

1. The students Pre-Test Score of Experimental Class

The students' pre-test score of experimental class could be shown on table 1 as follows:

Table 4.1

Students' Score of Pre-Test of Experimental Class

No	Name	Aspect					Amount	Category
		Accent	Grammar	Vocabulary	Fluency	comprehension		
1	AA	2	12	12	12	12	50	C
2	AY	2	8	8	10	8	36	D
3	AF	2	12	12	10	12	48	C
4	AN	3	18	16	12	15	64	B
5	A	2	10	10	10	12	44	C
6	A	2	8	8	8	8	34	D
7	AAE	2	12	10	8	12	44	C
8	A	2	8	10	10	12	42	D
9	BY	2	10	10	10	10	42	D
10	CWW	3	25	20	12	20	80	B
11	DLSP	2	10	10	10	12	44	C
12	GR	2	8	10	8	10	38	D
13	G	2	12	8	10	12	44	C
14	HBA	2	12	8	10	12	44	C
15	HH	2	8	8	8	10	36	D
16	LDAL	3	16	20	8	20	67	B
17	MAFJ	2	8	10	6	12	38	D
18	MK	3	12	12	8	10	45	C
19	M	2	8	8	8	10	36	D
20	MS	2	10	10	10	12	44	C
21	MT	2	8	10	6	12	38	D

22	MA	2	12	8	6	12	40	D
23	MAD	2	12	8	6	12	40	D
24	MIA	2	12	8	10	12	44	C
25	PA	3	12	12	8	10	45	C
26	RIZ	2	10	12	10	10	44	C
27	RS	2	12	10	10	10	44	C
28	R	3	16	16	8	10	53	C
29	R	2	8	8	8	10	36	D
30	S	3	18	16	10	15	62	C
31	SR	3	16	16	8	10	53	C
32	SS	2	12	12	8	12	46	C
33	SA	2	8	8	8	10	36	D
	Total						1501	

Determine mean of pre-test experimental class by formula

$$M_1 = \frac{\sum X_1}{N_1}$$

M_1 : Mean of pre-test

Σ : Total Score

N_1 : Number of sample

$$M_1 = \frac{\sum X_1}{N_1}$$

$$M_1 = \frac{1501}{33}$$

$$M_1 = 45.48$$

The table above shows us about the students' pre-test score of experimental class based on criteria in speaking skill. The data shows that the lowest score of pre-test is 34 and the highest score is 80 and the average score of pre-test is 45.48

2. The students Pre-Test Score Control Class

The students' pre-test score of control class could be shown on table 2 as follows:

Table 4.2
Students' Score of Pre-Test of Control Class

No	Name	Aspect					Amount	Category
		Accent	Grammar	Vocabulary	Fluency	comprehension		
1	AFA	2	10	10	10	10	42	D
2	ADCP	2	8	8	10	10	38	D
3	AG	2	8	8	8	10	36	D
4	AM	2	10	10	8	10	40	D
5	A	2	12	10	12	12	48	C
6	DR	2	10	12	12	12	48	C
7	FF	2	10	12	10	15	49	C
8	GS	2	10	12	8	10	42	D
9	HHR	2	8	8	8	10	36	D
10	IHK	2	10	12	8	10	42	D
11	IR	2	10	10	8	12	42	D
12	IR	2	10	10	10	12	44	C
13	IH	2	8	8	6	12	36	D
14	JR	2	10	12	12	10	46	C
15	K	2	12	12	10	10	46	C
16	MR	2	10	10	8	12	42	D
17	MS	2	10	10	10	12	44	C
18	MAN	2	10	10	8	12	42	D
19	MAR	2	10	10	8	12	42	D
20	MM	2	8	8	6	10	34	D
21	MM	2	8	8	7	10	35	D

22	MN	2	10	10	10	12	44	C
23	MRA	2	8	8	7	8	33	D
24	NS	2	8	8	8	12	38	D
25	RFM	2	6	8	6	10	32	D
26	S	2	8	8	6	8	32	D
27	S	2	6	6	6	10	30	D
28	SH	2	6	8	6	10	32	D
29	SN	3	18	16	10	15	62	C
30	S	2	12	12	8	12	46	C
31	S	2	8	8	7	8	33	D
32	SH	2	6	8	7	10	33	D
33	WS	2	6	8	6	10	32	D
	Total						1321	

