CHAPTER IV
RESEARCH FINDINGS AND ANALYSIS

A. Description of the Result Research

To find out the effectiveness of songs between the students who were taught by using songs and the students who were not taught by using songs on arithmetic vocabulary, especially in SD N1 Kutamendala, Tonjong, Brebes 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 (IV B), control class (IV B) and try out class (IV C) of SD N 01 Kutamendala Tonjong Brebes. 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 20 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 songs, while the control class without used songs.

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. The Data Analysis and Test of Hypothesis

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 20 test items; there are 16 test items which are valid (1 2 3 4 6 7 8 9 10 11 12 13 14 15 16 17) and 4 test items which are invalid (5 18 19 20). They are to invalid with the reason the computation result of their γ_{pbi} 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 = 39 $\quad \sum Y = 419$ $\quad p = 0.54$ $\quad Mp = 12.81$

$\sum XY = 269$ $\quad M_t = 10.74$ $\quad q = 0.46$

$\sum X = 21$ $\quad \sum Y^2 = 5291$ $\quad S_t = 4.50$

$$\gamma_{pbis} = \frac{M_p - M_t}{S_t}\sqrt{\frac{p}{q}}$$

$$= \frac{12.81 - 10.74}{4.50}\sqrt{\frac{0.54}{0.46}}$$

$$= 0.496$$

From the computation above, the result of computing validity of the item number 1 is 0,496. After that, the writer consulted the result to the table of γ_{pbi} with the number of subject (N) = 39 and significance level 5% it is 0.316. 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.

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 = 39 $\qquad \sum Y = 419$

$\sum Y^2 = 5291 \qquad \sum pq = 3.9697$

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

$$S^2 = \frac{55291 - \frac{(419)^2}{39}}{39}$$

$$S^2 = 20.2419$$

The computation of the Varian (S^2) is 20,2419. After finding the Varian (S^2) the writer computed the reliability of the test as follows:

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

$$r_{11} = \left(\frac{16}{16-1}\right)\left(\frac{20{,}2419 - 3{,}9697}{20{,}2419}\right)$$

$$r_{11} = 0{,}8575$$

From the computation above, it is found out that r_{11} (the total of reliability test) is 0,8575, whereas the number of subjects is 16 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) The level of Difficulty

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

$$\mathrm{P} = \frac{\mathrm{B_A} + \mathrm{B_B}}{\mathrm{J_A} + \mathrm{J_B}}$$

It is proper to say that the index difficulty of the item number 1 above can be said as the medium category, because the calculation result of the item number 1 is in the interval $0{,}30 \leq p \leq 0{,}70$.

After computing 20 items of the try-out test, there are 6 items are considered to be easy, 10 items are enough, 4 items are difficult. The whole computation result of difficulty level can be seen in appendix.

4) The Discriminating Power

The discrimination power of an item indicated the extent to which the item discriminated between the tastes, separating the more able tastes from the less able. The index of discriminating power told us whether those students who performed well on the whole test tended to do well or badly on each item in the test. To

do this analysis, the number of try-out subjects was divided into two groups, upper and lower groups.

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

$B_A = 16$ $B_B = 6$

$J_A = 19$ $J_B = 20$

$$D = \frac{B_A}{J_A} - \frac{B_B}{J_B}$$

$$D = \frac{16}{19} - \frac{6}{20}$$

D = 0, 49

According to the criteria, the item number 1 above is good category, because the calculation result of the item number 1 is in the interval $0,40 \leq D \leq 0,70$.

After computing 20 items of try out test 7 items are good, 10 items are enough, 2 items are poor and 1 items are excellent. The result of the discriminating power of each item could be seen appendix.

Based on the analysis of validity, reliability, difficulty level, and discriminating power, finally 16 items are accepted. They are number 1 2 3 4 6 7 8 9 10 11 12 13 14 15 16 17.

