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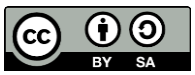

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The Effect of Mind Mapping and Semantic Mapping on Reading Comprehension of the Eleventh Graders of Senior High School

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Abstract

This paper discusses the effect of Mind Mapping and Semantic Mapping techniques on students' reading comprehension. This research was an experimental quantitative study involving three classes, they were experimental class 1, experimental class 2 and control class. In the experimental classes, the writer applied the Mind Mapping technique and the Semantic Mapping technique while in the control class the method did not apply. The population of this research was students from class XI of Methodist Berastagi. The writer used 105 students as samples; this research sample was taken using random sampling technique. It was about 35 from XI-A class and 35 from XI-B class as experimental class and 35 from XI-C class as control class. To obtain data, the author used a reading test, as an instrument in data collection. This test consisted of two types, namely pre-test and post-test. Based on ANOVA testing P= 0.52 > 0.05 or F count = 7.65 > F table = 2 significantly affected. It can be concluded that the alternative hypothesis (Ha) was accepted while the null hypothesis (Ho) was rejected. Therefore, it can be concluded that Mind Mapping and Semantic Mapping significantly affect the achievement on students' reading comprehension in narrative text. Based on the explanation above, the writer can choose these techniques as alternatives in learning.

Keywords: Mind Mapping; Semantic Mapping; Reading Skills; Narrative Text

Introduction

The need of being able to master oral and written English is essential, where it is used as the main language of communication. In this era, English takes part almost in all areas such as in science, technology, culture, economics, art, international relationship, and education. Almost newspapers, articles, journals, and books are written in English. For that reason, people need to learn English to obtain the

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information which they need.

Realizing that English is very important, it is considered a compulsory subject in the Indonesian school curriculum. Students formally learn English from the elementary level to the high school level. At the high school level, students should master four main skills; those are reading, listening, writing, and speaking. Consequently, to achieve the aim of teaching and learning process, students are required to be able to read, listen, write, and speak in English (Bakara & Pasaribu, 2022; Khadijah & Pasaribu, 2022; Tampubolon & Pasaribu, 2022; Ginting, et al., 2021; Purba, et al., 2021).

In this research, the researcher is concerned about reading. Reading skill is one of the skills of language which has to be mastered by EFL (English as a foreign language) Students. This is because reading is a means to learn another desired world, so humans can broad their knowledge and explore written messages that are contained in reading material.

Reading skill is not easy for EFL students because reading skill plays a significant role in students' learning process. It means students must understand and comprehend the content of the text not just read and see it. But most EFL students have difficulties comprehending the English text. Due to several factors such as factors from the English teacher or from the EFL students themselves, it needs to apply a new teaching technique when teaching English in classroom.

When the students are lazy to read and less interested in reading English text, it will make the EFL students have some problems in reading comprehension such as, they have difficulty to understand, to analyse the text, and to find information from the text. Therefore, it will make students difficult to learn. In addition, English teacher must develop the material to improve reading comprehension for students. English teacher must have good method when teaching reading in classroom, because with good method can make student interested to comprehend the text.

Since there are many factors which should be fulfilled, the objectives of teaching reading are not yet achieved. An observation done prior to this study showed that eleventh-grade students at SMA Methodist Berastagi had a major problem with reading. They still found difficulties in reading English texts. They often thought that reading was the need to read each word of the text. As a result, they spent time reading. According to Wallace (2003:4) one of the difficulties which young learners may have is the incapability to understand texts. They tend to fail in acquiring the significant meaning of the texts. Some students have difficulty finding the main idea in each paragraph. They still have trouble differentiating which the main idea and supporting sentences are.

From the problems above, the researcher assumes that the students have difficulties in their reading comprehension ability. Actually, there are many ways to comprehend English text which use reading strategies. Willis, (2008:127) states that strategies are needed to build comprehension at each step of the comprehension process. Based on the previous problems above is necessary learning that can help students to improve reading comprehension and also give them much more

motivation in the learning process, making students easier find the main points of the reading material. The writer proposes two reading strategies namely Semantic Mapping and Mind Mapping. The strategies hopefully can enhance students' reading comprehension and assist teachers to solve students' problems on reading comprehension among eleventh graders of SMA Methodist Berastagi.

Mind mapping is one of the techniques in the high school level since high school teachers rarely use this technique. In this study, mind mapping is a tool that helps teacher and students think and remember better, creatively solve problems and take action. Dunn (2006:35) states that mind mapping help learners think outside the box. It opens the users up to creativity and new ways of thinking.

