

## **CHAPTER IV**

### **RESEARCH FINDING AND DISCUSSION**

#### **A. Profil of Study**

SMA Wahid Hasyim is one of the institutions of Nahdlatul Ulama. It is located on Jl. Lapangan Gedongsari, Tersono, Batang. It has 2 majors, science and social. It has about 400 students from class X-XII. They usually speak in Javanese or bahasa Indonesia. They are rather unfamiliar with English because it is used in the lesson time only.

The research had been conducted since 30<sup>th</sup> April 2016 to 30<sup>th</sup> May 2016 in SMA Wahid Hasyim, Tersono. The researcher gave pre-test for both experimental and control class at 2<sup>nd</sup> May 2016.

After found that the experimental and control class had same variant, the researcher prepared the lesson plan and material for the learning activity. Experimental class was taught using time token arends while control class taught using lecturing method. It had been conducted on 4<sup>th</sup> 2016.

#### **B. Research Finding**

There were two kinds of test that had been conducted in this research, pre-test and post-test. The data were obtained based on few tests below:

## 1. Analysis of Pre-Test

The experimental class (XI IPA) and the control class (XI IPS I) were given pre-test on 2<sup>nd</sup> May 2016. They made a draft of hortatory exposition, and then practice it orally without text. The results of the test were analyzed as follow:

### a. Normality Test

The first step in this test is to find the result computation of the Chi-quadrade ( $\chi^2_{count}$ ), then compared with table of Chi-quadrade ( $\chi^2_{table}$ ) by using 5% alpha of significances. If  $\chi^2_{count} < \chi^2_{table}$ , it meant that the data spread of the research result distributed normally.

### 4.1. Table of Students' Score of Experimental Class in Pre-Test

EXPERIMENTAL		
NO	CODE	SCORE
1	E-1	44
2	E-2	48
3	E-3	56
4	E-4	52
5	E-5	48
6	E-6	52
7	E-7	52
8	E-8	48
9	E-9	52
10	E-10	60
11	E-11	52
12	E-12	52
13	E-13	48
14	E-14	48

15	E-15	48
16	E-16	60
17	E-17	44
18	E-18	48
19	E-19	52
20	E-20	44
21	E-21	60
22	E-22	44
23	E-23	56
24	E-24	48
25	E-25	56
26	E-26	64
27	E-27	48
28	E-28	44
29	E-29	56
30	E-30	52
31	E-31	52
32	E-32	52
33	E-33	44
34	E-34	40
35	E-35	68
SUM		1792
n		35
X Average		51.2
Variance (s2)		38.4
Standard Deviation (Sd)		6.196773

#### 4.2. Table of Distribution Frequency of Experimental Class in Pre-Test

Class			$f_i$	$X_i$	$X_i^2$	$f_i \cdot X_i$	$f_i \cdot X_i^2$
40	–	44	7	42	1764	294	12348
45	–	49	9	47	2209	423	19881
50	–	54	10	52	2704	520	27040
55	–	59	4	57	3249	228	12996
60	–	64	4	62	3844	248	15376
65	–	69	1	67	4489	67	4489
SUM			35			1780	92130

Based on the research result of students in experimental class, before they taught using time token arends strategy, it was found that the maximum score was 68 and minimum score was 40 and the stretches of score the score were 28. So, there were 6 classes with length of each classes were 5. From the computation of frequency distribution, it was found the average score ( $\bar{X}$ ) was 50.86 and the standard deviation (Sd) was 6.87. After the researcher counted the average score and standard deviation, table of observation frequency was needed to measure Chi-square

### 4.3. Table of Observation Frequency of Experimental Class in Pre-Test

Class			Bk	$Z_i$	$P(Z_i)$	Ld	Ei	Oi	$\frac{(O_i - E_i)^2}{E_i}$
			39.5	-1.65	-0.4509				
40	–	44				0.1282	4.1	7	2.0446
			44.5	-0.93	-0.3226				
45	–	49				0.2443	7.8	9	0.1785
			49.5	-0.20	-0.0783				
50	–	54				0.2804	9.0	10	0.1179
			54.5	0.53	0.2021				
55	–	59				0.1938	6.2	4	0.7813
			59.5	1.26	0.3958				
60	–	64				0.0806	2.6	4	0.7806
			64.5	1.99	0.4765				
65	–	69				0.0202	0.6	1	0.1940
			69.5	2.71	0.4967				
								$\chi^2 =$	4.10

Based on Chi-quadrat table ( $\chi^2_{table}$ ) for 5% alpha of significance, with dk 6-3, it was found ( $\chi^2_{table}$ ) = 7.81. Based on  $\chi^2_{count} = 4.10 < \chi^2_{table} = 7.81$ , it meant that the data of control class distributed normally.

