

CHAPTER IV

FINDINGS AND DISCUSSION

This chapter discusses two points. First, it presents the data gathered. Second, the data collected are analyzed concerning the research questions stated in this paper and elaborated based on theories established.

4.1 Findings

4.1.1 Pilot Test Result

As stated in chapter III, the pilot test went through two steps. Firstly, the instrument was validated by an English teacher. Secondly, the instrument was administered to five students who did not included in both control and experimental groups in academic year 2010/2011. The result of the pilot test is shown in the following table.

Table 4.1

The Result of Pilot Test

Topic: Describing animal

Aspect	Student no. 1		Student no. 2		Student no. 3		Student no. 4		Student no. 5	
Assessors'	Assessor 1	Assessor 2	Assessor 1	Assessor 2	Assessor 1	Assessor 2	Assessor 1	Assessor 2	Assessor 1	Assessor 2
Content	2	3	2	3	3	3	1	3	1	2

Vocabulary	2	3	3	3	2	3	2	3	2	3
Generic Structure	2	3	3	3	2	3	2	3	2	3
Language Feature	2	3	2	3	2	3	2	3	1	3

The students are able to develop the story based on the given topic that familiar for them. It can be seen from the scores that the students got. As mentioned before, this research adopts the rubric of Brown (1994). From the aspects, if the students get three scores mean that the contents that the students write are understandable, two scores mean that there are many confused words, for example; the writing are irrelevant with the topic, and one score means that so many mistakes.

Most of the students get the score between 1 until 3. For example, in vocabulary aspect, one student get three scores means that the words have already been related to the topic and situation; however, they are not have any variation yet. Four students get two scores which mean that there are still lots of inappropriate words used in the students write. From the table it can see that although the score is not high enough, the students can write and understand what the instruction given.

4.1.2 Pre-test Result

Pre-test was conducted on August 2nd, 2010 to 25 students in class VIII A and 25 students in class VIII B (2010/2011). Students' writing in pre-test was evaluated based on the rubric of Brown (1994) which covers content, vocabulary, generic structure, and language features. Later, the scores were statistically analyzed by using SPSS 16.0 for windows by following several steps.

4.1.2.1 Normal Distribution Test

The normality test was employed by using Kolmogorov-Smirnov test to know whether or not the score of the students were normally distributed. Before examining the normality of the scores, the hypotheses (null and an alternative hypothesis) were established. The result of the analysis is presented in the following table.

Table 4.2

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
EXPERIMENTAL GROUP	.148	25	.162	.949	25	.239
CONTROL GROUP	.119	25	.200*	.949	25	.234

In the test, the level of significance was set up at 0.05. Based on table 4.2, it shows that the asymp.sig of pre-test data in VIII A as the Experimental Group and VIII B as the Control Group are 0.162 and 0.200. It means $0.162 > 0.05$ and $0.200 > 0.05$. The result suggests that the null hypothesis is not rejected but alternative

hypothesis is rejected. Therefore, it can be drawn as a conclusion that the data of both groups are normally distributed.

4.1.2.2 Homogeneity of Variance

The homogeneity of variance test was accomplished after conducted normal distribution test. Levene test on SPSS 16.0 for Windows was employed to analyze the data and to find out the homogeneity of variance of experimental and control groups. The hypotheses proposed was null hypothesis that stated the data variances were homogenous; and alternative hypothesis that stated the data variances were not homogenous. The following table is the description of the test result.

Table 4.3

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
PRETEST	Based on Mean	.016	1	48	.900
	Based on Median	.011	1	48	.918
	Based on Median and with adjusted df	.011	1	47.701	.918
	Based on trimmed mean	.017	1	48	.898

In the table 4.3, the asymp.sig is higher than the determined level of significance (0.05), which also can be stated that $0.900 > 0.05$. It indicates that the null hypothesis is not rejected but the alternative hypothesis is rejected. It draws a conclusion that the variance of data is homogeneous. It also implies that the analysis

of t-test can be conducted since the data is normally distributed and the variances are homogeneous.

