

**THE USE OF MIND MAPPING TECHNIQUE TO IMPROVE 11TH GRADE HIGH
SCHOOL STUDENTS' READING COMPREHENSION OF EXPLANATION
TEXT. AN EXPERIMENTAL STUDY AT SMAN 3 MATARAM**



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ABSTRACT

Improving students academic reading skill becomes very important since students especially in high school level are demanded to learn variety texts such as descriptive text, expository text, explanation text and so on. In teaching reading comprehension the teacher may use variety method such as note taking and mind mapping is one way of assigning note taking. This writing was written to provide deeper explanation about the effect of mind mapping technique in teaching one of English skill particularly Explanation reading text. The population of this study was the 11th grade high school students in SMAN 3 Mataram. There were 2 classes taken as the sample where they were distinguished into experimental group and control group. The students in both groups were chosen using cluster random sampling technique. Students in both groups were given a pre-test to know their background knowledge and English ability. Both groups were given different treatments, experimental group was taught using mind mapping technique whereas the control group was taught using PPP technique. In order to measure the effect of treatments, both groups were given a post-test. The researcher then calculated the score of students and described the results based on the value of t-test as well as the teaching and learning process. The finding shows that in confidence level of 0,05 (95%) and in the degree of freedom (df) 65, the value of t-test (2,642) is higher than the value of t-table (1,997). It represents that mind mapping technique brings about significant effect toward students ability in reading explanation text.

Keywords: *mind mapping, explanation text, PPP technique.*

1. INTRODUCTION

Reading becomes one of subjects of research that mostly studied over decades. It is one of receptive skill that need to be enforce to every level of students to support the productive skills including speaking and writing. There have been many efforts made by teacher, academicians and researcher deals with the improvement of teaching and learning quality of english reading skills, so that the students can make more benefits from it. Sujana (2012) stated that the teaching and learning process is less-innovative and less effective, the teaching of reading is still dominated by traditional ways. He also adds that this traditional way of teaching reading should be replaced gradually by more challenging and useful materials and activities. In this case, the students are demanded

to have such academic reading skill as note-taking, summarizing, underlining, retaining information, arguing, presenting information and so on (Sujana, 2006). One of the ways in assigning students to write note-taking is through mind mapping. Note-taking strategy through mind mapping is a creative learning that uses two main part of one's memory, they are imagination and association.. Mind map is considered to be a special form of note taking and planning which works in harmony with brain to help remembering process. Based on the explanation above, the researcher intends to examine the effectiveness of mind mapping technique in teaching and learning process of explanation reading text.

2. LITERATURE REVIEW

According to Bernhardt the act of reading refer to the reader's processing of the written text in his or her brain and how this process results in a conceptualization of what is written. Reading Literacy plays a role as lifelong learning that enables the individual to fulfill their aspirations such as for gaining an education qualification or obtaining a job. It provides the reader with a set of linguistic tools that are increasingly important for meeting the demands of modern societies (Bernhardt, 2011). Moreover, according to RAND, Reading Study Group (2002) reading comprehension is the simultaneous process in extracting and constructing meaning through interaction and involvement with written language. It is indicated that in the effort of making meaning in order to construct meaning there should be a dance between the information that the reader had already known and that information that is available in the text.

According to Brown (1989), people have different purposes for reading. Based on the purpose of reading there are two types of reading which include intensive reading and extensive reading (United Arab Emirates Ministry of Education, 2014-2015). In intensive reading the reader will be more focus on grammatical forms,

discourse markers and other surface structure details with the aims of understanding literal meaning, implications and rhetorical relationships and the like. This kind of reading activity is commonly occurred in class and the text which is read usually short (not more than 500 words). However, according to Long and Richards (1977; p.216), extensive reading is identified as reading large amounts of material where the students are really keen on reading them and only focus on meaning (reading for gist) and often skip the difficult or unknown words. This type of reading is usually done in out of classroom context.

In order to know which process we will use in reading, it is also very important to know our reading purpose (Tutoring & Learning Services LIB 206, n.d). The first is Scanning; it is not actually reading, in this activity we just let our eyes to run across a page to find a bit of information. We use scanning when we look for a word in a dictionary or an index or looking for a name in a phone book. The second reading process is called as skimming, it is useful when we want to cover a lot of reading in a short time. We usually do skimming when we do not have time to read the passage, so we just skim the material for example before having a lecture or class discussion or before meeting. The third reading process is general reading, this is a process that people frequently used when reading once they get out of school. The last reading process is called as study reading is a process that is commonly used by students when reading. College students often have low reading rates because they usually use study reading for reading everything. During the study Students in the classroom were reading using intensive reading skills and implemented the study reading types.