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 Classes

No	Pre Test		Post Test	
	Control	Experiment	Control	Experiment
1	33	60	60	88
2	40	53	70	59

3	40	54	43	62
4	40	47	71	53
5	60	80	43	88
6	60	50	53	80
7	67	60	61	69
8	80	64	66	53
9	63	42	73	75
10	47	73	50	65
11	73	67	66	72
12	67	40	67	73
13	60	47	78	63
14	62	40	45	72
15	33	27	47	80
16	87	87	71	90
17	40	87	81	83
18	53	54	53	83
19	53	72	73	77
20	53	34	43	60
21	40	47	66	72
22	47	29	62	68
23	47	32	88	81
24	93	42	51	72
25	67	28	70	58
26	40	70	68	83
27	33	28	58	61
28	53	73	51	80
29	53	53	82	65
30	47	60	47	68
31	53	60	76	77
32	47	47	73	73
33	73	58	73	78
34	60	80	68	70
35	60	46	49	58
36	33	80	70	85
37	33	40	79	61
38	47	73	68	87
39	60	28	47	80
40	0	67	0	64
Σ	2097	2179	2460	2886

n	39	40	39	40
$\overline{x}$	53,769	54,475	63,08	72,15
S^2	$\overline{2}25,15$	304,563	156,231	104,695
S	15,004	17,456	12,499	102,321

1) The Normality Pre-test of the control 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:

Length of the class = 11

Maximum score = 93

Minimum score = 33

K / Number of class = 6

Range = 60

Table 4

Distribution value of pre test of control class

No.	X	$X - \overline{X}$	$(X - \overline{X})^2$
1	33	-20.77	431.36
2	40	-13.77	189.59
3	40	-13.77	189.59
4	40	-13.77	189.59
5	60	6.23	38.82
6	60	6.23	38.82
7	67	13.23	175.05
8	80	26.23	688.05
9	63	9.23	85.21

10	47	-6.77	45.82
11	73	19.23	369.82
12	67	13.23	175.05
13	60	6.23	38.82
14	62	8.23	67.75
15	33	-20.77	431.36
16	87	33.23	1104.28
17	40	-13.77	189.59
18	53	-0.77	0.59
19	53	-0.77	0.59
20	53	-0.77	0.59
21	40	-13.77	189.59
22	47	-6.77	45.82
23	47	-6.77	45.82
24	93	39.23	1539.05
25	67	13.23	175.05
26	40	-13.77	189.59
27	33	-20.77	431.36
28	53	-0.77	0.59
29	53	-0.77	0.59
30	47	-6.77	45.82
31	53	-0.77	0.59
32	47	-6.77	45.82
33	73	19.23	369.82
34	60	6.23	38.82
35	60	6.23	38.82
36	33	-20.77	431.36
37	33	-20.77	431.36
38	47	-6.77	45.82
39	60	6.23	38.82
∑	**2097.00**		**8554.92**

Mean (X) = $\frac{\sum X}{N}$ = $\frac{2097.00}{39}$ = 53.7692

Deviation standard (*S):*

$$S^2 = \frac{\sum (X_i - \overline{X})^2}{n-1}$$

$$= \frac{8554.92}{(39\text{-}1)}$$

$S^2 = 225.13$

$S = 15.0043$

Table 5

Observation frequency value of pre test

Of control class

Class	Bk	Z_i	$P(Z_i)$	Size area	Oi	Ei	$\frac{(O_i - E_i)^2}{E_i}$
	31.5	-1.48	0.4306				
32 – 42				0.1572	11	6.1	3.8672
	42.5	-0.75	0.2734				
43 – 53				0.2654	12	10.4	0.2628
	53.5	-0.02	0.0080				
54 – 64				0.2562	8	10.0	0.3971
	64.5	0.72	0.2642				
65 – 75				0.1623	5	6.3	0.2793
	75.5	1.45	0.4265				
76 – 86				0.0589	1	2.3	0.7324
	86.5	2.18	0.4854				
87 – 97				0.0128	2	0.5	4.5009
	97.5	2.91	0.4982				
Total					39	$X^2 =$	10.0398

With α = 5% and dk = 6-1 = 5, from the chi-square distribution table, obtained X_{table} = 11,0705. Because X^2_{count} is lower than X^2_{table} (10,0398<11,0705). So, the distribution list is normal.

2) The Normality Pre-Test of the Experiment 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 = 87 Length of the class = 11

Minimum score = 27

Range = 60

K/ Number of class = 6

Table 6

Distribution value of pre test of Experiment Class

No.	X	$X - \overline{X}$	$(X - \overline{X})^2$
1	60	5.53	30.53
2	53	-1.48	2.18
3	54	-0.48	0.23
4	47	-7.48	55.88
5	80	25.53	651.53
6	50	-4.48	20.03
7	60	5.53	30.53
8	64	9.53	90.73
9	42	-12.48	155.63
10	73	18.53	343.18
11	67	12.53	156.88
12	40	-14.48	209.53
13	47	-7.48	55.88
14	40	-14.48	209.53
15	27	-27.48	754.88
16	87	32.53	1057.88
17	87	32.53	1057.88
18	54	-0.48	0.23
19	72	17.53	307.13
20	34	-20.48	419.23
21	47	-7.48	55.88
22	29	-25.48	648.98
23	32	-22.48	505.13