The results of students in control class, before they were taught using lecturing learning method, it was found that the maximum score was 64 and minimum score was 36 and the stretches of score were 28. There were 6 classes with length of each classes were 5. From the computation of frequency distribution, it was found the average score ( $\bar{X}$ ) was 49.86 and the standard deviation (Sd) was 7.96. After the researcher counted the average score and

standard deviation, table of observation frequency was needed to measure Chi-square.

#### **4.4. Table of Students' Score of Control Class in Pre-Test**

<b>CONTROL</b>		
<b>NO</b>	<b>CODE</b>	<b>SCORE</b>
1	C-1	52
2	C-2	52
3	C-3	36
4	C-4	64
5	C-5	48
6	C-6	36
7	C-7	44
8	C-8	48
9	C-9	52
10	C-10	52
11	C-11	48
12	C-12	64
13	C-13	64
14	C-14	44
15	C-15	52
16	C-16	36
17	C-17	52
18	C-18	48
19	C-19	48
20	C-20	44
21	C-21	64
22	C-22	44
23	C-23	40
24	C-24	44
25	C-25	56
26	C-26	56
27	C-27	48

28	C-28	44
29	C-29	48
30	C-30	44
31	C-31	44
32	C-32	60
33	C-33	48
34	C-34	36
35	C-35	60
SUM		1720
N		35
X Average		49.1429
Variance (s2)		66.420
Standard Deviation (Sd)		8.14986

#### 4.5. Table of Distribution Frequency of Control Class in Pre-Test

Class			$f_i$	$X_i$	$X_i^2$	$f_i \cdot X_i$	$f_i \cdot X_i^2$
36	–	40	4	38	1444	152	5776
41	–	45	8	43	1849	344	14792
46	–	50	8	48	2304	384	18432
51	–	55	6	53	2809	318	16854
56	–	60	4	58	3364	232	13456
61	–	65	5	63	3969	315	19845
SUM			35			1745	89155

#### 4.6. Table of observation frequency of Control Class in Pre-Test

Class			Bk	$Z_i$	$P(Z_i)$	Ld	Ei	Oi	$\frac{(O_i - E_i)^2}{E_i}$
			35.5	-1.80	-0.4644				
36	-	40				0.0843	2.7	4	0.6307
			40.5	-1.18	-0.3801				
41	-	45				0.1722	5.5	8	1.1260
			45.5	-0.55	-0.2079				
46	-	50				0.2401	7.7	8	0.0130
			50.5	0.08	0.0322				
51	-	55				0.2286	7.3	6	0.2367
			55.5	0.71	0.2608				
56	-	60				0.1486	4.8	4	0.1198
			60.5	1.34	0.4094				
61	-	65				0.0659	2.1	5	3.9627
			65.5	1.97	0.4753				
							$\chi^2$	=	6.09

Based on Chi-quadrade table ( $\chi^2_{table}$ ) for 5% alpha of significance, with dk 6-3, it was found ( $\chi^2_{table}$ ) = 7.81. Based on  $\chi^2_{count} = 6.09 < \chi^2_{table} = 7.81$ , it meant that the data of control class distributed normally.

#### b. Homogeneity Test

Test of homogeneity was done to know if sample of the research came from population that had same variance or not. The hypothesis of homogeneity test in pre- test was:

$$H_o : \sigma_1^2 = \sigma_2^2$$



$$H_a : \sigma_1^2 \neq \sigma_2^2$$

Description:

$\sigma_1^2$  = Variance of experiment class

$\sigma_2^2$  = Variance of control class

$H_0$  was accepted if  $F_{count} < F_{table}$ . It meant that the variance was homogeneous.

