

## IMPROVING READING COMPREHENSION ACHIEVEMENT OF THE TENTH GRADE STUDENTS OF SMA NEGERI 2 PALEMBANG BY USING ONLINE MIND MAPPING

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**Abstract:** The objectives of this study were to find out (1) whether or not there was a significant improvement in reading comprehension achievement of the tenth grade students of SMA Negeri 2 Palembang after they were taught by using online mind mapping, and (2) whether or not there was contribution of each sub-skill of reading comprehension to reading comprehension achievement of the tenth grade students of SMA Negeri 2 Palembang. In this study, Time Series design was applied. The sample of this study was 40 tenth grade students of SMA Negeri 2 Palembang, who belong to the experimental group. To collect the data, the experimental group was given a pretest and a post test. The result showed that (1). The mean difference between pre-test and post-test of the experimental group was 34.70 at the significance level of p value  $<0.05$ . Since t obtained was higher than t table ( $18.2111 > 2.023$ ),  $H_{01}$  was rejected and there was a significant improvement in reading comprehension achievement after they were taught by using online mind mapping, (2). The highest contribution of reading sub-skill was given by sequence (39.4%) and then it was followed by vocabulary (23.3%), detail (17.3%), main idea (9.1%), inference (5.6%) and cause and effect (5.2%).

**Keywords:** *reading comprehension, online mind mapping*

The cheapest way to travel around the world and understand everything is through reading. Reading is considered important since it affects all areas of one's life from childhood to adulthood (Reidel, Tomaszewski, & Weaver, 2003 p. 4). Through reading people are able to know, understand, and gain new knowledge and information. Moreover, nowadays it is such an easy way to get the new information from all over the world just by surfing through the internet. People can easily find journals, articles, and e-books especially in English. Mickulecky and Feffries (2003, p. 10) state that reading in English is important because it helps readers to think in English, build their English vocabulary and make them feel more comfortable with the language.

Futhermore, according to Swalm and Kling (2000), reading is an important language skill that is now in more demand than in any time in the history. Reading is

set of skills that involve making sense and deriving meaning from the printed words. In order to read, the readers must be able to make out the printed words and also comprehend what they read (Linse & Nunan, 2005, p.86). In relation with that, in Indonesia, English is one of mandatory foreign language subjects which is put into National Examination. Moreover, reading skill plays a big role in National Examination in which most of the test items that need to be answered by students is reading text. So, it cannot be denied that reading is one of the important skills which need to be mastered because reading is the basic way of gaining new information and knowledge.

Moreover, Indonesia students' reading score are still below OECD (The Organization for Economic Co-operation and Development) average score and the rank 64 out of 65 countries. The score on the students' reading scale was 396 while

OECD average score was 496 (OECD, 2013). This is also shown that Indonesia students' reading score were still below OECD. Furthermore, Progress in International Reading Literacy Study (PIRLS, 2011) found that Indonesian students score average was 428 in reading literacy and was ranked 42 out of 45 countries. It was far below the mean of International score.

Dealing with that, in our country, Indonesia, the students' reading achievement is still low. Madya (2007) describes that around 69 %, the students whose age are around 15, have the lowest level of reading. In addition, EFL literacy in Indonesia is still low. This is evidenced by a study using 3-Ls---libraries, literature, and literacy--- as an instructional model, which involved five methods/subcategories: Informational Text Structures; Online Resources; Partnership with Librarians; Big6; and Literature Circles conducted by Diem (2011). In addition, judging from the level of achievements, as a whole, the literacy skills achievement of the students was still at poor level with the mean of only 54,77. Using 5 levels of achievement the condition of the students literacy skills achievement is as follows : excellent was 0,5%, good was 11,5%, average was 37,5%, poor was 35,5%, and very poor was 15 %. However, overall the 3-Ls approach significantly increased the literacy skills as well as reading habits in Palembang.

Based on the description above, it is essential to improve students' ability in reading by trying to provide an appropriate strategy in teaching and learning process. In this case, the writer will involve a technology to support the use of strategy which is mind mapping. Duffy and Bruns (2006, p.31) state that the rapid development of digital technologies and their use in education enable individuals to interact within the educational domain in new ecologies of learning. Moreover, Nutt (2010) states that World Wide Web has opened a whole new world of opportunity to those who need or want to learn English.

