CHAPTER IV
RESEARCH FINDING AND ANALYSIS

A. Description of Research Findings

To find out the difference between the students who were taught by using Mime Game and the students who were not taught by using Mime Game on Present Continuous Tense, especially in SMP Islam Walisongo Penawangan Grobogan the writer did an analysis of quantitative data. The data was obtained by giving test to the experimental class and control class after giving a different learning both classes.

The subjects of this research were divided into two classes. They are experimental class (VII A), control class (VII B). Before items were given to the students, the writer gave try out test to analyze validity, reliability, difficulty level and also the discrimination power of each item. The writer prepared 30 items as the instrument of the test. Test was given before and after the students follow the learning process that was provided by the writer.

Before the activities were conducted, the writer determined the materials and lesson plan of learning. Learning in the experiment class used mime game, while the control class without used mime game.

After the data were collected, the writer analyzed it. The first analysis data is from the beginning of control class and experimental class that is taken from the pre test value. It is the normality test and homogeneity test. It is used to know that two groups are normal and have same variant. Another analysis data is from the ending of control class and experimental class. It is used to prove the truth of hypothesis that has been planned.

B. Data Analysis And Hypothesis Test

1. The Data Analysis

a. The data analysis of try out finding

This discussion covers validity, reliability, level of difficulty and discriminating power.

1) Validity of Instrument

As mentioned in chapter III, validity refers to the precise measurement of the test. In this study, item validity is used to know the index validity of the test. To know the validity of instrument, the writer used the Pearson product moment formula to analyze each item.

It is obtained that from 30 test items; there are 21 test items which are valid and 9 test items which are invalid. They are on number 11, 12, 14, 15, 16, 17, 21, 22, 25. They are invalid with the reason computation result of their r_{xy} value (the correlation of score each item) is lower than their r_{table} value.

The following is the example of item validity computation for item number 1 and for the other items would use the same formula.

N = 30 $\qquad \sum Y = 347$

$\sum XY = 279 \qquad \sum X^2 = 22$

$\sum X = 22 \qquad \sum Y^2 = 4595$

$$r_{xy} = \frac{N\sum XY - \sum(X)\sum(Y)}{\sqrt{\left\{N\sum X^2 - \left(\sum X\right)^2\right\}\left\{N\sum Y^2 - \left(\sum Y\right)^2\right\}}}$$

$$r_{xy} = \frac{30(279) - 22(347)}{\sqrt{\left\{30(22) - (22)^2\right\}\left\{30(4595) - (347)^2\right\}}}$$

$$r_{xy} = \frac{8370 - 7634}{\sqrt{(660 - 484)(137850 - 120409)}}$$

$$r_{xy} = \frac{736}{\sqrt{(176)(17441)}}$$

$$r_{xy} = \frac{736}{\sqrt{3069616}}$$

$$r_{xy} = \frac{736}{2916.70}$$

$$r_{xy} = 0.420$$

From the computation above, the result of computing validity of the item number 1 is 0.420. After that, the writer consulted the result to the table of r Product Moment with the number of subject (N) = 30 and significance level 5% it is 0.312. Since the result of the computation is higher than r in table, the index of validity of the item number 1 is considered to be valid. The list of the validity of each item can be seen in appendix 1.

2) Reliability of Instrument

A good test must be valid and reliable. Besides the index of validity, the writer calculated the reliability of the test using Kuder-Richarson Formula 20(K-R 20).

Before computing the reliability, the writer had to compute varian (S^2) with the formula below:

N = 30 $\quad\quad$ $\sum Y$ = 347

$\sum Y^2$ = 4595 $\quad\quad$ $\sum pq$ = 6.0567

$$S^2 = \frac{\sum y^2 - \frac{(\sum y)^2}{N}}{N}$$

$$S^2 = \frac{4595 - \frac{(347)^2}{30}}{30}$$

$$S^2 = \frac{4595 - 4013.63}{30}$$

$$S^2 = \frac{581.37}{30}$$

$$S^2 = 19.379$$

The computation of the variant (S^2) is 19.379. After finding the variant (S^2) the writer computed the reliability of the test as follows:

$$r_{11} = \left(\frac{n}{n-1}\right)\left(\frac{S^2 - \sum pq}{S^2}\right)$$

$$r_{11} = \left(\frac{30}{30-1}\right)\left(\frac{19.379 - 6.057}{19.379}\right)$$

$$r_{11} = 1.03\left(\frac{13.322}{19.379}\right)$$

$$r_{11} = 0.711$$

From the computation above, it is found out that r_{11} (the total of reliability test) is 0.711, whereas the number of subjects is 30 and the critical value for r-table with significance level 5% is 0.361. Thus, the value resulted from the computation is higher than its critical value. It could be concluded that the instrument used in this research is reliable.