#### 4.7 Table of Variance in Pre-Test

Variance Sources	Experimental Class	Control Class
SUM	1792	1720
n	35	35
$\bar{x}$	51.200	49.142
Variance ( $s^2$ )	38.400	66.425
Standard Deviation (s)	6.197	8.149

The computation of homogeneity test as follow:

$$F = \frac{\text{Biggest Variance}}{\text{Smallest Variance}}$$

$$F = \frac{66.42}{38.40}$$

$$F = 1.73$$

On alpha 5% with df numerator = 35-1 =34, df denominator = 35-1 =34, it was found  $F_{table} = 1.772$ . Based on the computation, it is obtain that  $F_{count} = 1.730 < F_{table} 1.7772$ , so  $H_0$  was accepted. It could be

concluded that data of pre- test from experiment and control class has the same variance or homogeneous.

c. Hypothesis Test

To test the average of similarity, the researcher used t-test. T- test was used to differentiate if the students' result of experiment class and control class were significant or not.

$$H_0 : \bar{X}_1 = \bar{X}_2$$

$$H_a : \bar{X}_1 \neq \bar{X}_2$$

Description:

$$\bar{X}_1 = \text{Average data of experimental class}$$

$$\bar{X}_2 = \text{Average data of control class}$$

If  $t_{count} > t_{table}$  So  $H_0$  is rejected and there is difference of average value from both of classes. The formula of t-test was:

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

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

Based on table, the researcher had to find out S with that formula.

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

$$= \sqrt{\frac{(35-1)(38.40) + (35-1)(66.42)}{35+35-2}}$$

$$= 7.2396$$

After S was found, the next step was to measure t-test.

$$\begin{aligned}
 t &= \frac{\bar{X}_1 - \bar{X}_2}{s \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \\
 &= \frac{51.20 - 49.14}{7.2396 \sqrt{\frac{1}{35} + \frac{1}{35}}} \\
 &= 1.189
 \end{aligned}$$

With  $\alpha = 5\%$  and  $df = 35+35-2= 68$ , obtained  $t_{table} = 2.00$ . Based on the result of t-test, it was found that  $t_{count} = 1.189$ . Because of  $t_{count} < t_{table}$  so  $H_0$  was accepted. It could be concluded that there was no significant of difference between experiment and control class. Both of them had same condition before treatments.

## 2. Analysis of Post-test

The experimental class and control class were given a post test on 16<sup>th</sup> May 2016. Post-test was conducted after doing all treatments. Time token arends strategy was used as a strategy in teaching speaking in the experimental class by the researcher. While in control class, students were taught using lecturing learning method also by the researcher.

Post-test was aimed to measure students' speaking skill. The results of the test were analyzed as follows:

### a. Normality Test

When the result computation of Chi-quadrade ( $t_{count}$ ) found then, compared with table of Chi-quadrade ( $t_{table}$ ) by using alpha of significances. If  $t_{count} < t_{table}$ ,

it meant that the data spread of the research result distributed normally.

**4.8. Table of Students' Score of Experimental Class in Post-Test**

<b>EXPERIMENTAL</b>		
<b>NO</b>	<b>CODE</b>	<b>SCORE</b>
1	E-1	68
2	E-2	60
3	E-3	64
4	E-4	76
5	E-5	64
6	E-6	60
7	E-7	64
8	E-8	60
9	E-9	64
10	E-10	76
11	E-11	64
12	E-12	72
13	E-13	76
14	E-14	68
15	E-15	72
16	E-16	60
17	E-17	60
18	E-18	56
19	E-19	60
20	E-20	60
21	E-21	76
22	E-22	60
23	E-23	72
24	E-24	68
25	E-25	64
26	E-26	64
27	E-27	60

28	E-28	48
29	E-29	72
30	E-30	64
31	E-31	64
32	E-32	68
33	E-33	60
34	E-34	60
35	E-35	76
Jumlah		2280
n		35
X rata2		65.1429
Varians (s2)		43.8319
Standar Deviasi (Sd)		6.62057

