CHAPTER IV

FINDINGS AND DISCUSSION

This chapter presents the data that was collected during the experimental research. First analysis focuses on the validity, reliability, index difficulty, and discriminating power of instruments. Second analysis represents the result of pre-test and post-test that was done both in experimental and control group.

A. Description of the Result of 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 prepositions, especially in SMP Hj.Isriati Baiturrahman Semarang 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 three classes. They are experimental class (VIII B), control class (VIII A) and try out class (VIII C) of SMP Hj. Isriati Baiturrahman Semarang. Before items were given to the students, the writer gave a try out test to analyze validity, reliability, difficulty level and also the discrimination power of each item. The writer prepared 25 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. First Analysis

The First analysis was meant to get a valid and reliable instrument for investigation. In this analysis the writer counted the validity, reliability, level difficulty and discriminating power of the test.

The try out tests were conducted for VIII C of SMP H. Isriati Semarang. Class VIII C consisted of 39 respondents. They were given a try out using the instrument that will be used in control and experiment class. The following is the interpretation of the try out test to find out the validity and reliability of the instrument.

a. Validity of Try Out Test

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 25 test items; there are 20 test items which are valid (1 2 3 4 6 7 8 9 10 11 13 14 15 16 17 20 21 22 23) and 5 test items which are invalid (12 18 19 24 25). They are to invalid with the reason the 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.

$N = 39$ $\quad\quad$ $\sum Y = 691$

$\sum XY = 578$ $\quad\quad$ $\sum X^2 = 30$

$\sum X = 30$ $\quad\quad$ $\sum Y^2 = 13051$

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

$$r_{xy} = \frac{39(578) - 30(691)}{\sqrt{\left\{39(30) - (30)^2\right\}\left\{39(13051) - (691)^2\right\}}}$$

$$r_{xy} = \frac{1812 - 20730}{\sqrt{(1170 - 900)(508989 - 477481)}}$$

$$r_{xy} = \frac{1812}{\sqrt{(270)(31508)}}$$

$$r_{xy} = \frac{1812}{2916.70}$$

$$r_{xy} = 0.621$$

From the computation above, the result of computing validity of the item number 1 is 0.621. After that, the writer consulted the result to the table of r Product Moment 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.

b. Reliability of Try Out Test

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 $\sum Y$ = 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.

c. Discriminating Power of Try Out Test

The discrimination power of an item indicated the extent to which the item discriminated between the testers, separating the more able testers 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.

BA=20 BB=10

JA= 20 JB=19

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

$$D = \frac{20}{20} - \frac{10}{19}$$

$$D = \frac{180}{380}$$

$$D = 0.47$$

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 25 items of try –out test, there are 1 item is considered to be good, 14 items are good, 6 items are enough, and 5 items are poor.

d. Difficulty Level of Try Out Test

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

B=20+10=30

JS= 39

$$P = \frac{B}{JS} \qquad P = \frac{30}{39}$$

$$P = 0.75$$

It is proper to say that the index difficulty of the item number 1 above can be said as the easy category, because the calculation result of the item number 1 is in the interval $0.70 \leq p \leq 1.00$.

After computing 25 items of the try-out test, there are 17 items are considered to be easy, 9 items are enough 8.

2. Second Analysis

The researcher analyzed and tested hypothesis pre-requisites which contained of normality test and homogeneity test before tested the hypothesis that had been mentioned in the chapter two by using t-test (test of difference two variants) in pre-test and post-test.

a. Analysis of Pre-test

1. Test of Normality

The result computation of Chi-Square (X^2_{score}) then was compared with table of Chi-Square (X^2_{table}) by using 5% alpha of significance. If $X^2_{score} < X^2_{table}$ meant that the data spread of research result distributed normally.

Based on the research result of students in control class, before they were taught preposition using conventional method, was found that the maximum score was 75 and minimal score was 45 and the stretches of score

were 30. So, there were 7 classes with length of classes 5. From the computation of frequency distribution, it was found ($\Sigma f_{i.} x_i$) = 2515, and ($\Sigma f_{i.} x_i^2$) = 160825. So, the average score ($\overline{X}$) was 62.875 and the standard deviation (S) was 8.3118. After the researcher counted the average score and standard deviation, table of observation frequency was needed to measure Chi-Square (X^2_{score}). .

