre-test and post-test at the experimental class by the table below:

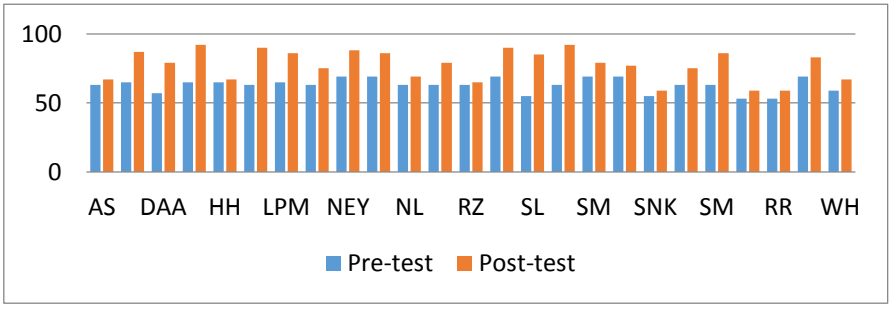
Table 4.7
The difference score between pre-test and post-test result of experimental class

No	Respondent	Pre-Test (X_1)	Post-Test (X_2)	Diferences($X_2 - X_1$)
1	AS	63	67	4
2	DF	65	87	22
3	DAA	57	79	22
4	ES	65	92	27
5	HH	65	67	2
6	LK	63	90	27
7	LPM	65	86	21
8	MN	63	75	12
9	NEY	69	88	19
10	NE	69	86	17
11	NL	63	69	6
12	NR	63	79	13
13	RZ	63	65	2
14	RFP	69	90	21
15	SL	55	85	30
16	SM	63	92	29
17	SM	69	79	10
18	SN	69	77	8

19	**SNK**	**55**	**59**	**4**
20	**SR**	**63**	**75**	**12**
21	**SM**	**63**	**86**	**23**
22	**RM**	**53**	**59**	**6**
23	**RR**	**53**	**59**	**6**
24	**RZ**	**69**	**83**	**19**
25	**WH**	**59**	**67**	**8**
N = 25	**TOTAL**	**∑X = 1573**	**∑X = 1941**	**∑X = 370**
	AVERAGE	**M = 62,92**	**M = 77,64**	**M = 14,8**

Table 4.7 above showed that the difference score between pre-test and post-test at the experimental class. The difference score was the result from the post-test scores reduced pre-test score. There was significant difference score between pre-test and post-test at the experimental class by the higgest score was 14 and the lowest was 1. The graphic describes the table as follow:

Graphic 4.1
The different score between pre-test and post-test of experimental class



From graphic 4.1 above showed the results of the students' pre-test and post-test scores on the criteria in speaking at the

experimental class. Data showed that the maximum score in pre-test was 69 and the minimum score was 53. While in post-test the maximum score was 90 and the minimum score was 59.

2. Control Class

The writer analysis the data by comparing students' score in pre-test and post-test at the control class. This result describes by the table below:

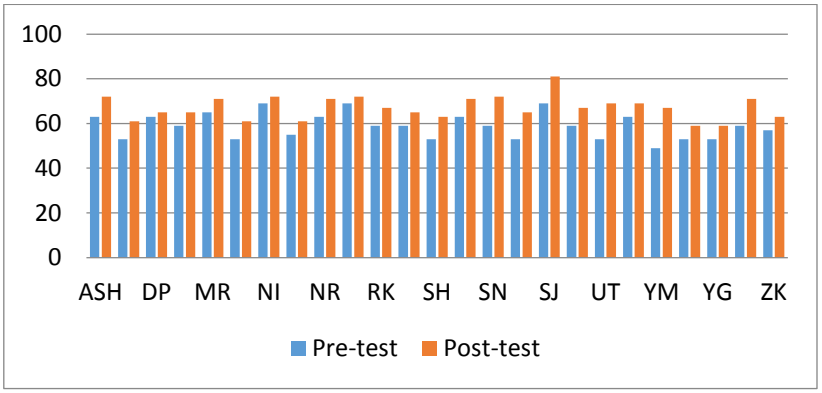
Table 4.8
The difference score between Pre-test and Post-test result of control class