This is also in line with the government program in the 2013 Curriculum which states the importance of the involvement of technology in every subjects. The term technology here refers to the teaching of reading through a mind mapping which will be supported by using the technology such as laptop/computer and internet connection such as wifi or modulator demodulator (modem).

Mind mapping (or "idea" mapping) has been defined as 'visual, non-linear representations of ideas and their relationships' (Biktimirov and Nilson 2007). Mind mapping comprise a network of connected and related concepts. However, in mind mapping, any idea can be connected to any other. Free-form, spontaneous thinking is required when creating a mindmap, and the aim of mind mapping is to find creative associations between ideas. Thus, mind maps are principally association maps. Formal mind mapping strategy arguably began with Buzan (Buzan & Buzan 1993).

This online mind mapping has several advantages such as encourage students' creativity, help them to understand the reading material easily because in mind mapping students will focus in outlining the story by indicating it through symbols, colors, maps, and images. One of the important points is mind mapping can improve memory retention and attract their attention in teaching and learning process. Additionally, the use of technology is the bridge for students to engage with the technology itself and also help them to get closer with the world.

Hence, online mind mapping can improve reading comprehension achievement. This is proven by previous study which is conducted by Ningtyas (2012) that digital mind mapping can attract students' interest in learning reading comprehension. In addition, it also can create pleasurable atmosphere in teaching and learning process. It clearly shows that by using online mind mapping, students are not just learning reading but also they

develop their creativity and sharpen their critical thinking. Moreover, by involving the technology in learning reading, the students also will increase their interests in reading and engage it as the concept by making the mind mapping. By using online mind mapping, students have an opportunity to develop communication competence orally or in written form contextually as suggested by Curriculum of English Senior High School (2013) and Badan Standar Nasional

Therefore, based on the explanation above, the problem of this study can be formulated as follows.

The problem of the study is formulated in the following question:

1. Is there any significant difference in reading comprehension achievement of the tenth grade students of SMA Negeri 2 Palembang before and after students being given the treatment by using online mind mapping?
2. Is there any contribution of each sub-skills of reading comprehension to the improvement of reading comprehension achievement in experimental group?

## LITERATURE REVIEW

At the basic level, reading is the recognition of the words. From simple recognition of the individual letters and how these letters form particular words to what each word means not just an individual level, but as a part of a text to see the big picture of a text in order the reader may get the idea of information that the writer shares the text (Jacobs, 2008). Furthermore, Trelease (2001, p. 1) explains that reading is a fundamental task that must be mastered by students in order to be able to read functionally.

Ylvisaker (2006) adds that reading comprehension includes all of the process related to deriving meaning from written language (including books and other forms of written language) and constructing

meaning from written language. Comprehension is the ultimate goal of reading (Hock & Mellard, 2011). Prado and Plourde (2011) also state that comprehension is a process that involves thinking, teaching, past experiences, and knowledge. Reading comprehension is usually a primary focus of instruction in the post-primary grades, after readers have largely mastered word recognition skills, although comprehension of text should be an integral part of reading instruction with beginning readers as well (Snow, 2002). Reading comprehension can be categorized into four levels (Smith 2007, p.17). These four levels are: (a). Literal comprehension, (b) Interpretative or referential comprehension, (c) Critical reading and (d) Creative reading.

Teaching reading at school will expose the students to learn about reading for meaning. In order to make the students understand about the kind of the text and the meaning of every text they read during the teaching and learning process, some strategies usually being exposed to the students in order to make them easier to memorize the information in the text and understand the content of the text. One of the important point that can help students in understanding the text is by introducing them to the sub-skills of reading comprehension in relation to the text they deal with. One of the kind of texts that students must deal with is narrative text. Narrative text is one of genres of text. According to Sudarwati and Grace (2007, p. 62), narrative deals with problematic events which lead to the climax and turn into some problems. They also add that narrative story has the functional purpose to amuse or entertain the readers with imaginary experience in difference way. Moreover, Astuti (2010, p. 90) says that narrative text tell story, mainly used to entertain, motivate or teach, and maintain interest. Narrative story includes folktale (fairy tales, fables, myths, legend, folklore), mysteries, fantasy, science fiction, short stories, or realistic fiction. In reading narrative text the main

aspects are, main idea, vocabulary, detail, inference, sequence, and cause and effect.