List of the Observation Frequency of Control Group

Class	Bk	Z_i	$P(Z_i)$	Ld	Ei	Oi	$\frac{(O_i - E_i)^2}{E_i}$
	44.5	-2.21	-0.4865				
45 _ 49				0.0403	1.6	3	1.1987
	49.5	-1.61	-0.4462				
50 _ 54				0.1030	4.1	4	0.0036
	54.5	-1.01	-0.3432				
55 _ 59				0.1855	7.4	6	0.2722
	59.5	-0.41	-0.1576				
60 _ 64				0.2351	9.4	9	0.0175
	64.5	0.20	0.0775				
65 _ 69				0.2098	8.4	9	0.0441
	69.5	0.80	0.2873				
70 _ 74				0.1317	5.3	6	0.1012
	74.5	1.40	0.4190				
75 _ 79				0.0582	2.32895	3	0.1934
	79.5	2.00	0.4773				
						X^2 =	1.8307

Based on the Chi-Square table (X^2_{table}) for 5% alpha of significance with df 7 – 4 = 3, it was found X^2_{table} = 9.49. Because of $X^2_{score} < X^2_{table}$, so the initial data of control class distributed normally.

While from the result of students in experimental class, before they were taught prepositions by using songs, was found that the maximum score was 70 and minimal score was 40 and the stretches of score were 30. So, there were 7 classes with length of classes 5. From the computation of frequency distribution, it was found ($\Sigma f_{i.} x_i$) = 2460, and ($\Sigma f_{i.} x_i^2$) = 154630. So, the average score ($\overline{X}$) was 61.5 and the standard deviation (S) was 9.2542. After counting the average score and standard deviation, table of observation frequency was needed to measure Chi-Square (X^2_{score}).

List of the Observation Frequency of Experimental Group

Class	Bk	Z_i	$P(Z_i)$	Luas Daerah	Ei	Oi	$\frac{(O_i - E_i)^2}{E_i}$
	39.5	-2.38	-0.4913				
40 – 44				0.0244	1.0	3	4.2024
	44.5	-1.84	-0.4669				
45 – 49		-1.84		0.0643	2.6	2	0.1266
	49.5	-1.30	-0.4026		2.6		
50 – 54		-1.30		0.1273	5.1	4	0.2347

	54.5	-0.76	-0.2753		5.1		
55 _ 59		-0.76		0.1897	7.6	5	0.8837
	59.5	-0.22	-0.0856		7.6		
60 _ 64		-0.22		0.2126	8.5	9	0.0287
	64.5	0.32	0.1271		8.5		
65 _ 69		0.32		0.1792	7.2	7	0.0040
	69.5	0.86	0.3063		7.2		
70 _ 74				0.1136	4.5448	10	6.5481
	74.5	1.40	0.4200				
#REF!					X^2 =		5.4801

Based on the Chi-Square table (X^2_{table}) for 5% alpha of significance with df 7 – 3 = 4, it was found X^2_{table} = 9.49. Because of X^2_{score} < X^2_{table}, so the initial data of experimental class distributed normally.

2. Test of Homogeneity

In this research, the homogeneity of the test was measured by comparing the obtained score (F_{score}) with F_{table}. Thus, if the obtained score (F_{score}) was lower than the F_{table} or equal, it could be said that the Ho was accepted. It was meant that the variance was homogeneous.

Test of Homogeneity (Pre-test)

Variant Sources	Control	Experimental
Sum	2435	2380
N	40	40
$\overline{X}$	60.88	59.50
Variance (s^2)	69.09	85.64
Standard deviation (s)	8.31	9.25

By knowing the mean and the variance, the researcher was able to test the similarity of the two variants in the pre-test between control and experimental class. The computation of the test of homogeneity as follows:

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

$$= \frac{85.64}{69.09}$$

$$= 1.2395$$

On a 5% with df numerator (nb - 1) = 40– 1 = 39 and df denominator (nk – 1) = 40 – 1 = 39, it was found F_{table} = 3.84. Because of $F_{score} \leq F_{table}$, so it could be concluded that both experimental and control class had no differences. The result showed both classes had similar variants or homogenous.

3. Test of Difference Two Variants in Pre-test between Experimental and Control Class

After counting the standard deviation and variance, it could be concluded that both classes have no differences in the test of similarity between two variances in pre-test score. So, to differentiate whether the students' results of

teaching prepositions style in control and experimental class were significant or not, the researcher used t-test to test the hypothesis. The researcher used formula:

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

Where:

$$S = \sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}}$$

Based on table 6, the researcher had to find out S by using the formula above:

$$S = \sqrt{\frac{(40-1)85.64110 + (40-1)69.0865}{40 + 40 - 2}}$$

$$= 8.79567$$

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

$$t = \frac{59.50 - 60.88}{8.79567\sqrt{\frac{1}{40} + \frac{1}{40}}}$$

$$= -0.699$$

After getting the result, then it would be consulted to the critical score of t_{table} to check whether the difference is significant or not. For a = 5% with df 40 + 40 – 2 = 78, it was found $t_{table(0.975)(78)}$ = 1.99. Because of $t_{score} < t_{table}$, so it could be concluded that there was no significance of difference between the control and experimental class. It meant that both control and experimental class had same condition before getting treatments.

b. Analysis of Post-test

Post-test was conducted after doing all treatments. Songs was used as media in the teaching prepositions to experimental class. While for students in control class, the researcher gave treatments without songs. Post-test was aimed to measure students' ability in prepositions after treatments.