3) Degree of the Test Difficulty

The following computation of the level difficulty for the item number 1 and for the other items would use the same formula.

$B = 14 + 8 = 22$ $\qquad P = \frac{B}{JS}$

$JS = 30$ $\qquad P = \frac{22}{30}$

$$P = 0.73$$

From the computation above, the question number 1 can be said as the easy category, because the calculation result of the item number 1 is in the interval $0.7 < P \leq 1$

4) Discriminating Power

The following is the computation of the discriminating power for item number 1, and for other items would use the same formula.

$$D = \frac{BA}{JA} - \frac{BB}{JB}$$

Before computed using the formula, the data divided into 2 (group). They were upper group and low group.

Table 2

The Table of the Gathered Score of Item Number 1

Upper Group			Low Group		
No	Code	Score	No	Code	Score
1	TO-8	1	1	TO-14	0
2	TO-6	1	2	TO-19	1
3	TO-15	1	3	TO-26	0
4	TO-30	1	4	TO-28	1
5	TO-23	1	5	TO-2	0
6	TO-22	1	6	TO-11	0
7	TO-3	1	7	TO-16	1
8	TO-17	1	8	TO-21	1
9	TO-18	1	9	TO-13	0
10	TO-20	1	10	TO-29	1
11	TO-24	1	11	TO-1	1
12	TO-25	1	12	TO-5	0
13	TO-7	0	13	TO-27	1
14	TO-9	1	14	TO-4	0
15	TO-12	1	15	TO-10	1
Sum		14	Sum		8

TO : Try Out

From the table above known as below

$BA = 14$ $BB = 8$

$JA = 15$ $JB = 15$

$$D = \frac{BA}{JA} - \frac{BB}{JB}$$

$$D = \frac{14}{15} - \frac{8}{15}$$

$$D = \frac{6}{15}$$

$$D = 0.40$$

From the computation above, the question number 1 can be said as the fair category, because the calculation result of the item number 1 is in the interval $0.2 < D \leq 0.4$.

Based on the analysis of validity, reliability, difficulty level and discriminating power, finally 20 items are accepted. They are number 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 13, 18, 19, 20, 23, 24, 27, 28, 29, and 30.

b. The data analysis of pre test value of the experimental class and the control class

Table 3

The list of Pre-test Value of the Experimental and Control Class

No	Experiment Class				Control Class			
	Code of the Students	x_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$	Code of the Students	x_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$
1	E - 29	70	12.333	152.103	C - 15	75	17.833	318.016
2	E - 1	70	12.333	152.103	C - 13	65	7.833	61.356
3	E - 17	70	12.333	152.103	C - 17	65	7.833	61.356
4	E - 19	65	7.333	53.773	C - 8	65	7.833	61.356
5	E - 23	65	7.333	53.773	C - 9	65	7.833	61.356