In order to make the students comprehend the text and understand the meaning well, many ways need to be tried by the teachers. One of them is by introducing the students to the strategies that can help the students to master it easily. In reading narrative text students need a strategy that can guide them to master the content of the text chronologically and it is appropriate with mind mapping. Because in mind mapping students are exposed to map the story, starting from the characteristic, plot, setting (time and place, and the moral value of the story. Mind mapping was popularized by Tony Buzan, who has written extensively on maximizing one's mental skills, increasing memory, and accelerating learning. Buzan has degrees in psychology, mathematics, English, and the general sciences. Nowadays, by the supported of technology such as computer, mind mapping has evolved into such a powerful tool for teachers, learners, and organizations that it has been called the "Swiss Army Knife of the Brain."

According to Buzan and Buzan (1993), mind map is an expression of radiant thinking and is therefore a natural function of the human mind. It is a powerful graphic technique which provides a universal key to unlocking the potential of the brain. The mindmap can be applied to every aspect of life where improved learning and clearer thinking will enhance human performance. The mind map has three essential characteristics, as follows:

- a. The main themes of the subject radiate from the central image as branches
- b. Branches comprise a key image or key word printed on an associated line. Topics of lesser importance are also represented as branches attached to higher level branches.
- c. The branches from a connected nodal structure.

In mind mapping, the whole learning can take place especially for reading activity. Buzan and Buzan (1993) state that mind mapping provide the ideal opportunity to improve students' head/eye coordination and to develop and refine your visual skills. With a little more practice, the image making skills students have already developed can be used to take that mind maps in to the realms of art. Such mind maps enable students' brain to express its own artistic and creative personality. In developing students' personal style it is especially useful to apply the guiding principles of image, color, dimension, and spacing.

Nowadays, the use of Information and Communication Technology or ICT can not be denied. Technology facilitates people in every aspects of life. It is really helpful and everybody needs it. Moreover, in education field, the use of technology in teaching and learning process is becoming essential now. Since technology take part in whole aspects of human's life, it transforms the conventional mind mapping into the online as well.

Online mind mapping is mind mapping that can be accessed just through online. People should connect to the internet in making this mind mapping. It has so many advantages and it does not only help people in sharpening their ideas but also can help them to hand the technology in right way. People do not need a pen and paper anymore when they want to make mind mapping. In this online mind mapping they just need to visit the website and create the mind mapping. Moreover, they can choose the appropriate template based on their need. They can add picture, change the color, capture it, share it, import some files and easily can edit it. Here are some of the features of online mind mapping.

- a. Import image to the mind mapping
- b. Export mind mapping into image
- c. Share the mind mapping into email

- d. Add interesting symbols
- e. Change colors

## RESEARCH METHOD

This study employed time series design. There was only one group in this design, it was experimental group. The population of this study was 427 tenth grade students of SMA Negeri 2 Palembang Academic Year 2015/2016 and the sample was 40 tenth grade students. The technique in choosing the sample was purposive sampling in which the researcher used personal judgment and considered some particular elements for the specific purpose. This class was chosen because their score was considered low based on the interviewed done by the writer in the observation time. Then MIA (Matematika Ilmu Alam) X class was chosen.

During the treatment, in teaching and learning process, the experimental group was exposed to the online mind mapping. At first, students were given a narrative story, after they read the story, they were asked to make mind mapping by visiting the website provided by the researcher. The students together with their group make the online mind mapping. After they make it with their group, they also allowed to design their own mind mapping. At the last, they were asked to present their online mind mapping in front of the class. So, the other students could see their friends' work and give comment or suggestion as well. Since this study employed time series design, so after each meeting, the writer gave the students a test in order to know students' understanding in every meeting. After that in the twelfth meeting, the writer gave the students formative test 1. The function of giving the formative test 1 was to measure students understanding toward the six sub-skill that became the focus in this study. The result of the lowest sub-skills from students became the focus for the writer in the next treatment until in the twenty fourth meeting the students got their formative test 2. This

formative test became the last test before they did their posttest.