1. Test of Normality

It was same to test of normality in the pre-test. The result computation of Chi-Square (X^2_{score}) then was compared with table of Chi-Square (X^2_{table}) by using 5% alpha of significance. If $X^2_{score} < X^2_{table}$ meant that the data spread of research result distributed normally.

Based on the research result of VIII A students in the control class after they got usual treatments in the prepositions teaching, they reached the maximum score 90, minimum score 60 and the stretches of score were 30. So, there were 7 classes with length of classes 5. From the computation of frequency distribution, it was found ($\Sigma f_i x_i$) = 2880, and ($\Sigma f_i x_i^2$) = 209960. So, the average score ($\overline{X}$) was 72 and the standard deviation (S) was 8.16497. It meant that there was an improvement of students' score after they got treatments. After counting the average score and standard deviation, table of observation frequency was needed to measure Chi-Square (X^2_{score}).

List of the Observation Frequency of Control Group

Kelas	Bk	Z_i	$P(Z_i)$	Luas Daerah	Ei	Oi	$\frac{(O_i - E_i)^2}{E_i}$
	59.5	-1.53	-0.4371				
60 – 64				0.1163	4.7	9	4.0672
	64.5	-0.92	-0.3208				
65 – 69				0.2006	8.0	9	0.1190
	69.5	-0.31	-0.1203				
70 – 74				0.2405	9.6	7	0.7143
	74.5	0.31	0.1203				
75 – 79				0.2006	8.0	6	0.5100

	79.5	0.92	0.3208				
80 – 84				0.1163	4.7	7	1.1866
	84.5	1.53	0.4371				
85 – 89				0.0468	1.9	1	0.4076
	89.5	2.14	0.4840				
90 – 94				0.0131	0.5246	1	0.4307
	94.5	2.76	0.4971				
					X^2	=	7.0046

Based on the Chi-Square table (X^2_{table}) for 5% alpha of significance with dk 7 – 3 = 4, it was found X^2_{table} = 9.49. Because of $X^2_{score} < X^2_{table}$, so the data of control class after getting treatments distributed normally.

While from the result of VIII B students in experimental class, after they were taught prepositions by using songs, was found that the maximum score was 95, minimal score was 55 and the stretches of score were 40. So, there were 7 classes with length of classes 6. From the computation of frequency distribution, it was found ($\Sigma f_i x_i$) = 3032, and ($\Sigma f_i x_i^2$) = 234646. So, the average score ($\overline{X}$) was 75.8 and the standard deviation (S) was 11.1176. After seeing the average score of students in experimental class, it could be concluded that there was an improvement of students' score after they got treatments by using songs. After the researcher counted the average score and standard deviation, table of observation frequency was needed to measure Chi-Square (X^2_{score}).

List of the Observation Frequency of Experimental Group

Class	Bk	Z_i	$P(Z_i)$	Luas Daerah	Ei	Oi	$\frac{(O_i - E_i)^2}{E_i}$
	54.5	-1.92	-0.4723				
55 _ 60				0.0567	2.3	4	1.3235
	60.5	-1.38	-0.4156				
61 _ 66				0.1171	4.7	6	0.3709
	66.5	-0.84	-0.2986				
67 72				0.1819	7.3	5	0.7112

–							
	72.5	-0.30	-0.1167				
73 – 78				0.2126	8.5	8	0.0301
	78.5	0.24	0.0959				
79 – 84				0.1871	7.5	8	0.0355
	84.5	0.78	0.2831				
85 – 90				0.1239	5.0	4	0.1844
	90.5	1.32	0.4070				
91 – 96				0.0617	2.4695	5	2.5929
	96.5	1.86	0.4687				
					X^2	=	2.6557

Based on the Chi-Square table (X^2_{table}) for 5% alpha of significance with df 7 – 3 = 4, it was found X^2_{table} = 9.49. Because of $X^2_{score} < X^2_{table}$, so the data of experimental class after getting treatments distributed normally.

2. Test of Homogeneity

By knowing the mean and variance, the researcher was able to test the similarity of both variance in the post-test control and experimental class.