6	E - 24	65	7.333	53.773	C - 18	65	7.833	61.356
7	E - 27	65	7.333	53.773	C - 23	60	2.833	8.026
8	E - 2	65	7.333	53.773	C - 29	60	2.833	8.026
9	E - 6	60	2.333	5.443	C - 24	60	2.833	8.026
10	E - 7	60	2.333	5.443	C - 25	60	2.833	8.026
11	E - 8	60	2.333	5.443	C - 26	60	2.833	8.026
12	E - 10	60	2.333	5.443	C - 28	60	2.833	8.026
13	E - 11	60	2.333	5.443	C - 1	60	2.833	8.026
14	E - 12	60	2.333	5.443	C - 6	60	2.833	8.026
15	E - 15	60	2.333	5.443	C - 7	60	2.833	8.026
16	E - 16	55	-2.667	7.113	C - 11	55	-2.167	4.696
17	E - 26	55	-2.667	7.113	C - 12	55	-2.167	4.696
18	E - 5	55	-2.667	7.113	C - 16	55	-2.167	4.696
19	E - 13	55	-2.667	7.113	C - 22	55	-2.167	696
20	E - 18	55	-2.667	7.113	C - 27	55	-2.167	4.696
21	E - 20	55	-2.667	7.113	C - 30	55	-2.167	4.696
22	E - 21	55	-2.667	7.113	C - 3	55	-2.167	4.696
23	E - 22	55	-2.667	7.113	C - 10	55	-2.167	4.696
24	E - 25	50	-7.667	58.783	C - 14	55	-2.167	4.696
25	E - 28	50	-7.667	58.783	C - 20	50	-7.167	51.366
26	E -30	50	-7.667	58.783	C - 5	50	-7.167	51.366
27	E - 3	50	-7.667	58.783	C - 19	50	-7.167	51.366
28	E - 4	45	-12.667	160.453	C - 21	50	-7.167	51.366
29	E - 14	45	-12.667	160.453	C - 2	40	-17.167	294.706
30	E - 9	45	-12.667	160.453	C - 4	40	-17.167	294.706
	$\sum$ $\bar{x}$	1730 57.667	0.00	1487.50	$\sum$ $\bar{x}$	1715 57.167	0.00	1534.164

1) The Normality Pre-test of the Experimental Class

The normality test is used to know whether the data obtained is normally distributed or not. Based on the table above, the normality test:

Hypothesis:

Ha: The distribution list is normal.

Ho: The distribution list is not normal

Test of hypothesis:

The formula is used:

$$X^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

The computation of normality test:

N = 30 Length of the class = 5

Maximum score = 70 $\sum x$ = 1730

Minimum score = 45 $\bar{x}$ = 57.667

K / Number of class = 6 Range = 25

Table 4

Frequency Distribution

Class interval	x_i	f_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$	$f_i(x_i - \bar{x})^2$
45 - 49	47	3	-10.667	113.785	341.355
50 - 54	52	4	-5.667	32.115	128.460
55 - 59	57	8	-0.667	0.445	3.559
60 - 64	62	7	4.333	18.775	31.424
65 - 69	67	5	9.333	87.105	435.524
70 - 74	72	3	14.333	205.435	616.305
$\sum$		30			1556.626

$$S = \sqrt{\frac{\sum f_i (x_i - \bar{x})^2}{n-1}} = \sqrt{\frac{1556.626}{30-1}} = 7.326$$

Table 5

Normality Pre test of the Experimental Class

Class interval	Limit class	Z for the limit class	Opportunities Z	Size classes for Z	Ei	Oi	$\frac{(O_i - E_i)^2}{E_i}$
45 - 49	44.5	-1.797	0.464				
				0.095	2.85	3	0.008

50 - 54	49.5	-1.115	0.369				
				0.203	6.09	4	0.717
55 - 59	54.5	-0.432	0.166				
				0.178	5.34	8	1.325
60 - 64	59.5	0.025	0.012				
				0.312	9.36	7	0.595
65 - 69	64.5	0.933	0.324				
				0.123	3.69	5	0.465
70 - 74	69.5	1.615	0.447				
				0.042	1.26	3	2.403
	74.5	2.298	0.489				
The result of computation Chi–Square							5.513

With α = 5% and dk = 6-3=3, from the chi-square distribution table, obtained χ^2_{table} = 7.815. Because χ^2_{count} is lower than χ^2_{table} (5.513<7.815). So, the distribution list is normal.

2) The Normality Pre-test of the Control Class

Hypothesis:

Ha: The distribution list is normal.