Morover, In enhancing students' reading process the teacher may follow some of the following reading techniques including choral reading, taped reading, echo reading and buddy reading. In teaching students, the researcher implemented choral and

echo reading technique. The text taught to students were explanation text under the theme natural disaster. Explanation text is a text that explain how and why something or phenomena in the world happens, so there will be detail of accurate sequences of events and show causal relationship (blake education, nd). In order to improve students' reading comprehension mind mapping technique was used. According to Biktimirov and Nilson cited in Davies (2010), mind mapping has been defined as 'visual and non-linear representations of ideas and their relationships'. It is the representations of the network that connect the concepts and make them related to other concepts, it has free-form and in order to make mind mapping we will need to think spontaneously. The aim of making mind mapping is to find creative associations between ideas and concepts.

In making mind mapping process, Buzan suggested us to use the following recommendation including:

- Place an image or topic in the centre using at least 3 colors.
- Use images, symbols, codes, and dimensions throughout your mind map.
- Select key words and print using upper and lower case letters
- Each word/image is alone and sitting on its own line.
- Connect the lines starting from the central image. The central lines are thicker, organic and flowing, becoming thinner as they radiate out from the centre.
- Make the lines the same length as the word or image.
- Use colours—your own code—throughout the Mind Map.
- Develop your own personal style of mind mapping.
- Use emphasis and show associations in your Mind Map.
- Keep the Mind Map clear by using radial hierarchy, numerical order or outlines to embrace your branches.

3. METHOD OF ANALYSIS

A. Types of research

This study is categorized as a true experimental research that use pre-test and post-test control group design. The population of this research were those students of grade 11 who are particularly majoring language, natural science and social science program in SMAN 3 MATARAM in the academic year 2017- 2018. Second grade students in this school are divided into 16 classes with the total number of 609 students. In determining the samples in this study, the researcher uses cluster random sampling technique. This technique lets the researcher to choose two classes including XI MIA 4 and XI MIA 9 with the total number of students in both classes are 76 students. In determining the samples the researcher considers several aspects including students knowledge, the environment, the teacher and number of students. Students in both classes are taught by the same teacher with the same time allocation. Moreover, the number of students in both classroom are not too different and the learning environment supports them to learn well. Students in both classrooms are also considered to have similar English learning ability. In order to check the level of students ability used in this samples the researcher used homogeneity test, the following is the formula:

Homogeneity test is used to measure and determine that the students in both experimental group and control group are in the same level of ability before giving the treatment.

$$F = \frac{\text{varians terbesar}}{\text{varians terkecil}}$$

B. Research Procedures

The following are the procedures of conducting this study:

- **Selecting reading materials:** the researcher had checked the latest syllabus which is used by second year students of SMA. This syllabus is based on School Based Curriculum of 2013. The reading was about explanation texts under the theme *Natural Phenomenon and Disasters*.
- **Conducting Pre test:** The Pretest was conducted to determine the students' reading comprehension ability before giving them the treatment. The text given in this test entitled *Geyser*.
- **Giving Treatment:** Both control and experimental groups were given two different treatments. The treatment of mind mapping technique were conducted in the experimental class, XI MIA 4, for two meetings in which 2 X 45 minutes were distributed for each meeting. However, the control group, XI MIA 3, were taught using PPP (Presentation, Practice and Production) technique which is commonly used by teacher in teaching reading skill. Figure 3.1 shows the



Figure 3.1 mind mapping about explanation text

example of mind mapping which had been prepared by researcher to teach students in experimental group.

- **Conducting Post-test:** After the researcher giving each treatment to each group, the post-test was given to both groups to know the progress of students reading comprehension ability.

C. Data Collection Procedures

The data collection procedures are covered by the following table:

Table 3.2 Data Collection Procedure

No	Kinds of Data	Sources	Data collection Procedure	Data analysis	Instrument
1	Teaching and Learning Activity	Students and teacher	observation	Qualitative analysis	Video Recorder, Note book
2	Achievement	Students	Tests	Quantitative analysis	Post-test and pre-test

D. Method of Data analysis

In order to know the students' progress in comprehending the text, the students' score was computed by doing these activities:

- Tabulating the result of the pretest and the post-test.