Test of Homogeneity (Post-test)

Variance Sources	Control	Experimental
Sum	2800	3025
N	40	40
$\overline{X}$	70.00	75.63
Variance (s^2)	66.67	116.91
Standard deviation (s)	8.16	10.81

The computation of the test of homogeneity as follows:

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

$$= \frac{116.91}{66.67}$$

$$= 1.7536$$

On a 5% with df numerator (nb - 1) = 40 – 1 = 39 and df denominator (nk – 1) = 40– 1 = 39, it was found $F_{table(0.025)(22:22)}$ = 3.84. Because of $F_{score} \leq F_{table}$, so it could be concluded that both control and experimental class had no differences. The result showed both classes had similar variance or homogenous.

3. Test of Difference Two Variants in Post-test between Experimental and Control Class

It was same to test of difference two variants in the pre-test that both classes have no differences in the test of similarity between two variances in post-test score. So, to differentiate if the students' results of teaching prepositions in control and experimental class after getting treatments were significant or not, the researcher used t-test. To get the difference between both classes, the researcher used formula:

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

Where:

$$S = \sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}}$$

Based on table 9, the researcher had to find out S by using the formula above:

$$S = \sqrt{\frac{(40-1)116.9071+(40-1)66.6667}{40+40-2}}$$

$$= 9.58055$$

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

$$t = \frac{75.63-70.00}{9.58055\sqrt{\frac{1}{40}+\frac{1}{40}}}$$

$$= 2.626$$

After getting t-test result, then it would be consulted to the critical score of t_{table} to check whether the difference is significant or not. For a = 5% with df 40 + 40 – 2 = 78, it was found $t_{table(0.95)(78)}$ = 1.66. Because of $t_{score} > t_{table}$, so it could be concluded that there was significance of difference between the control and experimental class. It meant that experimental class was better than control class after getting all treatments.

After doing the analysis, the researcher concluded that since the obtained t-score was higher than the critical score on the table, the difference was statistically significance. Therefore, based on the computation there was a significance difference between the teaching prepositions using songs and without songs for the eighth grade students of SMP Hj. Isriati Baiturrahman Semarang. In this research, teaching prepositions with songs was more effective than teaching without songs. It can be seen from the result of the test. Where the students taught prepositions by using songs got higher scores than the students taught prepositions without songs.

C. Discussions of the Research Finding

In this part, the writer would like to discuss the interpretation of statistical and non-statistical analysis of using song in teaching prepositions to the second year students of SMP Hj. Isriati Baiturrahman Semarang.

D. Interpretation of Statistical Analysis

From the result calculation, the research finding was proven with the average of the control class in the post-test was 72 which was lower than the

experimental class was 75.8. Although, the average of the control class in the pre-test was 62.875 while the experimental class was 61.5, it can be inferred that there is significant difference between the experimental and control group.

It was proven by knowing that the score of experimental group taught with song was higher than the score of control group taught with conventional method. From the explanation above, it can be inferred that teaching using pop song is more effective than conventional one for improving students' scores in prepositions to the second year students of SMP Hj.Isriati Baiturrahman Semarang.

E. The Analysis of Teaching prepositions Using Songs and Conventional Method

Generally, teaching prepositions using songs is a method that uses songs as media in conveying the material about prepositions. In the treatments have been done, the steps of using songs are follows:

1) The teacher explains the material that he wants to deliver to the students,
2) He gives background information or questions related to the song,
3) He asks students to listen carefully to the song,
4) He plays the song twice to make students familiar to the lyric of the song,
5) He gives the script of the song with the blank spaces especially for the prepositions and lets the students guess the answers,
6) He plays the song twice again for giving a chance to the students correcting their answers,
7) The teacher and students discuss about noun prepositions in the song,
8) The teacher explains the prepositions,
9) They continue the activities by singing the song together,
10) The teacher gives time to the students to make a sentence using prepositions.

The students were very enthusiastic in following the method strategy. It could be proven with they mentioned the keywords they heard together regardless whether it was correct or not. Then they guessed prepositions in the blank space of the songs' lyrics by paying attention to the context, they could practice pronouncing words as native speaker did through singing the songs, then they could know more examples of prepositions. From

these activities, they could gain new knowledge and enrich their vocabulary especially for prepositions.

It was different with the control group. This class was taught using conventional method that is more concerned with the prepositions. Those activities could help them to understand more about prepositions.

Here are the steps which writer did to give the treatments to the control group:

1) The teacher explains the material that he wants to deliver to the students,
2) He gives background knowledge of prepositions,
3) The teacher explains the prepositions,
4) The teacher uses pictures to make students understand more about prepositions,
5) The teacher and students discuss about prepositions in the picture,
6) The teacher gives time to the students to make a sentence using prepositions.