24	42	-12.48	155.63
25	28	-26.48	700.93
26	70	15.53	241.03
27	28	-26.48	700.93
28	73	18.53	343.18
29	53	-1.48	2.18
30	60	5.53	30.53
31	60	5.53	30.53
32	47	-7.48	55.88
33	58	3.53	12.43
34	80	25.53	651.53
35	46	-8.48	71.83
36	80	25.53	651.53
37	40	-14.48	209.53
38	73	18.53	343.18
39	28	-26.48	700.93
40	67	12.53	156.88
∑	**2179**		**11877.975**

Mean (X) = $\frac{\sum X}{N}$ = $\frac{2179}{40}$ = 54.475

Deviation standard (*S):*

$$S^2 = \frac{\sum (X_i - \overline{X})^2}{n-1}$$

$$= \frac{11877.98}{(40-1)}$$

S^2 = 304.5635

S = 17.45175

Table 7

Observation frequency value of pre test Of control class

Class	Bk	Z_i	$P(Z_i)$	Size area	Oi	Ei	$\frac{(O_i - E_i)^2}{E_i}$
	22.5	-1.83	0.4649				
23 – 33				0.0819	6	3.3	2.2650
	33.5	-1.20	0.3830				

34	– 44				0.1707	6	6.8	0.1004
		44.5	-0.57	0.2123				
45	– 55				0.1884	10	7.5	0.8056
		55.5	0.06	0.0239				
56	– 66				0.2279	6	9.1	1.0651
		66.5	0.69	0.2518				
67	– 77				0.1514	7	6.1	0.1471
		77.5	1.32	0.4032				
78	– 88				0.0694	5	2.8	1.7818
		88.5	1.95	0.4726				
Total						40	**X^2 =**	**6.1651**

With α = 5% and dk = 6-1 = 5, from the chi-square distribution table, obtained X_{table} = 11,0705. Because X^2_{count} is lower than X^2_{table} (6,1651<11,0705). So, the distribution list is normal.

3) The Homogeneity Pre-Test of Experimental and Control Classes.

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:

Variant	Experiment	control
Total	2179	2097
N	40	39
$\overline{X}$	54,48	53,77
Variant (S^2)	304,5635	225,1296
Standard deviation (S)	17,45	15,00

Based on the formula, it is obtained:

$$F = \frac{304,5635}{225,1296} = 1,353$$

With α = 5% and dk = (40-1 = 39) : (39-1 = 38), obtained F_{table} = 1,90. Because F_{count} is lower than F_{table} (1,353 < 1,71). So, Ho is accepted and the two groups have same variant / **homogeneous.**

4) The average of similarity Test of Pre-Test

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:

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

The data of the research:

Criteria	Experiment	control
Total	2179	2097
N	40	39
$\overline{X}$	54,48	53,77
Variant (S^2)	304,5635	225,1296
Standard deviation (S)	17,45	15,00

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

$$S = \sqrt{\frac{(40 - 1)304{,}5635 + (39 - 1).225{,}1296}{40 + 39 - 2}} = 16{,}2899$$

So, the computation t-test:

$$t = \frac{\overline{x_1} - \overline{x_2}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} = \frac{54{,}48. - 53{,}77}{16{,}2899\sqrt{\frac{1}{40} + \frac{1}{39}}} = 0{,}193$$

With α = 5% and dk = 40 + 39– 2 = 77, obtained t_{table} = 1,9913. Because t_{count} is lower than t_{table} (0,193 < 1, 9913). 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 List of the Post Test Value of the Experimental And Control Classes

No	Pre Test		Post Test	
	Control	Experiment	Control	Experiment
1	33	60	60	88
2	40	53	70	59
3	40	54	43	62
4	40	47	71	53
5	60	80	43	88
6	60	50	53	80
7	67	60	61	69
8	80	64	66	53
9	63	42	73	75
10	47	73	50	65
11	73	67	66	72
12	67	40	67	73
13	60	47	78	63
14	62	40	45	72
15	33	27	47	80
16	87	87	71	90
17	40	87	81	83
18	53	54	53	83
19	53	72	73	77
20	53	34	43	60
21	40	47	66	72
22	47	29	62	68
23	47	32	88	81
24	93	42	51	72