Ho: The distribution list is not normal

Test of hypothesis:

The formula is used:

$$X^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

The computation of normality test:

Maximum score = 75 N = 30

Minimum score = 40 Range = 35

K / Number of class = 6 $\bar{x}$ = 57.167

Length of the class = 6 $\sum x$ = 1715

Table 6

Frequency Distribution

Class interval	x_i	f_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$	$f_i(x_i - \bar{x})^2$
40 - 45	42.5	2	-14.667	215.121	430.242
46 - 51	48.5	4	-8.667	75.117	300.468
52 - 57	54.5	9	-2.667	7.113	64.016
58 - 63	60.5	9	3.333	11.109	99.980
64 - 69	66.5	5	9.333	87.105	425.524
70 - 75	72.5	1	15.333	235.101	235.101
$\sum$		30			1555.330

$$S = \sqrt{\frac{\sum f_i (x_i - \bar{x})^2}{n-1}} = \sqrt{\frac{1555.330}{30-1}} = 7.323$$

Table 7

Normality Pre test of the Control Class

Class interval	Limit class	Z for the limit class	Opportunities Z	Size classes for Z	Ei	Oi	$\frac{(O_i - E_i)^2}{E_i}$
40 - 45	39.5	-2.413	0.492				
				0.047	1.41	2	0.247
46 - 51	45.5	-1.593	0.445				
				0.166	4.98	4	0.193
52 - 57	51.5	-0.774	0.279				
				0.299	8.97	9	0.000
58 - 63	57.5	0.045	0.020				
				0.321	9.63	9	0.041
64 - 69	64.5	1.001	0.341				
				0.113	3.39	5	0.765
70 - 75	69.5	1.684	0.454				
				0.040	1.2	1	0.033
	75.5	2.503	0.494				
The result of computation Chi–Square							1.279

With α = 5% and dk = 6-3=3, from the chi-square distribution table, obtained χ^2_{table} = 7.815. Because χ^2_{count} is lower than χ^2_{table} (1.279<7.815). So, the distribution list is normal.

3) The Homogeneity Pre-Test of the Experimental Class

Hypothesis :

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

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

Test of hypothesis:

The formula is used:

$$F = \frac{Biggest\ \text{var}\ iant}{smallest\ \text{var}\ iant}$$

The Data of the research:

$\sum (x_i - \bar{x})_1^2 = 1536.664$ $\quad n_1 = 30$

$\sum (x_i - \bar{x})_2^2 = 1534.164$ $\quad n_2 = 30$

$$\sigma_1^2 = S_1^{\ 2} = \frac{\sum (x - \bar{x})^2}{n_1 - 1} = \frac{1536.664}{29} = 52.988$$

$$\sigma_2^2 = S_2^{\ 2} = \frac{\sum (x - \bar{x})^2}{n_2 - 1} = \frac{1534.164}{29} = 52.902$$

Biggest variant (Bv) = 52.988

Smallest variant (Sv) = 52.902

Based on the formula, it is obtained:

$$F = \frac{52.988}{52.902} = 1.00$$

With α = 5% and dk = (30-1 = 29): (30-1 = 29), obtained F_{table} = 1.85. Because F_{count} is lower than F_{table} (1.00 < 1.85). So, Ho is accepted and the two groups have same variant / **homogeneous.**

4) The average similarity Test of Pre-Test of Experimental and Control Classes

Hypothesis:

Ho: $\mu_1 = \mu_2$

Ha: $\mu_1 \neq \mu_2$

Test of hypothesis:

Based on the computation of the homogeneity test, the experimental class and control class have same variant. So, the t-test formula:

$$t = \frac{\overline{x_1} - \overline{x_2}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \qquad S = \sqrt{\frac{(n_1 - 1)S_1^{\,2} + (n_2 - 1)S_2^{\,2}}{n_1 + n_2 - 2}}$$

The data of the research:

$\overline{x_1}$	= 57.667	$\overline{x_2}$	= 57.164
$S_1^{\,2}$	= 52.988	$S_1^{\,2}$	= 52.902
n_1	= 30	n_2	= 30

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

$$S = \sqrt{\frac{(30-1)52.988 + (30-1)52.902}{30 + 30 - 2}} = \sqrt{\frac{3070.810}{58}} = 7.276$$

So, the computation t-test:

$$t = \frac{\overline{x_1} - \overline{x_2}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} = \frac{57.667 - 57.167}{7.276\sqrt{\frac{1}{30} + \frac{1}{30}}} = \frac{0,5}{0.487} = 1.027$$

With α = 5% and dk = 30 + 30 – 2 = 58, obtained t_{table} =2.390. Because t_{count} is lower than t_{table} (1.027<2.390). So, Ho is accepted and there is no difference of the pre test average value from both groups.

c. The Data Analysis of Post-test Scores in Experimental Class and Control Class.