4.1.2.3 Independent t-test

Lastly, independent t-test was calculated to see the equity of the data between VIII A and VIII B students' score means. t –Test determines if there is a significant difference between the means of two data sets. The hypotheses established in this analysis were null hypothesis and alternative hypothesis. Null hypothesis proposed that the students' scores are not significantly different; and alternative hypothesis proposed that there is a significant difference of means between the two groups. The table below is the result of independent t-test conducted on pre-test scores.

Table 4.4

Independent Samples Test

	Levene's Test for equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
pretest Equal varianc assumed	,016	,900	-,058	48	,954	-,04000	,68896	1,42525	1,34525
Equal varianc not assumed			-,058	47,930	,954	-,04000	,68896	1,42530	1,34530

The level of significance established in this test was 0.05 with $df = 48$. Based on the statistical analysis illustrated on the table 4.4, it can be explained that the significance value is higher than 0.05 or $0,954 > 0.05$. The result ensures that the null

hypothesis is not rejected but the alternative hypothesis is rejected. Therefore, there is no difference between control and experimental groups' means.

By the results of the normality, homogeneity, and independent t-test above, it is apparent that both of the groups have equal initial ability in writing descriptive text. Therefore, class VIII A and VIII B can be grouped as samples of research. The students in class VIII A was selected to be the experimental group, and class VIII B was taken as the control group.

4.1.3 Post-test Result

Post-test was administered on September 23th, 2010 to 50 samples. After gathering the data of post-test scores, similar statistical analysis as pre-test was also accomplished. Beside the calculation on normality, homogeneity, and independent t-test, the effect size was also employed to discover at what value mind mapping technique affects student's writing score.

4.1.3.1 Normal Distribution Test

First step taken was quantifying the normality test by utilizing Kolmogorov-Smirnov test. The hypotheses proposed were the null and alternative hypothesis.

Table 4.5

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
VIIIA	.159	25	.102	.936	25	.122
VIIIB	.149	25	.160	.936	25	.117

a. Lilliefors Significance Correction

In the test, the level of significance was set up at 0.05. As presented in table 4.5, the asymp.sig of post-test scores is 0.160 and experimental group is 0.102. Both of the data are higher than the level of significance (0.05), or $0.160 > 0.05$ and $0.102 > 0.05$. It suggests that the null hypothesis is not rejected but alternative hypothesis is rejected. The data of control and experimental group are normally distributed.

4.1.3.2 Homogeneity of Variance

Second, the homogeneity test was based on the hypothesis posed in this analysis. The result of calculation is presented on the table below.

Table 4.6

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
POSTEST	Based on Mean	.108	1	48	.743
	Based on Median	.115	1	48	.736
	Based on Median and with adjusted df	.115	1	47.992	.736
	Based on trimmed mean	.101	1	48	.751

The level of significance of this test was established at 0.05. Moreover, table 4.6 above shows that the asymp.sig is 0.743 that is greater than 0.05 ($0.743 > 0.05$). It indicates that the null hypothesis is not rejected and alternative hypothesis is rejected. It means that there is no difference of variance scores between the control and the experimental group.

4.1.3.3 Independent t-test

The answer of the first research problem would be shown from the result of the calculation of independent t-test on post-test data. This test established null hypothesis and alternative hypothesis as the tentative statement. The null hypothesis announces that there is no significant difference between the mean of control and experimental group's scores. Moreover, the alternative hypothesis reveals the means of score between the two groups that are significantly different. The table below is the result of the statistical calculation.

Table 4.7
Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means							
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
								Lower	Upper	
POST Equal variances assumed	.108	.743	2.753	48	.008	1.60000	.58126	.43129	2.76871	
POST Equal variances not assumed			2.753	47.573	.008	1.60000	.58126	.43102	2.76898	

This test is established the level of significance in 0.05 and $df = 48$. Meanwhile, table 4.7 above informs that the significance value is lower than 0.05, $0.008 < 0.05$. Regarding to this finding, it discovers that the null hypothesis is rejected, but alternative hypothesis is not rejected. It affirms that there is a difference in mean of post-test scores between the experimental and control groups.