25	67	28	70	58
26	40	70	68	83
27	33	28	58	61
28	53	73	51	80
29	53	53	82	65
30	47	60	47	68
31	53	60	76	77
32	47	47	73	73
33	73	58	73	78
34	60	80	68	70
35	60	46	49	58
36	33	80	70	85
37	33	40	79	61
38	47	73	68	87
39	60	28	47	80
40	0	67	0	64
Σ	2097	2179	2460	2886
N	39	40	39	40
$\overline{x}$	53,769	54,475	63,08	72,15
s^2	225,15	304,563	156,231	104,695
S	15,004	17,456	12,499	102,321

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 = 90

Length of the class = 6,2867

Range = 37

Minimum score = 53

K/ Number of class = 7

Table 9

Distribution value Post Test of the Experimental Class

No.	X	$X - \overline{X}$	$(X - \overline{X})^2$
1	88	88	7744
2	59	59	3481
3	62	62	3844
4	53	53	2809
5	88	88	7744
6	80	80	6400
7	69	69	4761
8	53	53	2809
9	75	75	5625
10	65	65	4225
11	72	72	5184
12	73	73	5329
13	63	63	3969
14	72	72	5184
15	80	80	6400
16	90	90	8100
17	83	83	6889
18	83	83	6889
19	77	77	5929
20	60	60	3600
21	72	72	5184
22	68	68	4624
23	81	81	6561
24	72	72	5184
25	58	58	3364
26	83	83	6889
27	61	61	3721
28	80	80	6400
29	65	65	4225
30	68	68	4624
31	77	77	5929
32	73	73	5329
33	78	78	6084
34	70	70	4900
35	58	58	3364
36	85	85	7225
37	61	61	3721
38	87	87	7569
39	80	80	6400
40	64	64	4096
Σ	2886		212308

$$\overline{X} = \frac{\sum X}{N} = \frac{2886}{40} = 72{,}15$$

$$s^2 = \frac{\sum (X_i - \overline{X})^2}{n-1} = \frac{212308}{40-1}$$

$s^2 = 104{,}696$

$s = 10{,}2321$

Table 10

Observation frequency value of post test

Of experiment class

Class	Bk	Zi	P(Zi)	Luas Daerah	Oi	Ei	$\frac{(O_i - E_i)^2}{E_i}$
	52.5	-1.9204	0.4744				
53 – 59				0.08	5	3.2	1.0125
	59.5	-1.2363	0.3944				
60 – 66				0.189	8	7.56	0.025608
	66.5	-0.5522	0.2054				
67 – 73				0.269	10	10.76	0.05368
	73.5	0.13194	0.0636				
74 – 80				0.247	8	9.88	0.357733
	80.5	0.81606	0.3106				
81 – 87				0.13	6	5.2	0.123077
	87.5	1.50019	0.4406				
88 – 94				0.0475	3	1.9	0.636842
	94.5	2.18431	0.4881				
Total		0.92357			40	X^2 =	2.209441

With α = 5% and dk = 6-1 = 5, from the chi-square distribution table, obtained X_{table} = 11,07045. Because X^2_{count} is lower than X^2_{table} (2.209441<11,07045). 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 = 88 Length of the class = 6,2505

Minimum score = 43

Range = 45

K/many class interval = 6

Table 11

Distribution value of post test of control class

No.	X	$X - \overline{X}$	$(X - \overline{X})^2$
1	60	-3.08	9.47
2	70	6.92	47.93
3	43	-20.08	403.08
4	71	7.92	62.78
5	43	-20.08	403.08
6	53	-10.08	101.54
7	61	-2.08	4.31
8	66	2.92	8.54
9	73	9.92	98.47
10	50	-13.08	171.01
11	66	2.92	8.54
12	67	3.92	15.39
13	78	14.92	222.7
14	45	-18.08	326.78
15	47	-16.08	258.47
16	71	7.92	62.78
17	81	17.92	321.24
18	53	-10.08	101.54
19	73	9.92	98.47
20	43	-20.08	403.08
21	66	2.92	8.54
22	62	-1.08	1.16
23	88	24.92	621.16
24	51	-12.08	145.85
25	70	6.92	47.93
26	68	4.92	24.24
27	58	-5.08	25.78
28	51	-12.08	145.85
29	82	18.92	358.08