In order to collect the data, the experimental group was assigned a reading comprehension test in the form of multiple choice consisting 36 questions. The narrative passages in the pretest, posttest, formative test, and daily test have been already checked the readability using Fesch Kincaid 2014 readability tool. The text that used was considered based on students' reading level. The reading level of students was also have already checked before the writer did the treatment by using IRI (Independent Reading Inventory) Burns and Roe. The result showed that the tenth grades Students of SMA Negeri 2 Palembang was in the sixth level. Hence, in order to vary the material, the text that used in this study was put proportionally by considering students' level and also categorize their material into 5 level (very easy, easy, standard, difficult, and very difficult level). The validity of the test was also calculated by using Pearson Product Moment in SPSS 21.0 in correlated item total correlation section. The validity of the reading test can be said valid if  $r$ -obtain is higher than  $t$ -table. The result showed that out of 50 multiple choices questions provided by the writer, there were 12 items, which was not valid. Since in this study the writer need 36 questions, so the writer chose the 36 appropriate questions out of 38 valid questions. For the reliability of the reading test, Cronbach alpha in SPSS was used. The reliability coefficient is considered strong and can be used for the test, if the value is at least 0.70 and it is considered strong if it is higher than 0.70. Based on the analyses, the reliability coefficient of pretest and posttest of experimental group was 0.74, therefore the test was reliable.

After the data was collected, the data were analyzed by using paired sample t-test. Paired sample t-test was used to analyze data gained from pretest and posttest of the experimental group. From paired sample t-test,  $t$  obtained, the degree of freedom and the significance level (in-two-tailed test)

were found. To know whether the null hypothesis was rejected or accepted, there are two ways, based on the ratio of  $t$  obtained and  $t$  table; and the ratio of the probability value. Hence,  $t$  table should also be found. If the  $t$  obtained  $<$   $t$  table and the  $p$  value  $>$  0.05, then the null hypothesis is accepted and if the  $t$  obtained  $>$   $t$  table and the  $p$  value  $<$  0.05, thus the null hypothesis is rejected

**FINDING AND INTERPRETATIONS**

Based on the data collected, the mean of experimental group in reading comprehension achievement was 46.27(poor) in pretest and 81.12 (excellent) in post test, while the mean difference was 34.85. The data distribution from experimental group during their pretest and post test is presented in Table 1

Table 1  
The Score Distribution in the Experimental Group

Score Interval	Score Range	Predicate	Category	Pretest		Posttest	
				Frequency	Percentage	Frequency	Percentage
86-100	3.67-4.00	A	Excellent	0	0%	13	32.5%
81-85	3.34-3.66	A-		0	0%	8	20%
76-80	3.01-3.33	B+	Good	0	0%	10	25%
71-75	2.67-3.00	B		0	0%	6	15%
66-70	2.34-2.66	B-		0	0%	3	7.5%
61-65	2.01-2.33	C+		Average	2	5%	0
56-60	1.67-2.00	C	6		15%	0	0%
51-55	1.34-1.66	C-	9		22.5%	0	0%
46-50	1.01-1.33	D+	Poor	6	15%	0	0%
0-45	$\leq$ 1.00	D		17	42.5%	0	0%
Total				40	100%	40	100%

From table 1 above, the result of pretest in experimental group showed the lowest score was 25 and the highest score was 63. The mean score was 46.42. In the posttest, the lowest score was 67 and the highest score was 94. The mean was 81.12.

In the pretest, no student (0%) was in excellent and good category; 17 students (42.5%) were in average category, and 23 students (57.5%) were in poor category. In the posttest, 21 students (52.5%) were in excellent category; 19 students (47.5%) were in good category; no student (0%) was in average category; no student (0%) was in poor category; and no student (0%) was in very poor category.

Before doing a statistical analysis, the normality of the data distribution needs to be checked. Each of the data from the pretest and post test from experimental was

analyzed by using One-Sample Kolmogorov-Smirnov test. Based on the results, the significance value in two tailed testing gained from pretest and post test of experimental group were 0.526 and 0.345. Priyatno (2008, p.28) states that the data can be said having a normal distribution if the  $p > 0.05$ . The results showed that the value from both group were higher than 0.05, they were 0.526 and 0.345. Therefore it can be said that the data obtained were considered normal. Then, based on the homogeneity test by using Levene's test, the significance value was 0.99 ( $p > 0.05$ ). Since significance value was higher than 0.05, it means that the variance was assumed equal

Then, after checking the normality of the data, paired sample t-test was employed to analyze the data. The result of paired sample t-test can be seen in table 2.