#### 4.9. Table of Distribution Frequency of Experimental Class in Post-Test

Class			$f_i$	$X_i$	$X_i^2$	$f_i \cdot X_i$	$f_i \cdot X_i^2$
48	-	52	1	50	2500	50	2500
53	-	57	1	55	3025	55	3025
58	-	62	11	60	3600	660	39600
63	-	67	9	65	4225	585	38025
68	-	72	8	70	4900	560	39200
73	-	77	5	75	5625	375	28125
SUM			35			2285	150475

Based on the research result of students in experiment class, it was found that the maximum score was 76 and minimum score was 48 and the stretches score were 28. So,

there were 6 classes with length of classes 5. From the computation of frequency distribution, it was found the average score ( $\bar{X}$ ) was 65.29 and the standard deviation (Sd) was 6.18. After the researcher counted the average score and standard deviation, table of observation frequency was needed to measure Chi-square.

#### 4.10. Table of Observation Frequency of Experimental Class in Post-Test

Class			Bk	$Z_i$	$P(Z_i)$	Ld	Ei	Oi	$\frac{(O_i - E_i)^2}{E_i}$
			47.5	-2.88	-0.4980				
48 -		52				0.0172	0.6	1	0.3647
			52.5	-2.07	-0.4808				
53 -		57				0.0845	2.7	1	1.0743
			57.5	-1.26	-0.3963				
58 -		62				0.2222	7.1	11	2.1256
			62.5	-0.45	-0.1740				
63 -		67				0.3140	10.0	9	0.1094
			67.5	0.36	0.1400				
68 -		72				0.2386	7.6	8	0.0175
			72.5	1.17	0.3786				
73 -		77				0.0974	3.1	5	1.1372
			77.5	1.98	0.4760				
							$\chi^2$	=	4.83

Based on Chi-quadrante table ( $\div^2_{table}$ ) for 5% alpha of significance, with dk 6-3, it was found ( $\div^2_{table}$ ) = 7.81. It

can be concluded that  $\div^2_{count} = 4.83 < \div^2_{table} = 7.81$ . It meant that the data of control class distributed normally.

#### 4.11. Table of Students' Score of Control Class in Post-Test

CONTROL		
NO	CODE	SCORE
1	C-1	52
2	C-2	60
3	C-3	64
4	C-4	52
5	C-5	60
6	C-6	56
7	C-7	56
8	C-8	60
9	C-9	60
10	C-10	60
11	C-11	56
12	C-12	52
13	C-13	72
14	C-14	64
15	C-15	52
16	C-16	44
17	C-17	48
18	C-18	56
19	C-19	68
20	C-20	60
21	C-21	52
22	C-22	56
23	C-23	48
24	C-24	56
25	C-25	44
26	C-26	52
27	C-27	72

28	C-28	56
29	C-29	52
30	C-30	56
31	C-31	60
32	C-32	48
33	C-33	60
34	C-34	64
35	C-35	48
Jumlah		1976
N		35
X rata2		56.4571
Varians (s2)		47.785
Standar Deviasi (Sd)		6.91266

#### 4.12. Table of Distribution Frequency of Control Class in Post-Test

Class			$f_i$	$X_i$	$X_i^2$	$f_i \cdot X_i$	$f_i \cdot X_i^2$
44	–	48	6	46	2116	276	12696
49	–	53	7	51	2601	357	18207
54	–	58	8	56	3136	448	25088
59	–	63	8	61	3721	488	29768
64	–	68	4	66	4356	264	17424
69	–	73	2	71	5041	142	10082
SUM			35			1975	113265

The results of students in control class, after they were taught using conventional learning method, it was found that the maximum score was 72 and minimum score was 44 and the stretches of score were 28. There were 6 classes with length of each classes were 5. From the



computation of frequency distribution, it was found the average score ( $\bar{X}$ ) was 56.43 and the standard deviation (Sd) was 7.31. After the researcher counted the average score and standard deviation, table of observation frequency was needed to measure Chi-square.