Mind mapping is a structured strategy that shows the (hierarchical) relationship of ideas. Buzan (2002:21) explains that mind mapping is a powerful graphic technique which provides a universal key to unlock the potential of the brain. Further, Buzan argues that mind mapping is a note-taking technique to keep any information in a visualization and graphic form by engaging imagination and association.

Semantic mapping is a form of graphic organizer, lead learners to design a visual representation of relationship among words, meanings and images. This means semantic mapping is a simple technique that can explain the topic of the text with graphic organizer. The ideas relate to each other. It means, map can help students to improve their reading comprehension without difficulty, using the map students can easy to finding the main idea, or something important in the text.

In other definition about semantic mapping an excellent strategy to help students engage in higher-order thinking. Students focus on some of the core regulators that divide the main idea patters follow using semantic mapping. Semantic mapping, they state semantic mapping is closely related to reading comprehension can help students not only focus on keyword but also text structure, it can help student's develop prior knowledge by looking at the relationship in a given topic.

From the previous statement semantic mapping can be describe as , the writer conclude mapping is a learning strategy which has the form of a diagram, a graphic that describes the word called the subject or main idea by writing sub-sub ideas that explained the subject. Semantic mapping also is easy including teaching and improving students reading comprehension. The student can understand the element of the text.

Method

This research was done in quantitative research design especially in Quasi-Experimental. It is appropriate with the research since it is related to the purpose of the research. Anderson (2005:98) states that" Quasi-Experimental is a comparative method in which different groups of people or organizations receive different opportunities and the researcher attempts to demonstrate the differences among the groups on some type of quantitative measure such as student examination

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results". These methods have dominated educational research for much of the century, though they are now being supplanted by more eclectic methods. In the example, there could be a range of comparative questions asked. Anderson (2005:98) adds that "quasi-experimental research approaches, being much more flexible, have been used for years in evaluation projects".

The goal of employing the quasi-experiment is to assess and contrast the effect of Mind Mapping and Semantic Mapping on reading comprehension of the eleventh graders of SMA Methodist Berastagi. Participants are assigned to groups in quasi-experiments, but not at random. Because the experimenter is unable to create an artificial group for the experiment due to the study setting's limitation, the quasi-experiment will be used.

Based on the statement above, in doing the research, the researcher uses Quasi-Experimental by using Pre-test and Post-test for both groups. The differences of the pre-test and post-test were both compared in the groups by the effect of the treatment. For more understanding, the research design can be shown on the table 1.

Table 1 research design

Groups	**Pre-test**	**Treatment**	**Post-test**
Experimental Group (A)	√	Mind Mapping	√
Experimental Group (B)	√	Semantic Mapping	√
Control Group	√	Conventional Strategy	√

Population is generally a large collection of individuals or objects that is the main focus of a scientific query. It is for benefit of the population that researches are done. However, due the large sizes of population, the researcher often cannot test every individual in the population because it is too expensive and time consuming. Levy and Lemeshow (2008:11) states "The population (or universe or target population) is the entire set of individuals to which findings of the survey are to be extrapolated". The population in this study was the students at the eleventh grade of SMA Methodist Berastagi which consisted of four classes. They were XI-A, XI-B, XI-C, and XI-D. Each class had 35 students. The following table describes the number of the eleventh-grade student at SMA Methodist Berastagi.

Sample is as stated by Sugiono (2011) stated that, sample is a model for the random sampling process in selecting experimental units from the universe of units which would be defined later. It can be said that sample was a part of population that was studied. In conducting the research, the researcher selected the sample by using "simple cluster random sampling technique" to establish the experimental and control classes. Then Sugiono (2011) stated that cluster random sampling, the

sample is not selected individually directly, but it is selected through random groups. The samples in this study were XI-A, XI-B, and XI-C. Here were several procedures in selecting sample through cluster random sampling like as.

1. Identify the research population.
2. The population of the research was the eleventh grade of SMA Methodist Berastagi that consist of 140 students.
3. Determine the desired sample size.
4. The desired was 105 students.
5. Identify and define the logical cluster.
6. A logical cluster was classroom.
7. List the entire cluster (obtained list) that made up the population of clusters.
8. There were 4 classrooms.
9. Estimate the average number of population members per clusters.
10. Determine the number of the clusters needed by dividing the sample size by the estimated size of cluster.
11. Randomly select the needed number clusters.
12.