Table 8

The Value of the Post Test of the Experimental and Control Class

No	Experiment Class				Control Class			
	Code of the Students	x_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$	Code of the Students	x_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$
1	E - 28	95	20.333	413.431	C - 14	90	22.167	491.376
2	E - 29	90	15.333	235.101	C - 19	80	12.167	148.136
3	E - 13	85	10.333	106.771	C - 3	80	12.167	148.136
4	E - 18	85	10.333	106.771	C - 6	80	12.167	148.136
5	E - 19	85	10.333	106.771	C - 9	80	12.167	148.136
6	E - 11	85	10.333	106.771	C - 23	75	7.167	51.366
7	E - 21	85	10.333	106.771	C - 30	75	7.167	51.366
8	E - 23	85	10.333	106.771	C - 1	75	7.167	51.366
9	E - 1	80	5.333	28.441	C - 11	70	2.167	4.696
10	E - 7	80	5.333	28.441	C - 13	70	2.167	4.696
11	E - 14	80	5.333	28.441	C - 18	70	2.167	4.696
12	E - 22	80	5.333	28.441	C - 29	70	2.167	4.696
13	E - 27	75	0.333	0.111	C - 17	70	2.167	4.696
14	E - 2	75	0.333	0.111	C - 26	70	2.167	4.696
15	E - 3	75	0.333	0.111	C - 4	65	-2.833	8.026

16	E - 5	75	0.333	0.111	C - 5	65	-2.833	8.026
17	E - 6	75	0.333	0.111	C - 7	65	-2.833	8.026
18	E - 8	70	-4.667	21.781	C - 8	65	-2.833	8.026
19	E - 10	70	-4.667	21.781	C - 10	65	-2.833	8.026
20	E - 12	70	-4.667	21.781	C - 15	65	-2.833	8.026
21	E - 16	70	-4.667	21.781	C - 16	65	-2.833	8.026
22	E - 17	70	-4.667	21.781	C - 20	65	-2.833	8.026
23	E - 24	70	-4.667	21.781	C - 24	65	-2.833	8.026
24	E -30	70	-4.667	21.781	C - 25	65	-2.833	8.026
25	E - 20	65	-9.667	93.451	C - 27	65	-2.833	8.026
26	E - 25	65	-9.667	93.451	C - 28	60	-7.833	61.356
27	E - 15	65	-9.667	93.451	C - 21	55	-12.833	164.686
28	E - 26	60	-14.667	215.121	C - 22	55	-12.833	164.686
29	E - 4	55	-19.667	386.791	C - 12	50	-17.833	318.016
30	E - 9	50	-24.667	608.461	C - 2	45	-22.833	521.346
	$\sum$ $\bar{x}$	2240 74.667	0.00	3046.666	$\sum$ $\bar{x}$	2035 67.833	0.00	2584.564

1) The Normality Post-Test of the Experimental Class

Based on the table above, the normality test:

Hypothesis :

Ho : The distribution list is normal.

Ha : The distribution list is not normal.

Test of hypothesis:

The formula is used:

$$\chi^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

The computation of normality test:

Maximum score	= 95	N	= 30
Minimum score	= 50	Range	= 45
K / Number of class	= 6	$\bar{x}$	= 74.667
Length of the class	= 8	$\sum x$	= 2240

Table 9

Frequency Distribution

Class interval	x_i	f_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$	$f_i(x_i - \bar{x})^2$
50 – 57	53.5	2	-21.167	448.042	896.084
58 – 65	61.5	4	-13.167	173.370	693.480
66 – 73	69.5	7	-5.167	26.698	186.885
74 – 81	77.5	9	2.833	8.026	72.233
82 – 89	85.5	6	10.833	117.354	704.123
90 - 97	93.5	2	18.833	354.819	709.364
$\sum$		30			3262.168

$$S = \sqrt{\frac{\sum f_i (x_i - \bar{x})^2}{n-1}} = \sqrt{\frac{3262.168}{30-1}} = 10.606$$