30	47	-16.08	258.47
31	76	12.92	167.01
32	73	9.92	98.47
33	73	9.92	98.47
34	68	4.92	24.24
35	49	-14.08	198.16
36	70	6.92	47.93
37	79	15.92	253.54
38	68	4.92	24.24
39	47	-16.08	258.47
Σ	2460		5936.79

$$\overline{X} = \frac{\sum X}{N} = \frac{2460}{39} = 63{,}077$$

$$s^2 = \frac{\sum (X_i - \overline{X})^2}{n-1} = \frac{5936.79}{39-1}$$

$s^2 = 156{,}2313$

$s = 12{,}4992$

Table 12

Observation frequency value of post test
Of control class

Class	Bk	Zi	P(Zi)	Size class	Oi	Ei	$\frac{(O_i - E_i)^2}{E_i}$
	42.5	-1.64625	0.4452				
43 – 50				0.1898	10	7.4022	0.9116972
	50.5	-1.00621	0.2554				
51 – 58				0.1299	5	5.0661	0.0008624
	58.5	-0.37	0.1255				
59 – 66				0.2472	6	9.6408	1.3749299
	66.5	0.273863	0.1217				
67 – 74				0.2072	12	8.0808	1.9008178
	74.5	0.913901	0.3289				
75 – 82				0.1152	5	4.4928	0.0572587
	82.5	1.553939	0.4441				
83 – 90				0.0427	1	1.6653	0.2657924
	90.5	2.193977	0.4868				
Total		1.913213			39	X^2 =	4.5113585

With α = 5% and dk = 6-1 = 5, from the chi-square distribution table, obtained X_{table} = 11,0705. Because X^2_{count} is lower than X^2_{table} (4.5113585< 11,0705). So, the distribution list is normal.

3) The Homogeneity Post-Test of the Experimental Class and Control 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:

Variant	control	Experiment
Total	2460	2886
N	39	40
$\overline{X}$	63,0769	72,15
Variant (S^2)	156,2313	104,6949
Deviation standard (S)	12,4993	10.2321

Based on the formula, it is obtained:

$$F = \frac{156,2313}{104,6949} = 1,492$$

With α = 5% and dk = (40-1 = 39) : (39-1 = 38), obtained F_{table} = 1,71. Because F_{count} is lower than F_{table} (1,492 < 1,71). So, Ho is accepted and the two groups have same variant / **homogeneous.**

2. The Hypothesis Test

The hypotheses in this research is a significance difference in grammar test score between students taught using songs and those taught using non-songs.

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:

Variant	Control	Experiment
Total	2886	2460
N	40	39
$\overline{X}$	72,15	63,0769
Variant (S^2)	104,6949	156,2313
Deviation standard (S)	10.2321	12,4993

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

$$S = \sqrt{\frac{(40-1).155,3213 + (39-1).1046949}{40 + 39 - 2}} = 11,43668$$

So, the computation t-test:

$$t = \frac{\overline{x_1} - \overline{x_2}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} = \frac{63,0769 - 72,15}{11,43668\sqrt{\frac{1}{40} + \frac{1}{39}}} = 3,534$$

With α = 5% and dk = 40 + 39 – 2 = 77, obtained t_{table} = 1,66. Because t_{count} is lower than t_{table} (1, 66 < 3, 534). So, Ho is accepted and there is no difference of the pre test average value from both groups.

From the computation above, the t-table is 1, 66 by 5% alpha level of significance and dk = 40 + 39-2=77. T-value was 3,534. So, the t-value was higher than the critical value on the table (3,534> 1, 66).

From the result, it can be concluded that using songs is more effective than without using songs in teaching arithmetic vocabulary. The hypothesis is accepted.

C. Discussion of Research Finding

The result of the research shows that the experimental class (the students who are taught using songs) has the mean value pre-test was 54,475

and post-test was 72,15. While the control class (the students who are taught without using songs) has the mean value pre-test was 53,769and post-test was 63,08.

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. The value of t-test is 3,534, while the critical value on $t_{s0,05}$ is 1, 66. It means that using songs Islam more effective than without using songs in teaching arithmetic vocabulary .

From the observation result, the experimental class has percentage 63, 63 % (average). It means that the activities of this class are good enough. While control class has percentage 57, 52 % (fair). It means that the activities of this class are less good than experimental class. For the result of observation scheme can be seen in appendix.

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 SD N 01 Kutamendala Tonjong Brebes. 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 perfect. Because short time of this research, so the assessment was conducted not only based on the material given in the class but also the assignments or exercises given to students' homework.

Considering all those limitations, there is a need to do more research about teaching modal using songs. So that, the more optimal result will be gained.