**Table 2**  
**Paired Sample T-test of Experimental Group**

	Paired Differences					t	df	Sig, (2 tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidenc e Interval of the Differenc e				
				Lower	Upper			
Pair 1 Posttest -pretest	34.70000	12.18911	1.927227	30.80173	38.59827	18.005	39	.000

Based on (Table 2), the mean of pretest was 46.42, and the mean of posttest was 81.12. Standard deviation was 10.44 with the standard error mean of 1.65. The mean difference was 34.70 with t-obtained was 18.211 at significance level  $p < 0.05$  in two tailed testing and the df was 39 and the critical value of t-table was 2.023. Since the value of t-obtained was exceeded the critical value of t-table, ( $18.2111 > 2.023$ ) and  $p$  value  $< 0.05$ , the null hypothesis was rejected and the research hypothesis was accepted. Therefore, it could be declared that there was a significant difference between the students' reading comprehension achievement after they were taught by using online mind mapping.

Since time series design was applied in this study, there were also two formative tests that given to the students. The result of formative test 1 showed that the lowest students' score was 50 and the highest score was 90, out of the six sub-skills of reading

comprehension, the bottom three of reading comprehension sub-skills were vocabulary, cause and effect, and inference. Then, these three sub-skills were mostly exposed to the students in the next treatment. As the result, in formative test 2, each of sub-skill result showed an improvement and In formative test 2, the lowest score was 75 and the highest score was 97. Moreover the result of those three lowest sub-skill in formative test 1 was also shown that those three sub-skills got a better result than the result in formative test 1.

In order to see the contribution of each sub-skills of reading comprehension to the improvement of reading comprehension achievement in experimental group as state in research question 2, stepwise regression analysis was used. Based on the result of the analysis, the result of stepwise regression can be seen in table 3.

**Table 3**

**The Result of Multiple Regression Analysis of Reading Comprehension's Sub Skills**

	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.627 <sup>a</sup>	.394	.378	5.79023	.394	24.666	1	38	.000
2	.791 <sup>b</sup>	.626	.606	4.60561	.233	23.062	1	37	.000
3	.894 <sup>c</sup>	.800	.783	3.41811	.173	31.175	1	36	.000
4	.944 <sup>d</sup>	.891	.878	2.56220	.091	29.069	1	35	.000
5	.973 <sup>e</sup>	.947	.939	1.81062	.056	36.087	1	34	.000
6	.999 <sup>f</sup>	.999	.998	.28702	.052	1320.061	1	33	.000

- a. Predictors: (Constant), Seq
- b. Predictors: (Constant), Seq, Vocab
- c. Predictors: (Constant), Seq, Vocab, Det
- d. Predictors: (Constant), Seq, Vocab, Det, MI
- e. Predictors: (Constant), Seq, Vocab, Det, MI, Infer
- f. Predictors: (Constant), Seq, Vocab, Det, MI, Infer, Causeandeffect

Furthermore, based on the ANOVA analysis in Stepwise Regression, it was also shown that the p value of each sub-skill was 0.000 and p value <0.05. It means that each of sub-skill gave contribution to the improvement of reading skill. The

contribution of each aspect was considered from the R square of each aspect (see appendices).The contribution of each sub-skills towards the improvement of reading skill can be seen in figure 1.