Determine mean of pre-test control class by formula

$$M_1 = \frac{\sum X_1}{N_1}$$

M_1 : Mean of pre-test

Σ : Total Score

N_1 : Number of sample

$$M_1 = \frac{\sum X_1}{N_1}$$

$$M_1 = \frac{1321}{33}$$

$$M_1 = 40.03$$

The table above shows us about the students' pre-test score of control class based on criteria in speaking skill. The data shows that the lowest score of pre-test is 32 and the highest score is 60 and the average score of pre-test is 40.03

3. The Students Post-Test Score Experimental Class

The students' post-test score of experimental class could be shown on table 3 as follows:

Table 4.3
Students' Score of Post-Test of Experimental Class

No	Name	Aspect					Amount	Category
		Accent	Grammar	Vocabulary	Fluency	comprehension		
1	AA	3	25	24	15	17	84	A
2	AY	3	24	18	10	15	70	B
3	AF	3	24	18	10	15	70	B
4	AN	3	20	18	15	15	71	B
5	A	3	20	18	10	15	66	B
6	A	3	20	18	10	15	66	B
7	AAE	3	24	16	15	15	73	B
8	A	3	22	18	15	15	73	B
9	BY	3	20	20	15	15	73	B
10	CWW	3	30	25	15	23	96	A
11	DLSP	3	24	24	15	17	83	A
12	GR	3	22	20	15	15	75	B
13	G	3	20	18	15	15	71	B
14	HBA	3	22	25	10	15	75	B
15	HH	3	22	22	10	15	72	B
16	LDAL	3	25	25	15	15	83	A
17	MAFJ	3	24	22	10	15	74	B
18	MK	3	24	20	10	15	72	B
19	M	3	22	25	10	15	75	B
20	MS	3	24	22	12	15	76	B
21	MT	3	22	20	10	15	70	B

22	MA	3	24	24	15	17	83	A
23	MAD	3	24	22	10	15	74	B
24	MIA	3	24	22	10	15	74	B
25	PA	3	22	20	15	15	75	B
26	RIZ	3	22	24	10	15	74	B
27	RS	3	24	24	10	10	71	B
28	R	3	22	20	10	15	70	B
29	R	3	24	22	10	15	74	B
30	S	3	24	20	10	15	72	B
31	SR	3	22	22	10	15	72	B
32	SS	3	22	22	15	15	77	B
33	SA	3	22	20	10	15	70	B
	Total						2454	

Determine mean of post-test experimental class by formula

$$M_2 = \frac{\Sigma X_2}{N_2}$$

M_2 : Mean of post-test

Σ : Total Score

N_2 : Number of sample

$$M_2 = \frac{\Sigma X_2}{N_2}$$

$$M_2 = \frac{2454}{33}$$

$$M_2 = 74.36$$

The table above shows us about the students' post-test score of experimental class based on criteria in speaking skill. The data shows that the lowest score of post-test is 70 and the highest score is 96 and the average score of post-test is 74.36.

4. The Students Post-Test Score Control Class

The students' post-test score of control class could be shown on table 4 as follows:

Table 4.4
Students' Score of Post-Test of Control Class

No	Name	Aspect					Amount	Category
		Accent	Grammar	Vocabulary	Fluency	comprehension		
1	AFA	3	20	17	15	15	70	B
2	ADCP	2	17	15	15	13	62	C
3	AG	2	18	15	15	15	65	B
4	AM	2	18	15	15	15	65	B
5	A	2	15	15	10	15	57	C
6	DR	2	17	15	15	15	64	B
7	FF	2	18	15	15	15	65	B
8	GS	2	17	17	15	15	66	B
9	HHR	2	16	16	15	15	64	B
10	IHK	2	15	15	10	15	57	C
11	IR	2	17	10	10	15	54	C
12	IR	2	10	15	15	15	57	C
13	IH	2	20	18	16	15	71	B
14	JR	2	18	17	17	15	69	B
15	K	2	18	15	16	15	66	B
16	MR	2	18	15	17	15	67	B
17	MS	2	18	17	15	15	67	B
18	MAN	3	18	17	18	15	71	B
19	MAR	2	18	18	18	15	71	B
20	MM	2	20	17	18	15	72	B
21	MM	3	20	18	17	15	73	B