Table 3.3 Student' Score Percentage

No.	Types of assessment	Number of questions	Score Percentage
1.	Multiple choice	10	30%
2.	True and False statements	5	25%
3.	Fill in the blank	5	20%
4.	Essay	5	25%
Total		25	100%

The score of each students in pretest and post-test were calculated using the following formula:

$$N = 3a + 5b + 4c + 5d \times 100\%$$

Furthermore, in order to calculate the mean deviation score of each group both in the pretest and the post-test the researcher used the following formula:

Experimental group:
$$Mx = \frac{\sum dx}{N}$$

Control Group:
$$My = \frac{\sum dy}{N}$$

- Calculating the square deviation score of pre-test and post-test of both experimental and control groups using the following formula:

The square deviation of Experimental group:

$$\sum x^2 = \sum dx^2 - \frac{(\sum dx)^2}{Nx}$$

The square deviation of Control group:

$$\sum y^2 = \sum dy^2 - \frac{(\sum dy)^2}{Ny}$$

- Calculating the correlation coefficients of the two mean scores:

$$T\text{-test} = \frac{Mx - My}{\sqrt{\left(\frac{\sum x^2 + \sum y^2}{Nx + Ny - 2}\right) \left(\frac{1}{Nx} + \frac{1}{Ny}\right)}}$$

(Arikunto, 2006)

- Calculating the degree of freedom by using the following formula:

$$Df = Nx + Ny - 2$$

(Arikunto, 2006)

After obtaining the T-test scores, it is tested at significant levels 0.05 (95%). The result of the test can be interpreted using the following data:

- If $t\text{-test} \geq t\text{-table}$ at the confidence level 0.05, H_0 is rejected.
- If $t\text{-test} < t\text{-table}$ at the confidence level 0.05, H_0 is failed to be rejected.

4.FINDING AND DISCUSSION

Researcher calculated the homogeneity test of students pre-test result to make sure that both classes are in the same level of ability, the following are the calculation:

- Calculating the variants of each class

Table 4.1 students' pre-test analysis

Groups	Number of students (n)	Total score (ΣX)	Average	ΣX^2
Experimental	35	1464	41.83	67014
Control	32	1889	59.03	120857

- Calculating deviation standart (S)

➤ Experimental group

$$S = \sqrt{\frac{\Sigma X^2 - \frac{(\Sigma X)^2}{n}}{n-1}}$$

$$S = S = 13$$

➤ Control group

$$S = \sqrt{\frac{\Sigma X^2 - \frac{(\Sigma X)^2}{n}}{n-1}}$$

$$S = S = 17$$

The result of the calculation above is summarized in the following table:

Tabel 4.2 Steps of homogeneity test

Groups	N	Standar Deviasi	S ² (Variants)
Experimental	35	13	169
Control	32	17	301

- Calculating the score of F-test:

$$F_{hitung} = \frac{\text{Varians terbesar}}{\text{Varians terkecil}} = \frac{301}{169} = 1.78$$

- Comparing score of F-test and F-table using the following formula:

$$dk_{pembilang} = n - 1 = 35 - 1 = 34 \text{ (untuk varians terbesar)}$$

$$dk_{penyebut} = n - 1 = 32 - 1 = 31 \text{ (untuk varians terkecil)}$$

At the significance level 0.05, the score of F-table is 1.80 and the homogeneity of pre-test score both for experimental and control group is interpreted using the following criteria:

- If $F\text{-test} > F\text{-table}$, data is not homogeneous
- If $F\text{-test} \leq F\text{-table}$, data is homogenous

According to the result of calculation above it is found that $F\text{-test} < F\text{-table}$ ($1.78 \leq 1.80$) and it can be concluded that students in both experimental and control group are homogeneous. The next steps is calculating t-test score through the following activities:

Table 4.3 Students pre-test and post-test scores for experimental group and control group.