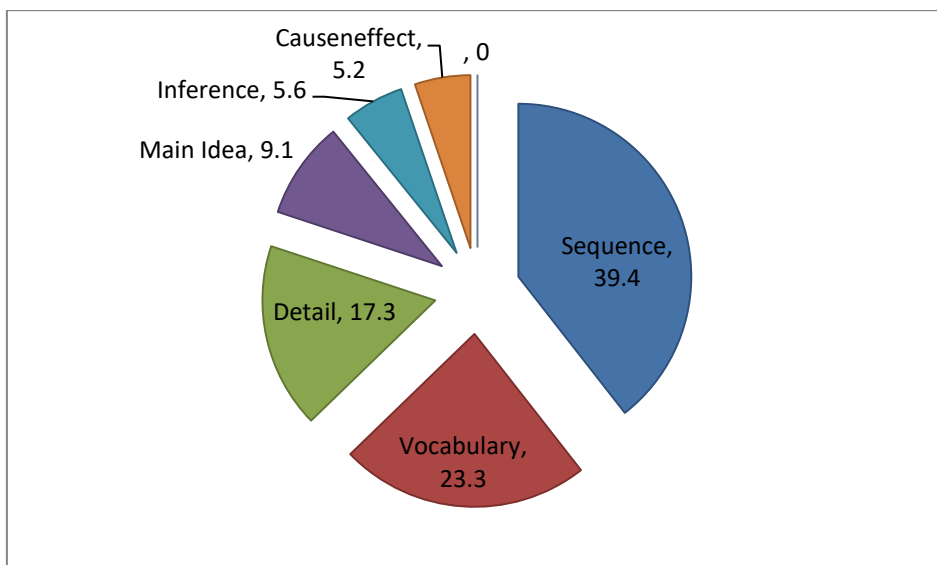


Figure 2: The contribution of each sub-skills in reading comprehension

From the figure 1 above, it can be concluded that the highest contribution was given by sequence, and then it was followed by vocabulary, detail, main idea, inference, and cause and effect. Referring to this result, it can be stated that online mind mapping strategy which was applied in this study can help students to improve their reading comprehension in sequence sub-

skill. Furthermore, online mind mapping can develop students' vocabulary, detail, main idea, inference, and cause and effect sub-skills.

Referring to the findings above, it can be said that there was an improvement in students' reading comprehension score. It can be seen from the result of the experimental group before and after being



taught by using online mind mapping. The posttest result of the experimental group showed that the students gained higher score than in the pretest. Also, the mean score of posttest in the experimental group was higher than the pretest.

In addition, the reading comprehension's sub skills (main idea, detail, sequence, inference, cause and effect, and vocabulary) showed that sequence (39.4 %) gave the most contribution to reading comprehension achievement. In other words, online mind mapping could improve sequence sub-skill in learning reading comprehension especially for learning narrative text. It is in line with

Coffman and Reed (2010) state that in reading narrative text, people deal with a structure consistency and it is predictable. Moreover, by considering the use of online mind mapping and the kind of text that used in this study, it was no wonder if sequence gives more contribution than other sub-skill, because in learning reading through narrative text students also learn more about event per event in each story chronologically and this activity is supported by online mind mapping in which students can map the concept of the text into their mind.

Then, after sequence it was followed by vocabulary. Vocabulary sub-skill comes as the second position which gave 23.3 % contribution. In learning narrative text, students deal with a story such as legend, fables, folklore, folktale, fable, myth, or even short story. Since in every teaching and learning process during the treatment, students always received different text, it can be concluded that students definitely gained new vocabulary in each meeting from each story they read. Based on previous study done by Indah (2010), mind mapping can improve students' vocabulary mastery because through mind mapping students can recognize the vocabulary easily since mind mapping has several branches so it makes the students be able to memorize it. Moreover by adding some pictures and symbols related to the vocabulary they

learned, it also helps them to remember the vocabulary since its display is interesting and attractive.

In this study, detail sub-skill appears in the third position which gave 17.3% contribution to reading comprehension achievement. In detail sub-skills students deal with the detail thing in the story and to know the detail in the story students should understand the completeness of the story. In narrative text, detail also becomes one of the important aspects, since it gives the information to the readers. Moreover in this study, in teaching reading comprehension by using narrative text, the writer used online mind mapping as the strategy which helped the students to memorize information of the story. It is in line with a study done by Boyson (2009) who states that 80% students agreed that mind mapping help them in memorizing the information in the story.

The fourth position goes to main idea. Main idea is allowed students to find the topic of the story. In narrative text, main idea becomes essential, since it draws an idea of the story. Learning reading comprehension by using narrative text through online mind mapping also helps the students to generate the main idea of the story. It is in line with DePorter and Hernacki (2008, p. 172) who state that mind mapping can help the readers to concentrate on the topic and focus on main idea easily. In this study main idea gave 9.3% contribution to the improvement of reading comprehension achievement. It was not as higher as it was supposed to be.