NO	Respondent	Pre-Test (X_1)	Post-Test (X_2)	Difference ($X_2 - X_1$)
1	ASH	63	72	9
2	AD	53	61	8
3	DP	63	65	2
4	KN	59	65	6
5	MR	65	71	6
6	ND	53	61	8
7	NI	69	72	3
8	NPK	55	61	6
9	NR	63	71	8
10	RH	69	72	3
11	RK	59	67	8
12	SR	59	65	6
13	SH	53	63	10
14	SN	63	71	8
15	SN	59	72	13
16	SH	53	65	12
17	SJ	69	81	18
18	SL	59	67	8
19	UT	53	69	16
20	VHS	63	69	6
21	YM	49	67	18

22	**YN**	**53**	**59**	**6**
23	**YG**	**53**	**59**	**6**
24	**YY**	**59**	**71**	**2**
25	**ZK**	**57**	**63**	**6**
N = 25	**TOTAL**	**∑X = 1473**	**∑X = 1679**	**∑X = 202**
	AVERAGE	**M = 58,92**	**M = 67,16**	**M = 8,08**

Table 4.8 above showed that the difference score between pre-test and post-test at the control class. The difference score was the result from the post-test scores reduced pre-test score. There was significant difference score between pre-test and post-test at the control class by the highest score was 18 and the lowest was 2. The graphic describes the table as follow:

Graphic 4.2
The different score between pre-test and post-test of control class



From graphic 4.2 above showed the results of the students' pre-test and post-test scores on the criteria in speaking at the control class. Data showed that the maximum score in pre-test was 69 and the minimum score was 49. While in post-test the maximum score was 81 and the minimum score was 59. After

getting the data from score of two classes, then the writer analyzed it by using t-test. The formula as follow:

$$t_0 = \frac{M_1 - M_2}{\left(\frac{\sum x_1^2 + \sum x_2^2}{N_1 + N_2 - 2}\right)\left(\frac{N_1 + N_2}{N_1 \,.\, N_2}\right)}$$

Notes:

t_0 = t observation

M_1 = Mean score of the experiment class

M_2 = Mean score of the control class

$\sum x_1^2$ = Sum of square deviation score in experiment class

$\sum x_2^2$ = Sum of square deviation score in control class

N_1 = Number of students of experiment class

N_2 = Number of students of control class

2 = Constant number

df = Degree of Freedom (df = $N_1 + N_2 - 2$)

Table 4.9
The result calculation of post-test at the experimental class (X_1^2) and the control class (X_2^2)

NO	X_1	X_2	x_1	x_2	x_1^2	x_2^2
1	67	72	-10,64	4,84	113.20	23.45
2	87	61	9,36	-6,16	87.60	37.94
3	79	65	1,36	-2,16	1.84	4.66
4	92	65	14,36	-2,16	205.20	4.66
5	67	71	-10,64	3,84	113.20	14.74
6	90	61	12,36	-6,16	125.76	37.94
7	86	72	8,36	4,84	69.88	23.45
8	75	61	-2,64	-6,16	5.56	37.94
9	88	71	10,36	3,84	113.20	4.66
10	86	72	8,36	4,84	69.88	23.45
11	69	67	-8,64	-0,16	74.64	0.02

12	**79**	**65**	**1,36**	**-2,16**	**1.84**	**4.66**
13	**65**	**63**	**-12,64**	**-4,16**	**159.39**	**17.30**
14	**90**	**71**	**12,36**	**3,84**	**125.76**	**14.47**
15	**85**	**72**	**7,36**	**4,84**	**54.16**	**23.45**
16	**92**	**65**	**14,36**	**-216**	**205.20**	**4.66**
17	**79**	**81**	**1,36**	**13,84**	**1.84**	**191.54**
18	**77**	**67**	**-0,64**	**-0,16**	**0.4**	**0.02**
19	**59**	**69**	**-18,64**	**1,84**	**347.44**	**3.38**
20	**75**	**69**	**-2,64**	**1,84**	**6.96**	**3.38**
21	**86**	**67**	**8,36**	**-0.16**	**69.88**	**0.02**
22	**59**	**59**	**-18,64**	**-8.16**	**347.44**	**66.58**
23	**59**	**59**	**-18,64**	**-8.16**	**347.44**	**66.58**
24	**83**	**71**	**5,36**	**3.84**	**28.72**	**14.47**
25	**67**	**63**	**-10,64**	**-4.16**	**113.20**	**`17.30**
∑	**1941**	**1679**			**2789.63**	**623.42**