#### 4.13. Table of Observation Frequency of Control Class in Post-Test

Class			Bk	$Z_i$	$P(Z_i)$	Ld	Ei	Oi	$\frac{(O_i - E_i)^2}{E_i}$
			43,5	-1.77	-0.4614				
44 –		48				0.1006	3.2	6	2.4013
			48,5	-1.08	-0.3608				
49 –		53				0.2053	6.6	7	0.0284
			53,5	-0.40	-0.1556				
54 –		58				0.2671	8.5	8	0.0350
			58,5	0.28	0.1115				
59 –		63				0.2217	7.1	8	0.1156
			63,5	0.97	0.3332				
64 –		68				0.1174	3.8	4	0.0158
			68,5	1.65	0.4506				
69 –		73				0.0396	1.3	2	0.4227
			73,5	2.33	0.4902				
								$\chi^2_k =$	3.02

Based on Chi-quadrade table ( $\div^2_{table}$ ) for 5% alpha of significance, with dk 6-3, it was found ( $\div^2_{table}$ ) = 7.81. It can be concluded that  $\div^2_{count} = 3.02 < \div^2_{table} = 7.81$ . It meant that the data of control class distributed normally.

b. Homogeneity Test

Test of homogeneity was done to know if sample of the research came from population that had same variance or not. The hypothesis of homogeneity test in post-test was:

$$H_0 : \sigma_1^2 = \sigma_2^2$$

$$H_a : \sigma_1^2 \neq \sigma_2^2$$

Description:

$$\sigma_1^2 = \text{Variance of experimental class}$$

$$\sigma_2^2 = \text{Variance of control class}$$

$H_0$  was accepted if  $F_{count} < F_{table}$ . It meant that the variance was homogeneous.

**4.14. Table of variance in post-test**

Variance Sources	Experimental Class	Control Class
SUM	2280	1968
n	35	35
x	65.142	56.450
Variance ( $s^2$ )	43.831	50.770
Standard Deviation (s)	6.620	7.125

The computation of homogeneity test as follow:

$$F = \frac{\text{Biggest Variance}}{\text{Smallest Variance}}$$

$$F = \frac{50.77}{43.58}$$

$$F = 1.15$$

On alpha 5% with df numerator = 35-1 =34, df denominator = 35-1 =34, it was found  $F_{table} = 1.7721$ . Based on the computation, it is obtain that  $F_{count} = 1.158 < F_{table} 1.7721$ , so  $H_0$  was accepted. It could be concluded that data of pre- test from experiment and control class has the same variance or homogeneous.

c. Hypothesis Test

To test the hypothesis, the researcher used t-test. T-test was used to differentiate if the students' result of experiment class and control class were significant or not.

$$H_0 : \bar{x}_1 \leq \bar{x}_2$$

$$H_a : \bar{x}_1 > \bar{x}_2$$

Description:

$$\bar{x}_1 = \text{Average data of experimental class}$$

$$\bar{x}_2 = \text{Average data of control class}$$

If  $t_{count} > t_{table}$  So  $H_0$  is rejected and there is difference of average value from both of classes. The formula of t-test was:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{S \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \text{ with}$$

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

Based on table, the researcher had to find out S with that formula.

$$\begin{aligned}
S &= \sqrt{\frac{(n_1 - 1) S_1^2 + (n_2 - 1) S_2^2}{n_1 + n_2 - 2}} \\
&= \sqrt{\frac{(35-1)(43.88) + (35-1)(50.77)}{35+35-2}} \\
&= 6.8775
\end{aligned}$$

After S was found, the next step was to measure t-test.

$$\begin{aligned}
t &= \frac{\bar{X}_1 - \bar{X}_2}{s \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \\
&= \frac{65.14 - 56.45}{6.8775 \sqrt{\frac{1}{35} + \frac{1}{35}}} \\
&= 5.365
\end{aligned}$$

With  $\alpha = 5\%$  and  $df = 35+35-2 = 68$ , obtained  $t_{table} = 1.67$ . From the result of t-test above, it was found that  $t_{count} = 5.422$ . Because of  $t_{count} > t_{table}$ , so  $H_0$  was rejected and  $H_a$  was accepted. It could be concluded that there is significant difference between experimental and control class. It means that experimental class is better than control class after getting the treatments.