EXPERIMENTAL GROUP			CONTROL GROUP		
	Pretest score	Post-test score		Pretest score	Post-test score
Total	1464	2642	Total	1889	2682
Deviation score	1178		Deviation score	793	
Minimum score	15	66	Minimum score	20	47
Maximum score	68	95	Maximum score	86	94
Average	41.83	75.49	Average	59.03	83.81

The average score of control group in pre-test and post pos-test is increasing from 60 to 84, while the average score for experimental group is also increasing from 42 to 75. The next step is finding out the mean score and the square deviation score of both groups, and finally find the value for the t-test. It is found that the

value for $M_x = 33.66$; $M_y = 24.78$; $\sum x^2 = 5,283.89$; and $\sum y^2 = 7,019.47$ which will be computed into the following analysis to find the value of t-test:

$$T\text{-test} = \frac{M_x - M_y}{\sqrt{\left(\frac{\sum x^2 + \sum y^2}{N_x + N_y - 2}\right) \left(\frac{1}{N_x} + \frac{1}{N_y}\right)}}$$

$$= 2.642$$

Based on the computation above, it can be seen that the value for t-test was 2.642. After finding out the value of the t-test, the next step to follow is finding out the value for NU or df in order that the significance of the t-table can be found. The value for NU or df is 65. In order to determine the effect of mind mapping technique to students reading ability of explanation text, the value of t-test and t-table are compared. Based on the result of the computation the value for t-test is 2.642. By using Microsoft Exel in confidence level of 0.05 (95%) and in the degree of freedom (df) 65 it is found 1.997 in the t-table. After comparing the value of t-test and t-table it shows that the value of t-test (2.642) is higher than the value of t-table (1.997). In sum, it is concluded that there is significant effect of using mind mapping technique on students' reading ability of explanation text. The significant improvement that the students made after they had been taught using mind mapping was concluded from the increasing number of score in pre-test and post-test. The mean deviation score of those students in experimental group (33.66) is higher than those students in control group (24.78). The pre-test score in experimental group is increasing to the number of 80% in the post-test, whereas it only increase to the number of 42% in control group.

After calculating the result of students test in both groups then the researcher was analyzing the result of students mind mapping and the teaching and learning processes during the study. The researcher found that using mind mapping in teaching and learning activity could bring both positive and negative impacts. The positive impact of mind mapping includes: (a) stimulating them to reread the text and increase their vocabulary; (b) increasing their retention of new information; (c) increasing students' creativity through the free-form of mind mapping; (d) providing new learning experience to students. Whereas the negative impacts of mind mapping include: (a) it needs much more extra times to teach and create mind mapping for a single text; (b) only active and motivated students are trying to engage in learning activity.

5. CONCLUSION AND SUGGESTIONS

- **Conclusion**

The use of mind mapping technique in teaching explanation reading text brings about significant impact toward students' comprehension. This is based on the result of pre-test and post-test. The average score of students pre-test in the experimental group is increasing from 41.83 to the number of 75.5 in post-test. The mean deviation score of pre-test and post-test in experimental group is 33.66 and this indicates that the students pre-test score has been increased up to 80% compare to the post-test result. Mind mapping may bring positive and negative impact toward teaching and learning activity in classroom. As the positive impact of mind mapping it is considered that this activity gradually helps increasing the number of vocabulary mastery for some students; It motivates the students to reread the explanation text given to them many times; and mind mapping could be one of technique that can be introduced to students in order to provide new learning experience. Besides, this

technique also has weaknesses including; (a) it needs much more extra time in teaching and learning activity to make students familiar of how mind mapping should be created; ; (b) only the active and motivated students in class who want to involve in teaching and learning activity

- **Suggestions**

The researcher suggest some of the following aspects to consider:

- a. For the English teacher: Teacher should make sure that the students vocabulary mastery is in sufficient amount, because the students should firstly read the text fast (do skimming activity) before doing note-taking using mind mapping technique. To keep the activities running well, the teacher need to prepare the blank paper given to students to start their mind mapping, if necessary prepare the colorful pencils to lend to students who may not be well-prepared. Teacher needs to train students as much as possible in order to familiarize them toward mind mapping activity. Before making mind mapping, teacher need to review or discuss the text first to connect what students already known to new information in text.
- b. The students: Students need to have more practises of creating mind mapping note-taking technique. To gain better result on mind mapping, students should be focus and serious.
- c. The next researcher: Any specific detail related to students difficulties in studying explanation reading text using mind mapping should be analyzed deeper. Longer research periode of teaching text comprehension using mind mapping is also considered necessary to do.

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