Note :

X_1 = Score Post-test (Experimental Class)

X_2 = Score Post-test (Control Class)

x_1 = X_1 - M_1(Mean X_1)

x_2 = X_2 - M_2 (Mean X_2)

x_1^2 = The Squared Value of x_1

x_2^2 = The Squared Value of x_2

From the table above, the researcher got the data $\sum X_1$ = 1941, $\sum X_2$ = 1679, $\sum x_1^2$ = 2789.63, $\sum x_2^2$ = 623.42 where as N_1 = 25 and N_2 = 25. After that the writer calculated them based on the t-test formula, the steps as follow:

1. Determine mean of variable X_1 and X_2

Variable X_1 $M_1 = \frac{\sum x_1}{N_1} = \frac{1941}{25}$ = 77.64

Variable X_2 $M_2 = \frac{\sum x_2}{N_2} = \frac{1679}{25}$ = 67.16

2. Determine t-test

$\sum x_1^2$ = 2789.63

$\sum x_2^2$ = 623,42

df = $N_1 + N_2 - 2$ = 25 + 25 – 2 = 48

$$t_o = \frac{M_1 - M_2}{\sqrt{\left(\frac{\sum x_1^2 + \sum x_2^2}{N_1 + N_2 - 2}\right)\left(\frac{N_1 + N_2}{N_1 \,.\, N_2}\right)}}$$

$$= \frac{77{,}64 - 67{,}16}{\sqrt{\left(\frac{2789{,}63 + 623{,}42}{25+25-2}\right)\left(\frac{25+25}{25.\ 25}\right)}} =$$

$$\frac{10{,}48}{\sqrt{\left(\frac{3413{,}05}{48}\right)\left(\frac{50}{625}\right)}}$$

$$= \frac{10{,}48}{\sqrt{71{,}10 \times 0{,}08}} = \frac{10{,}48}{\sqrt{5{,}68}} = \frac{10{,}48}{2{,}38} =$$

4,40

So after the writer calculates this data based on the formula t-test, the obtained t_o or $t_{observation}$ was 4,40.

C. Hypothesis Testing

The data obtained from experimental class and control class were calculated with the assumption as follow:

If $t_0 > t_t$: the alternative hypothesis was accepted. It means there was significant effect of using quantum teaching in teaching speaking than without using quantum teaching. If $t_0 < t_t$: null hypothesis was rejected. It means there was no

significant effect of using quantum teaching in teaching speaking than without using quantum teaching than without it.

From the result of calculation above, it is obtained that the value of t_o ($t_{observation}$) was 4,40, the degree of freedom (df) = 48. In the degree significance 5% = 1,67 in degree of significance 1% = 2,40. After that the writer compared the data with t_t (t table) both in degree significance 5% and 1%. Therefore $t_o : t_t$ = 4,40 > 1,67 in degree of significance 5% and $t_o : t_t$ = 4,40 > 2,40 in degree significance 1%.

The statistic hypothesis states that if t_o is higher than t_t, it shows that H_a(alternative hypothesis) of the result is accepted and H_o(null hypothesis) is rejected. It means that there was an effect of using quantum teaching in teaching speaking than without using quantum teaching.

D. Interpretation Data

From the result of the research that the mean of pre-test score obtained by students of MAN Cikeusal in the class X MIA (experimental class) 62,92 was smaller than class X IIS (control class) 58,92. The highest score of pre-test in X MIA (experimental class) was 69 and in the class X IIS (control class) was 75. The lowest score of pre-test in class X MIA (experimental class) was 53 and in the class X IIS (control class) was 49. It means that the distribution of score in experimental score was smaller than control class.

The mean of post-test score in experimental class was 77,64 was greater than in control class was 67,16. The highest score in experimental class was 92 and in control class was 81.

The lowest score in experimental class was 59 and in control class was 59. It means that the distribution of score post-test in experimental class was greater than class control.

Based on the data obtained from the research of experimental class and control class among the average score, t observation and comparison with t table. The writer summarize that the students taught by quantum teaching have improving in speaking ability than the students taught without quantum teaching.

The students who taught by using quantum teaching were easily to speak the words, and many activities by using quantum teaching that can make them more active in learning English especially in English speaking.