Table 10

Normality Post test of the Experimental Class

Class interval	Limit class	Z for the limit class	Opportunities Z	Size classes for Z	Ei	Oi	$\frac{(O_i - E_i)^2}{E_i}$
50 – 57	49.5	-2.373	0.491				
				0.044	1.320	2	0.350
58 – 65	57.5	-1.619	0.447				
				0.142	4.260	4	0.016
66 – 73	65.5	-0.864	0.305				
				0.261	7.830	7	0.088
74 – 81	73.5	-0.110	0.044				
				0.283	8.490	9	0.031
82 – 89	81.5	0.644	0.239				
				0.180	5.400	6	0.666
90 - 97	89.5	1.399	0.419				
				0.065	1.950	2	0.001
	97.5	2.153	0.484				
The result of computation Chi–Square							1.152

With α = 5% and dk =6-3 =3, from the Chi-Square distribution table, obtained χ^2_{table} =7.815. Because d χ^2_{count} is lower than χ^2_{table} (1.152<7.815). So, the distribution list is normal.

2) The Normality Post-Test of the Control Class

Hypothesis:

Ho : The distribution list is normal

Ha : The distribution list is not normal

Test of hypothesis:

The formula is used:

$$\chi^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

The computation of normality test:

Maximum score	= 90	N	= 30
Minimum score	= 55	Range	= 45
K / Number of class	= 6	$\bar{x}$	= 67.833
Length of the class	= 8	$\sum x$	= 2035

Table 11

Frequency Distribution

Class interval	x_i	f_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$	$f_i(x_i - \bar{x})^2$
45 - 52	48.5	2	-19.333	373.765	747.530
53 - 60	56.5	3	-11.333	128.437	385.311
61 - 68	64.5	11	-3.333	11.109	122.198
69 - 76	72.5	9	4.667	21.781	196.028
77 - 87	80.5	4	12.667	160.453	641.812
85 - 92	88.5	1	20.667	427.125	427.125
					2520.002

$$S = \sqrt{\frac{\sum f_i (x_i - \bar{x})^2}{n-1}} = \sqrt{\frac{2250.002}{30-1}} = 9.322$$

Table 12

Normality Post test of the Control Class

Class interval	Limit class	Z for the limit class	Opportunities Z	Size classes for Z	Ei	Oi	$\frac{(O_i - E_i)^2}{E_i}$
45 - 52	44.5	-2.503	0.494				
				0.043	1.290	2	0.391
53 - 60	52.5	-1.645	0.451				
				0.166	4.980	3	0.787
61 - 68	60.5	-0.787	0.285				
				0.313	9.390	11	0.276
69 - 76	68.5	0.072	0.028				
				0.296	8.880	9	0.002
77 - 87	76.5	0.930	0.324				
				0.159	4.770	4	0.124
85 - 92	87.5	2.110	0.483				
				0.013	0.390	1	0.954
	92.5	2.646	0.496				
The result of computation Chi–Square							2.534

With α = 5% and dk =6-3 =3, from the chi-square distribution table, obtained χ^2_{table} =7.815. Because χ^2_{count} is lower than χ^2_{table} (2.534 < 7.815). So, the distribution list is normal.

3) The Homogeneity Post-Test of the Experimental Class

Hypothesis :

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

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

Test of hypothesis:

The formula is used:

$$F = \frac{Biggest\ \text{var}\, iant}{smallest\ \text{var}\, iant}$$

The data of the research:

$\sum (x_i - \bar{x})_1^2 = 3046.666$ $n_1 = 30$

$\sum (x_i - \bar{x})_2^2 = 2584.564$ $n_2 = 30$

$$S_1^2 = \frac{\sum (x - \bar{x})^2}{n_1 - 1} = \frac{3046.666}{29} = 105.057$$

$$S_2^2 = \frac{\sum (x - \bar{x})^2}{n_2 - 1} = \frac{2584.64}{29} = 89.123$$

Biggest variant (Bv) = 105.057

Smallest variant (Sv) = 89.123

Based on the formula, it is obtained:

$$F = \frac{105.057}{89.123} = 1.179$$

With α = 5% and dk = (30-1=29): (30–1=29), obtained F_{table} = 1.84. Because F_{count} is lower than F_{table} (1.179 < 1.84). So, Ho is accepted and the two groups have same variant/ **homogeneous**

2. The Hypothesis Test

The hypothesis in this research is that Mime Game is effective to improve students' understanding on Present Continuous Tense.