In accordance with the result of normality, homogeneity, and independent t-test on post-test scores above, it is noticeable that after the treatments, the scores of writing descriptive text in experimental group were improved. Therefore, a significant difference appeared between the means scores of experimental and control group. In other words, mind mapping technique improved students' ability in writing descriptive text.

In order to find out whether mind mapping affected students' writing ability in descriptive text, the calculation of effect size was conducted. The calculation was performed manually by using the following formula developed by Coolidge (2000). The t refers to the t value obtained from the independent t-test calculation on post-test data. Afterward, the df is the amount of samples minus by 2 ($df = N-2$)

$$r = \sqrt{\frac{t^2}{t^2 + df}}$$

Derived from table 4.7, t value is 2.753 and df is 48. Hence, after completing the computation, it is found that r value is 0.369. Converted to the effect size table (see table 3.1), the obtained value shows medium effect size.

4.1.4 The Paired t-test Analysis on Experimental Group Scores

A paired t-test was conducted to discover the differences in experimental group score before and after the students was given the treatments. The calculation of paired t-test was used to analyze the score of the experimental and control groups.

Table 4.8
The Result of Experimental and Control Groups in Posttest in Paired Sample Test

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	EXP	13.6400	25	1.95533	.39107
	CONTROL	12.0400	25	2.15019	.43004

Table 4.9

Paired Samples Statistics Pretest and Posttest Experimental group

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PRETEST - POSTEST	-1.60000	1.65831	.33166	-2.28452	-.91548	-4.824	24	.000

Based on the result, the experimental group students' scores on posttest were better in which the mean = 13.64 than their scores on pretest the mean= 12.04. In addition, the two- tailed value of p was 0.000 which was lower than 0.05. In conclusion, the calculation of paired t-test showed that there was a significant difference between the pretest and posttest scores of experimental group. Thus, the null hypothesis was rejected because there was a significant difference between pretest and posttest in experimental group. It can be concluded that the use of mind mapping as treatment in teaching descriptive text to improve students' writing ability was effective.

The calculation was carried out in order to know how well the treatment worked, in term of pre-test and post-test scores for experiment group. The t value of 4.824 and df of 24 were obtained from paired sample t-test analysis.

The result represented effect size with the value of $r= 0.70$ according to Coolidge (2000: 152), the value of r was large effect. Thus, there was major effect of mind mapping technique in students' writing ability, in other word, the treatment worked very well.

4.1.5 The Analyses of Questionnaires

In this research, close-ended questionnaires and an open-ended questionnaire were used to investigate the advantages and disadvantages of mind mapping in improving students' writing descriptive text. The close-ended questionnaires consisted of seven questions, and one question for open-ended questionnaires. The responses are categorized into three major answers. Those are the students' responses toward learning writing text, students' responses to the use of mind mapping in their writing, advantages of using mind mapping to improve students' writing skill, and students' response to the use of mind mapping as media in writing. The following table displays the result:

Table 4.10
Result of Questionnaire Data Analyses

No	Categories	Question Number	Yes		Moderate		No		Total	
			F	%	F	%	F	%	F	%
.	Students' response	1	14	56 %	3	12%	8	32%	25	100%
		2	24	96%	1	4%	0	0%	25	100%

	toward their learning writing.	3	24	96%	0	0%	1	4%	25	100%
.	students' response to the use of mind mapping technique in their writing,	4	23	92%	2	8%	0	0%	25	100%
	advantages of using mind mapping technique to improve students' writing skill	5	24	96 %	1	4%	0	0%	25	100%
.	Students' response to the use of mind mapping techniques as media in writing.	6	7	28%	5	20%	13	52%	25	100%
		7	24	96%	0	0%	1	4%	25	100%

The results of several categories above are interpreted into:

1. Students' response toward their learning writing.

The result of first category in question no 1 indicates that more than half of the students (56%) enjoy learning writing because they can increase their knowledge through writing. In addition, the students also said that writing is fun, and they can practice their English vocabulary. Nearly half of the students (32%) do not like writing because the students assume that writing is boring and difficult. Small numbers of the students (12%) moderate to answers this question.