There were 3 of 4 classrooms are randomly selected by assigning a number to each classroom. Thus, the researcher used the three classes as the sample of the research from the population which was the eleventh grade of SMA Methodist Berastagi. The researcher selected a cluster of the both selected clusters that will be as experiment class randomly as suggested by Sugiono (2011). Finally, the researcher observed the students of the two experimental classes using the techniques. In conducting the research, the researcher gave treatment to the both class, the researcher taught the technique for students by using Mind Mapping in experimental class (A) and Semantic Mapping in experimental class (B).

Results and Discussion

In this research, the researcher gave pre-test and post-test both Experimental Group A and Experimental Group B and Control Group. Pre-test is used to determine the students' ability in reading skill examine the normality of the data and the reliability of the sample, while post-test is used to examine the hypothesis of the research. The data shows that the samples can represent the population and homogeneity of the sample shows that the students have the equal capability in reading skill. And then, the table below shows the data description for the pre-test and post-test score both of the experimental group A, experimental group B and Control Group.

In this study, a pre-test would be administered to determine the students' ability to read comprehension for narrative text. There are 35 students in the Mind Mapping class. Multiple choice exams based on narrative text were used to find data from the pre-test reading skill outcomes of students taught utilizing the Mind Mapping approach. A total of 20 items were included in the pre-test and post-test.

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The table below shows the data description for the pre-test score. We can see on the next page.

Table 2 the result of pre-test descriptions by using mind mapping

Descriptives					
Kelas				Statistic	Std. Error
PreTest	Mind Mapping	Mean		72,4286	1,55260
		95% Confidence Interval for Mean	Lower Bound	69,2733	
			Upper Bound	75,5838	
		5% Trimmed Mean		72,5794	
		Median		70,0000	
		Variance		84,370	
		Std. Deviation		9,18530	
		Minimum		50,00	
		Maximum		90,00	
		Range		40,00	
		Interquartile Range		5,00	
		Skewness		-0,142	0,398
		Kurtosis		0,270	0,778

Based on the table 2, the score result of the pre-test in the Mind Mapping was described in the table above. The pre-test mean in the Mind Mapping is 72.42. In the Mind Mapping, the pre-test has a maximum score of 50. Next, the pre-test standard deviation in the Mind Mapping class is 9.18 and variance is 84.37.

This study's post-test was used to determine the students' reading comprehension for the narrative text. There are 35 students in the Mind Mapping. Then, after receiving treatment using the Mind Mapping approach, a follow-up test was completed. The goal of the post-test was to use the post-test score to determine the effect of the treatment that had been administered. A total of 20 items were included in the post-tests. The table below shows the outcome description of the post-test score.

Table 3 the result of post-test descriptions by using mind mapping

Descriptives					
Kelas				Statistic	Std. Error
PreTest	Mind Mapping	Mean		88,4286	0,73254
		95% Confidence	Lower Bound	86,9399	

		Interval for Mean	Upper Bound	89,9173	
		5% Trimmed Mean		88,4127	
		Median		85,0000	
		Variance		18,782	
		Std. Deviation		4,33376	
		Minimum		80,00	
		Maximum		95,00	
		Range		15,00	
		Interquartile Range		5,00	
		Skewness		0,391	0,398
		Kurtosis		-1,059	0,778

The table was describing the score result of post-test in the Mind Mapping. The mean of the post-test in the Mind Mapping is 88.42. The maximum score of the post-test in the Mind Mapping was 95. The minimum score of the post-test in the Mind Mapping is 80. The standard deviation of the post-test in the Mind Mapping is 4.33. This can be concluded that the mean score of the post-test in students' reading comprehension who were taught using Mind Mapping was higher than the mean score of the pre-test.

In semantic mapping, a pre-test would be administered to determine the students' ability to read comprehension for narrative text. There are 35 students in the Semantic Mapping class. Multiple choice exams based on narrative text were used to find data from the pre-test reading skill outcomes of students taught utilizing the Semantic Mapping approach. A total of 20 items were included in the pre-test and post-test. The table below shows the data description for the pre-test score.