In this research, because $\sigma_1^2 = \sigma_2^2$ (has same variant), the t-test formula is as follows:

$$t = \frac{\overline{X}_1 - \overline{X}_2}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \qquad S = \sqrt{\frac{(n_1 - 1)S_1^{\,2} + (n_2 - 1)S_2^{\,2}}{n_1 + n_2 - 2}}$$

The data of the research:

$\overline{x}_1$	= 74.667	$\overline{x}_2$	= 67.833
S_1^2	= 105.057	S_1^2	= 89.123
n_1	= 30	n_1	= 30

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

$$\sqrt{\frac{(30-1)105.057 + (30-1)89.123}{30 + 30 - 2}} = \sqrt{\frac{5631.220}{58}} = 9.853$$

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

$$t = \frac{74.667 - 67.833}{9.853\sqrt{\frac{1}{30} + \frac{1}{30}}} = \frac{6.834}{9.853\sqrt{\frac{2}{30}}} = 2.686$$

From the computation above, the t-table is 2.390 by 5% alpha level of significance and dk = 30+30-2=58. T-value was 2.686. So, the t-value was higher than the critical value on the table (2.686 > 2.390).

From the result, it can be concluded that there is a significant difference in Present Continuous Tense achievement score between students were taught using Mime Game and those were taught without Mime Game. So, it can be said that Mime game is effective to improve

students' understanding on Present Continuous Tense, and so the action hypothesis is accepted.

C. Discussion of The Research Findings

1. The score of Pre test

Based on the calculations of normality and homogeneity test from class VII A as the experiment class and class VII B as the control class is normal distribution and homogeneous.

Normality test by using Chi Square Formula:

Class	χ^2_{count}	χ^2_{table} (α = 5%)	Distibution
Experiment class	5.513	7.815	$\chi^2_{count} < \chi^2_{table}$ (5.513 < 7.815). So, the distribution list is normal.
Control class	1.279	7.815	$\chi^2_{count} < \chi^2_{table}$ (1.279 < 7.815). So, the distribution list is normal.

Homogeneity test:

By using formula:

$$F = \frac{Biggest\ variant}{smallest\ variant}$$

Where:

Biggest variant (Bv) = 52.988

Smallest variant (Sv) = 52.902

Based on the formula, it is obtained:

$$F = \frac{52.988}{52.902} = 1.00$$

With α = 5% and dk = 29: 29, obtained F_{table} = 1.85. Because F_{count} is < F_{table} (1.00 < 1.85). So, Ho is accepted and the two groups have same variant / **homogeneous.**

2. The score of post test

The result of the research shows that the experimental class (the students who are taught using Mime Game) has the mean value 74.667. Meanwhile, the control class (the students who are taught without using Mime Game) has the mean value 67.833. It can be said that the Present Continuous Tense achievement of experiment class is higher than the control class.

On the other hand, the test of hypothesis using t-test formula shows the value of the t-test is higher than the critical value, $t_{count} > t_{table}$ (t_{count} higher than t_{table}). The value of t-test is 2.686, while the critical value on $t_{s0,05}$ is 2.390. It means that there is a significant difference the Present Continuous Tense achievement between students taught using Mime Game and those taught without Mime Game. In this case, the use of Mime Game is necessary needed in teaching Present Continuous Tense.

D. Limitation of The Research

The writer realizes that this research had not been done optimally. There were constraints and obstacles faced during the research process. Some limitations of this research are:

1. Relative short time of research makes this research could not be done maximum.
2. The research is limited at SMP Islam Walisongo Penawangan. So that when the same research will be gone in other schools, it is still possible to get different result.
3. The implementation of the research process was less smooth; this was more due to lack of experience and knowledge of the writer.

Considering all those limitations, there is a need to do more research about teaching Present Continuous Tense using Mime Game. So that, the more optimal result will be gained.