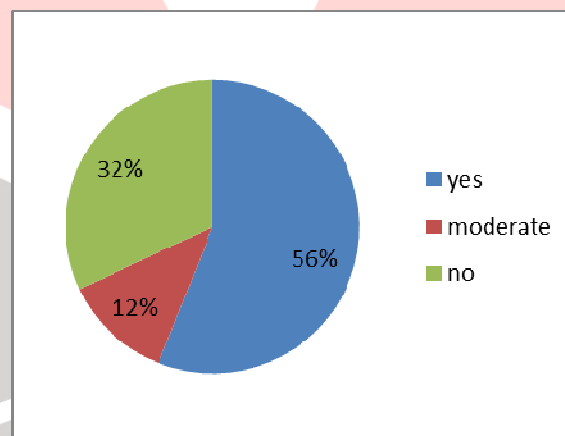


Chart 4.1
Students' interest in writing

Question no. 2 show almost of the students (96%) said that writing is the important subject because writing can increase students' knowledge; express students' ideas and some students said that writing is important for the better future. Although the students enjoy learning writing, almost all of them (96 %) said that they have problem in writing process.

The opinion for question no 3, the students said that they have lack in vocabulary, difficult to imagine the story, and some students' add that they are lazy to start writing.

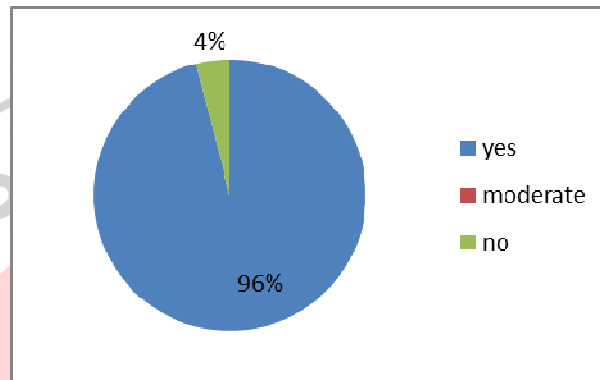


Chart 4.2
Students' problem in writing

2. Students' response to the use of mind mapping technique in their writing and advantages of using mind mapping technique to improve students' writing skill.

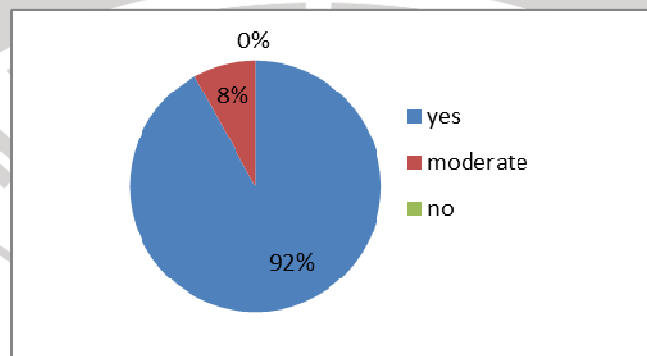


Chart 4.3
Students' responses of mind mapping in learning writing

The result of this second category for question no.4 shows that almost all of the students (92 %) agree that writing descriptive text using mind mapping make them easier to write and describe something detail. Some students also said that mind mapping is interesting and fun because they can draw pictures and put many colors, mind mapping also help students increasing their self confidence in writing without fear making mistake in vocabulary and grammar. Most of students agree that mind mapping technique make writing easier than the conventional method. For question no.5, almost all of the students (96%) state that they get benefit by learning mind mapping.

3. Students' response to the use of mind mapping technique as media in writing.

The result of the last categories in question no.6 shows that, more than half of the students (52%) agree that there is no obstacle in practice mind mapping technique. Nearly half of the students (28%) said that they have difficulty in drawing the picture and need more time to think the idea.