Table 4 the result of pre-test descriptions by using semantic mapping

Descriptives					
Kelas				Statistic	Std. Error
PreTest	Semantic Mapping	Mean		64,8571	1,76908
		95% Confidence Interval for Mean	Lower Bound	61,2619	
			Upper Bound	68,4524	
		5% Trimmed Mean		65,0794	
		Median		65,0000	
		Variance		109,538	
		Std. Deviation		10,46603	
		Minimum		40,00	
		Maximum		90,00	

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		Range	50,00	
		Interquartile Range	10,00	
		Skewness	-0,286	0,398
		Kurtosis	1,181	0,778

The score result of the pre-test in the semantic mapping was described in the table above. The pre-test mean in the semantic mapping is 64.85. In the semantic mapping, the pre-test has a maximum score of 90. Next, the pre-test standard deviation in the semantic mapping class is 10.46 and variance is 109.46.

In semantic mapping, post-test was used to determine the students' reading comprehension for the narrative text. There are 35 students in the Semantic Mapping. Then, after receiving treatment using the Semantic Mapping approach, a follow-up test was completed. The goal of the post-test was to use the post-test score to determine the effect of the treatment that had been administered. A total of 20 items were included in the post-tests. The table below shows the outcome description of the post-test score.

Table 5 the result of post-test descriptions by using semantic mapping

Descriptives					
Kelas				Statistic	Std. Error
PreTest	Semantic Mapping	Mean		87,2857	0,85363
		95% Confidence Interval for Mean	Lower Bound	85,5509	
			Upper Bound	89,0205	
		5% Trimmed Mean		87,2619	
		Median		85,0000	
		Variance		25,504	
		Std. Deviation		5,05017	
		Minimum		80,00	
		Maximum		95,00	
		Range		15,00	
		Interquartile Range		5,00	
		Skewness		0,215	0,398
		Kurtosis		-0,990	0,778

Table 5 was describing the score result of post-test in the Semantic Mapping. The mean of the post-test in the Semantic Mapping is 87.28. The maximum score of the post-test in the Semantic Mapping is 95. The minimum score of the post-test in the Semantic Mapping is 80. The standard deviation of the post-test in the Semantic Mapping is 5.05. This can be concluded that the mean score of the post-test in students' reading comprehension who were taught using Semantic Mapping was higher than the mean score of the pre-test.

In control group, a pre-test would be administered to determine the students' ability to read comprehension for narrative text. There are 35 students in the control group. Multiple choice exams based on narrative text were used to find data from the pre-test reading skill outcomes of students taught utilizing the control group approach. A total of 20 items were included in the pre-test and post-test. The table below shows the data description for the pre-test score.

Table 6 the result of pre-test descriptions by using conventional approach

Descriptives					
Kelas				Statistic	Std. Error
PreTest	Control Group	Mean		45,2857	3,26004
		95% Confidence Interval for Mean	Lower Bound	38,6605	
			Upper Bound	51,9109	
		5% Trimmed Mean		45,0397	
		Median		50,0000	
		Variance		371,975	
		Std. Deviation		19,28665	
		Minimum		15,00	
		Maximum		80,00	
		Range		65,00	
		Interquartile Range		30,00	
		Skewness		-0,098	0,398
		Kurtosis		-0,897	0,778

The score result of the pre-test in the control group was described in the table above. The pre-test mean in the control group is 45.28. In the control group, the pre-test has a maximum score of 80. Next, the pre-test standard deviation in the control group is 19.28 and variance is 371.97.

In control group, post-test was used to determine the students' reading comprehension for the narrative text. There are 35 students in the Control Group. Then, after receiving treatment using the Control approach, a follow-up test was completed. The goal of the post-test was to use the post-test score to determine the effect of the treatment that had been administered. A total of 20 items were included in the post-tests. The table below shows the outcome description of the post-test score.

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Table 7 the result of post-test descriptions by using conventional approach

Descriptives					
Kelas				Statistic	Std. Error
PreTest	Control Group	Mean		47,2857	3,42594
		95% Confidence Interval for Mean	Lower Bound	40,3234	
			Upper Bound	54,2481	
		5% Trimmed Mean		46,9841	
		Median		50,0000	
		Variance		410,798	
		Std. Deviation		20,26816	
		Minimum		15,00	
		Maximum		85,00	
		Range		70,00	
		Interquartile Range		40,00	
		Skewness		0,055	0,398
		Kurtosis		-1,244	0,778

The score result of the post-test in the Control Group was described in the table above. In the Control Group, the post-test mean is 47.28. In the Control Group, the maximum post-test score is 85. In the Control Group the standard deviation of the post-test is 20.26. As a result, the mean post-test score in students' reading skill who were taught using the standard technique was greater than the mean pre-test score.