The fifth sub-skills position was inference, in this sub-skill, the students were dealing with a summarization of story. In learning narrative text, it is important to summarize the story because by summarizing the story, the students will know the whole point of the story. In this study, inference did not give a big contribution to the improvement of reading comprehension achievement, by considering the percentage, which was only 5.6%. Based on a study done by Novianty (2015),

which deals with reading comprehension, report text and concept mapping, inference gave 67.4% to the improvement of reading comprehension. In her study, the percentage of inference gave a big contribution to the improvement of reading comprehension. Since this study has twice formative test before the posttest, so the result from this formative tests also become consideration. Based on formative test 1, inference also became one of the aspects which was low, so after the formative test 1, the writer actually tried to give more exercises which focus in this aspect. In formative test 2, there is an improvement and it is better from the formative test

Lastly, it was cause and effect (5.2%). Cause and effect had the lowest contribution to reading comprehension achievement. In cause and effect, students deal with cause of the story and find effect or the reason why something can happen in the story. Cause and effect is also one of the crucial parts in narrative text which is usually being asked in order to check students' understanding toward the story they read. In this study cause and effect just gave 5.2% contribution compared to other sub-skills. The same thing also happened to a study done by Mislaini (2015). She said that cause and effect aspect had low contribution and it was only 6.8%. The same as inference aspect, cause and effect was also one of the lowest aspect in formative test 1 and in formative test 2, it was improved.

In this study, the use of online mind mapping could create a good atmosphere in teaching and learning process, especially in improving reading comprehension. Goodnough and Woods (2002) discovered that online mind mapping can make the partakers become fun, interesting, and motivating in learning process. Also, based on the writer's observation during the treatment process, most of the students were active in learning activity and motivated to involve in reading the text and make the online mind mapping. Additionally, online mind mapping can help poor readers to read

effectively because the format can show the relative importance points. Furthermore, Mueller, Johnston, and Bigh (2002) state that mind mapping can help the readers to think and explore relationship between ideas and elements and also to generate solution to problems. It is also supported by Davies (2010) who states that mind mapping encourage and allow students to imagine and explore associations between concepts.

During the treatment, there were so many activities that the writer did with the students in using the online mind mapping. For examples, after the students created the draft of their mind mapping, they must design their mind mapping by adding some related pictures, changing the arrow's color, and giving the symbols. Besides making the online mind mapping, students were also asked to upload their mind mapping in facebook group. This was one of the ways that writer did in order to make the students more active and motivated in teaching and learning process. Since the students were asked to upload their mind mapping in facebook group, it will be easier for the other students to see their friends' works. But one of the activities could not be done well during the treatment that was peer comment. At first, the writer planned to have the activity to comment on each online mind mapping made by students, but it could not be done due to the bad connection for some times. As the result, the writer just asked students to have a simple presentation to explain their mind mapping and invited the other students to give comment.

Conclusively, online mind mapping as the reading strategy was applicable in improving reading comprehension achievement. It is line with Murley (2008) who states that mind mapping can help reading since it guides the readers to read systematically. Kaufman (2010) adds that mind mapping is a useful technique, because the non-linear format allow students to observe the entirety of students' notes at glance, then easily put new information in the appropriate branch or make a connections between ideas. Hence,

the use of online mind mapping is important in order to facilitate students for the sake of betterment in reading skills.

## CONCLUSION AND IMPLICATION

Based on the findings, it can be concluded that online mind mapping help students in improving reading comprehension achievement. There was a significant difference in students' reading comprehension achievement after they were taught by using online mind mapping. It can be seen from the improvement of their score in the pretest and posttest. Referring to the finding of this study, there is also a contribution of each sub-skills of reading which is mostly contributed to reading comprehension achievement. Through the six sub-skills, namely main idea, detail, inference, cause and effect, sequence, and vocabulary, sequence sub-skills appears as a dominant sub-skill in giving the contribution to the improvement of reading comprehension achievement. Lastly, It can be assumed that, online mind mapping is an effective strategy to help students to improve students' reading comprehension achievement.

Based on the result of study, some suggestions were offered to English teacher and the students. First, it is suggested that the English teacher ideally should make use of technology in teaching and learning process. By involving the technology, the students will know that learning is not just paper based all the time, by the time goes by; the technology also becomes human need. Therefore, it is highly suggested to the English teachers in SMAN 2 Palembang to use online mind mapping in teaching reading comprehension because online mind mapping develops students creativity, help them in mapping the story because in mind mapping students focus in outlining the story, and attract students attention in teaching and learning process. Moreover, online mind mapping is such an interesting strategy in teaching reading comprehension.

It is also suggested to the students that they should be more aware of the importance of English and be more active to practice their English especially in reading so that they can improve their reading comprehension achievement. They can start with a simple thing such as reading newspaper in English, magazines or a simple short story. Additionally, they also should master some vocabulary in order to help them to comprehend the text.

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