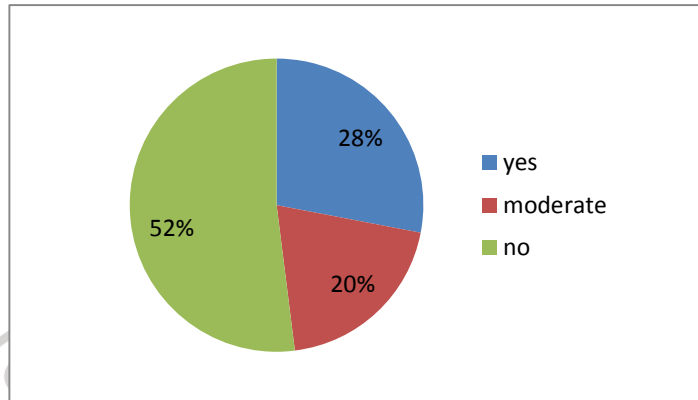


Chart 4.4

Students' obstacle in practice mind mapping technique

In addition, for question no.7 shows that almost all of the students (96%) agree that they feel advance in writing by using mind mapping. The student's states that they can improve their vocabulary, expand their ideas, and increase their self confidence in writing.

The open- questionnaires only contain one question, as follow: *Menurut anda, bagaimanakah pelajaran writing dengan menggunakan teknik mind mapping?berikan alasanmu* (Or what is your opinion about writing lesson by using mind mapping technique? Give your reason). The result shows that almost all of the students (96%) agree that writing become fun, interesting, and easy because of mind mapping. Most of the students have improvement in writing. The students that have half page can write more than it. By using mind mapping, students can encourage to find out some new vocabularies.

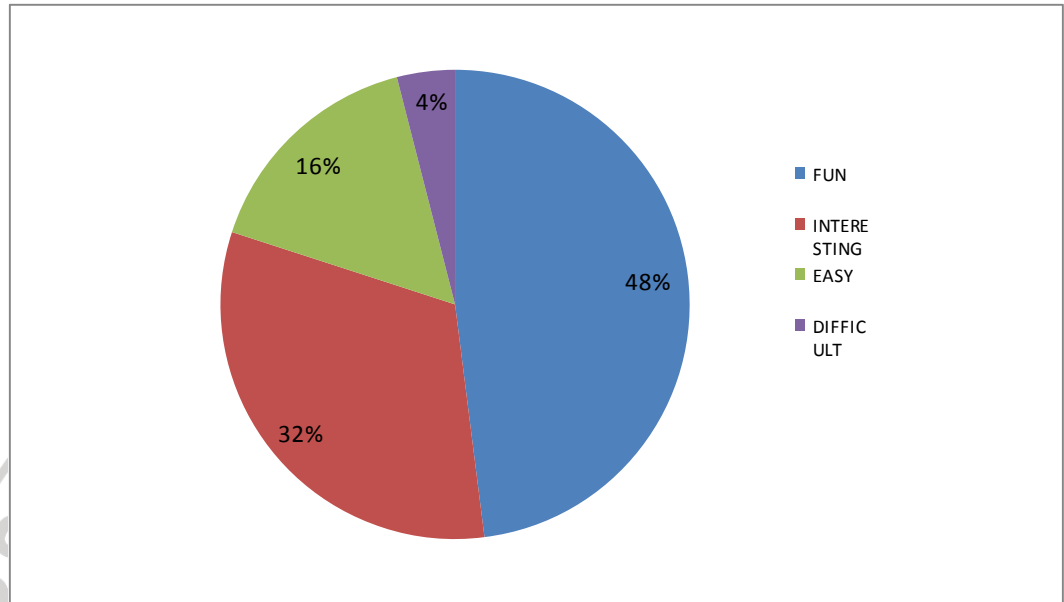


Chart 5.5

Students' opinion about writing lesson by using mind mapping technique

4.2 Discussion

The aims of this research were to investigate whether or not mind mapping technique is effective in improving students' writing ability and to investigate the students' responses toward mind mapping technique. Therefore, the discussion is divided into two explanations. The first a discussion of quantitative result and the second was the discussion of qualitative result.