22	MN	2	20	16	15	15	68	B
23	MRA	2	17	18	15	15	67	B
24	NS	2	22	20	15	15	74	B
25	RFM	2	22	22	15	15	76	B
26	S	2	24	22	15	15	78	B
27	S	2	24	22	15	15	78	B
28	SH	2	24	24	10	15	75	B
29	SN	3	22	24	10	15	74	B
30	S	3	24	26	15	15	83	A
31	S	2	22	24	15	15	78	B
32	SH	2	22	20	15	15	74	B
33	WS	2	22	22	15	15	76	B
	Total						2274	

Determine mean of pre-test control class by formula

$$M_2 = \frac{\sum X_2}{N_2}$$

M_2 : Mean of pre-test

Σ : Total Score

N_2 : Number of sample

$$M_2 = \frac{\sum X_2}{N_2}$$

$$M_2 = \frac{2274}{33}$$

$$M_2 = 68.90.$$

The table above shows us about the students' pre-test score of control class based on criteria in speaking skill. The data shows that the lowest score of pre-test is 54 and the highest score is 83 and the average score of pre-test is 68.90.

B. Analysis of the Data

After getting the data from pre-test and post-test score of two classes then the researcher analyzed it by using t-test formula with the degree of significant 5% and 1%, the researcher use step as follows:

Table 4.5
The Score of Distribution Frequency

No	Score		X_1	X_2	X_1^2	X_2^2
	X1	X2	$(X1-M_1)$	$(X2-M_2)$		
1	84	70	38.52	29.97	1.483.79	898.20
2	70	62	24.52	21.97	601.23	482.68
3	70	65	24.52	24.97	601.23	623.50
4	71	65	25.52	24.97	651.27	623.50
5	66	57	20.52	16.97	421.07	287.98
6	66	64	20.52	23.97	421.07	574.56
7	73	65	27.52	24.97	757.35	623.50
8	73	66	27.52	25.97	757.35	674.44
9	73	64	27.52	23.97	757.35	574.56
10	96	57	50.52	16.97	2.552.27	287.98
11	83	54	37.52	13.97	1.407.75	195.16
12	75	57	29.52	16.97	871.43	287.98
13	71	71	25.52	30.97	651.27	959.14
14	75	69	29.52	28.97	871.43	839.26
15	72	66	26.52	25.97	703.31	674.44
16	83	67	37.52	26.97	1.407.75	727.38
17	74	67	28.52	26.97	813.39	727.38
18	72	71	26.52	30.97	703.31	959.14
19	75	71	29.52	30.97	871.43	959.14
20	76	72	30.52	31.97	931.47	1.022.08
21	70	73	24.52	32.97	601.23	1.087.02
22	83	68	37.52	27.97	1.407.75	782.32
23	74	67	28.52	26.97	813.39	727.38

24	74	74	28.52	33.97	813.39	1.153.96
25	75	76	29.52	35.97	871.43	1.293.84
26	74	78	28.52	37.97	813.39	1.441.72
27	71	78	25.52	37.97	651.27	1.441.72
28	70	75	24.52	64.97	601.23	4.221.10
29	74	74	28.52	33.97	813.39	1.153.96
30	72	83	26.52	42.97	703.31	1.846.42
31	72	78	26.52	37.97	703.31	1.441.72
32	77	74	31.52	33.97	993.51	1.153.96
33	70	76	24.52	35.97	601.23	1.293.84
Σ	2454	2274			20.365.04	10.931.86

Notes:

X1 : Score Post-Test (Experimental Class)

X2 : Score Post-Test (Control Class)

X_1 : $X_1 - M_1$ (Mean X1)

X_2 : $X_2 - M_2$ (Mean X2)

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 $\Sigma X_1 = 2454$, $\Sigma X_2 = 2274$,

$\Sigma X_1^2 = 20.365.04$, $\Sigma X_2^2 = 10.931.86$, whereas $N_1 = 33$ and $N_2 = 33$. After getting the data

from pre-test and post-test, the researcher analyzed it by using statistic calculation of t-test

formula with the degree of significance 5% and 1% the formula as follow:

1. Determine mean of variable X1 and X2

$$\text{Variable X1}$$

$$M_1 = \frac{\Sigma X_1}{N_1}$$

$$\text{Variable X2}$$

$$M_2 = \frac{\Sigma X_2}{N_2}$$

$$M_1 = \frac{2454}{33}$$

$$= 74.36$$

$$M_2 = \frac{2274}{33}$$

$$= 68.90$$

2. Determine t-test

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

$$t = \frac{74.36 - 68.90}{\sqrt{\frac{(20.365.04 + 10.931.86)}{33 + 33 - 2} \left(\frac{33 + 33}{33 \cdot 33} \right)}}$$

$$= \frac{5.46}{\sqrt{\left(\frac{31.296.9}{64} \right) \left(\frac{66}{1089} \right)}}$$

$$= \frac{5.46}{\sqrt{(4.890) \cdot (0.06)}}$$

$$= \frac{5.46}{\sqrt{2.93}}$$

$$= \frac{5.46}{1.7}$$

$$= 3.21$$

Notes :

M_1 : The average score of experimental class (Mean X1)

M_2 : The average score of control class (Mean X2)

$\sum X_1^2$: Sum of the squared deviation score of experimental class

$\sum X_2^2$: Sum of the squared deviation score of control class

N_1 : The number of the students of experimental class

N_2 : The number of the students of control class

2 : Constant number

3. Degree of Freedom

$$\begin{aligned} df &= (N_1 + N_2) - 2 \\ &= (33 + 33) - 2 \\ &= 64 \end{aligned}$$

There is no degree of freedom for 64, so the researcher uses the closer df from 64. In degree of significance 5% from 64 $t_t = 1.66$ and degree of significance 1% from 64 $t_t = 2.38$.

C. Hypothesis Testing (t-test)

Data obtained from both pre-test and post-test are analyzed and calculated using t-test formula. The data obtained from the experiment class and control class is calculated with the assumption as follow:

If $t_{\text{observation}} > t_{\text{table}}$:The alternative hypothesis is accepted. It means there is a significant the effectiveness of talking chips on teaching students speaking skill.

If $t_{\text{observation}} < t_{\text{table}}$: The alternative hypothesis is rejected. It means there is no significant the effectiveness of talking chips on teaching students speaking skill.

Based on the result statistic calculation, it is obtained that the score of t_o is $= 3.21 > t_t = 1.66$ in degree of significance 5%. The score of $t_o = 3.21 > t_t = 2.38$ in degree of significance 1%.

D. interpretation of Data

After analyzing pre-test and post-test from two group, experiment and control class. The researcher get the data pre-test and post-test score. In the experiment class, the highest in pre-test score was 80 and the lowest is 36. The highest post-test is 92 and the lowest score is 70. The mean of pre-test score obtained by students in the class is 45.48 and the mean of post-test is 74.36. the mean of pre-test and post-test score has improvement it seen $74.36 > 45.48$.

In the control class, the highest score of pre-test is 62 and the lowest score is 32. The highest score of post-test is 83 and the lowest score is 57. The mean of pre-test score obtained by students in the class is 40.03 and the mean of post-test is 68.90. this can also realized improvement but lower than experimental class, it seen from the mean that is 74.36 on experimental class and 68.90 on control class. It means experimental class gets significant improvement be higher that control class that is $74.36 > 68.90$.

Before decided the result of hypothesis, the researcher proposed interpretation towards with procedure as follows:

If $t_{\text{observation}} > t_{\text{table}}$: The alternative hypothesis is accepted. It means there is a significant the effectiveness of talking chips on teaching students speaking skill.

If $t_{\text{observation}} < t_{\text{table}}$: The alternative hypothesis is rejected. It means there is no significant the effectiveness of talking chips on teaching students speaking skill.

According to the data, the value of $t_{\text{observation}}$ is bigger than t_{table} . $t_{\text{observation}} = 3.21 > t_{\text{table}} = 1.66$ (5%) or $t_{\text{observation}} = 3.21 > t_{\text{table}} = 2.38$ (1%), so H_0 is rejected and H_a is accepted.

From the result above, the researcher give conclusion that is means there is a significant the effectiveness of talking chips on teaching students speaking skill. It can be seen that the students got better score by talking chips technique. This could be seen after comparing the score of ore-test (before the implementation talking chips technique) and post-test (after implementation talking chips technique).

Based on the result of pre-test and post-test, it could be concluded; by using talking chips technique was effective to improve students' speaking skill at the tenth grade of SMKN 3 Kota Serang. It can be seen from the result of analysis by using t test formula.