4.2.1 The Quantitative Result

The statistical computation on the pre-test scores of the experimental and control group using SPSS 16.0 for windows show that the distribution of the experimental and the control group's scores are normally distributed. Since the pre-test scores of the experimental and control groups are normally distributed, it means a parametric test using t-test should be used. Brown (1995: 166) states that there are two requirements to be able to make assumption from t-test result, the score in each group were normally distributed and variance of the score of the two groups are equal. An independent sample test using t-test shows that both of the control and experimental groups are homogenous

The improvement of students' writing skill can be seen from the effect size t value is 0.008 and df is 48. It is found that r value is 0.369. It means that there is a significant improvement in students' writing ability. To support the data, paired sample test is represented. It can be seen from average pre-test score (12.04) and the average of post-test (13.64). It is increase 1.6 point, which is means that mind mapping influence students writing ability (Coolidge, 2000).

4.2.2 The Qualitative Result

The statistical calculation is represent that there is a significant influence of mind mapping in improving students' writing ability. It means that in the implementation, there are positive responses from the students toward mind mapping. However, based on the result of questionnaires, it can be found that there are not only

positive responses toward mind mapping technique, but also some negative responses from the students. It brings effect on the lack of their motivation to implement mind mapping in the English learning.

The students' responses toward learning writing text, it can be seen that students do not like writing because the students assume that writing is boring and difficult. This finding support the statement of Crider (2006:29) that writing become more complex and spent most a lot of time to think if we do not follow the series of steps. Unlike Crider (2006) who stated that writing does not only need skill but also need patience, the questionnaires answers find that students was boring before they start to write, it can be seen from students' reason why they do not like writing.

The reason why students do not like writing it is because they have problem in writing process, some reasons that students' have are lack of vocabularies, difficult to imagine the story, and lazy to start writing. As Blanchard and Root (2004: 11) explained about three steps in writing process: prewriting; generating idea, and organizing idea. Then, writing; using ideas to write a first draft. Last, revising and editing; improving what have written. It became a difficult activity for students since they have a problem in extended the idea, lack of vocabularies and finally lazy to start writing. Hyland (2003:9) state that writing is a way of sharing personal meanings and it is emphasized the power of personality to construct someone's view based on a certain topic, it became hard to implement for students in learning writing.

However, the students' responses toward mind mapping technique are show that they agree that mind mapping help them to make writing easier, especially in descriptive text. In seven steps of making mind mapping (Buzan & Abbot: 2010) supported these state that image, picture and color in mind mapping technique help students to stimulated creative thinking and keep focused to the subject that they want to described.

As Crider (2006) states that without guidance, some students never will learn to write. Mind mapping is a tool to facilitate students in extended their creativity by registering and planning using harmony work of brain (Brendan: 2002). It gives advantages in improving students' writing ability. It can be seen from the students' reason, they said that mind mapping is interesting and fun because they can draw pictures and put many colors, mind mapping also help students increasing their self confidence in writing without fear making mistake in vocabulary and grammar.

Although data statistical and students' responses showed good result, the students still have some difficulties in implementing mind mapping (28%), this result is contrast to Micalko cited from Buzan and Abbot (2010) who relied that the advantages of mind mapping help mind from mental problem, he also states that anything can be mapped. In this research, some of the students have difficulties in drawing; it made them stress and need more time to deliver their ideas into a good picture or interesting colors.

Generally, mind mapping for almost of the students contribute in improving their writing ability, mind mapping can improve their vocabulary, expand their ideas,

and interest to apply in writing process. This findings support the previous research which had been conducted. Wahyudi (2008) in his study found that mind mapping technique allows students to generate thinking in a continuous and progressive ways in creativity, thinking, efficient planning, effective studying, enhanced communication, and concentration, among other things. In addition, Mariani (2005) cited from Kusumaningsih (2008: 28) in her study investigated the use of mind mapping as a visual media in improving students' writing skill. The result of her study showed that there were several improvements of students' score in writing.