Testing Homogeneity test is used to determine whether or not the sample variance is homogeneous. The Levene test is used to examine the homogeneity test in this study using the SPSS 22 program. If the significance of the probability score is more than 0.05, the sample variance can be said to be homogeneous. The SPSS 22 program was used to examine the findings of the homogeneity test in this study, which are provided in the table below.

Table 8 Homogeneity Test

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
PreTest	Based on Mean	14,029	2	102	0,55
	Based on Median	9,833	2	102	0,63

	Based on Median and with adjusted df	9,833	2	78,174	0,72
	Based on trimmed mean	14,220	2	102	0,81

Based on the table pre-test and post-test above, according to the results of the analysis levene statistic show is significance. However, implying the data in this study are from the same or homogeneous set of data. Next, the table of ANOVA.

Table 9 ANOVA Test

ANOVA					
PreTest					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	13732,857	2	6866,429	36,402	0,103
Within Groups	19240,000	102	188,627		
Total	32972,857	104			

Based on the ANOVA test there was a significant effect on the student's ability after teaching the technique Mind Mapping and Semantic Mapping towards the students ability in reading skill then used control class.

After getting the mean score, the standard deviation and variance, the researcher formulated was the research hypotheses as follows: "There is a significant effect of Using Mind Mapping and Semantic Mapping on students' ability in reading skill at the eleventh graders of SMA Methodist Berastagi"

The result of testing hypotheses, the table value of t-table dk = 2(n-1) = 2(35-1) =68 and the significance level is 5% (x=0.05), so, t table = t1/2oc(dk) = 2.666. Since T count (2.) > t table (2.038) it can be concluded that Ha is accepted and Ho is rejected.

The main problem of the research is to investigate whether there is a significant effect of Using Mind Mapping and Semantic Mapping on students' ability in reading skill at the eleventh graders of SMA Methodist Berastagi.

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By using Mind Mapping and Semantic Mapping both to the experimental group, it has a very good effect to improve the students' ability in reading skill. In the research, especially from the computations of the obtained data either both to the experimental group, it proves that there is the different students' learning outcome. The result of the pre-test in both of the group, the experimental group A and B, showed that the students' ability was classified in less level. Then, the researcher gave the treatment in the experimental group A and B by using Mind Mapping and Semantic Mapping and having the students' post-test result, the students' ability in reading skill is increased and classified to be good level. The researcher stated that the students' value in the post-test was higher than the students' value in the pre-test. It can be stated that there is a significant effect on the students' ability reading skill by Mind Mapping and Semantic Mapping.

Based on the testing hypothesis, it can be seen that there is a significant effect of using Mind Mapping and Semantic Mapping on the students' ability in writing skill. Through this strategy, the students' reading skill is better than by using real teaching that is done commonly by the teacher in the classroom when teaching reading skill to the students. From the result of hypothesis computation, it can be concluded that the research hypothesis is accepted.

Conclusion

After analyzing the data as presented in the previous chapter, the researcher takes some conclusions as follows:

The mean score of the students' ability in reading skill who were taught by using Mind Mapping (Experimental Group A) was 88.42 which was stated in enough level while the mean score of the students' ability in speaking which was taught by using Semantic Mapping (Experimental Group B) was 87.66 which was also stated in enough level. Based on the result of examining hypothesis, It gets the result of testing hypotheses, the table value of t-table dk = 2(n-1) = 2(35-1) =68 and the significance level is 5% (x=0.05), so, t table = t1/2oc(dk) = 2.666. Since T count (2.) > t table (2.038) it can be concluded that Ha is accepted and Ho is rejected. The use of Mind Mapping gives a significant effect to the students' ability in reading than the students who are taught without using Semantic Mapping. By having much knowledge about the practices of reading, it will be very helpful for the students to read a text well.

References

Anderson, G. & Arsenault, N., (2005). Fundamentals of Educational Research. USA: Taylor & Francis e-Library.

Bakara, J., & Pasaribu, A. N. (2022). The Implementation of Cooperative Learning by Using a Jigsaw Technique in Speaking to the Grade XI Students of SMK Negeri 9 Medan. Jurnal Ilmiah Aquinas, 5 (1), 10-23. https://doi.org/10.54367/aquinas.v5i1.1552

Buzan, T., and Barry, B., (2002). The Mind Map Book. London: BBC Worldwide

Limited.

Dunn, S., (2006). What is a Mind Map, (http://braindance.com/bdimmap4.htm, accessed on April 5, 2022).

Ginting, G., Manik, S., Sinambela, E., & Pasaribu, A. N. (2021). The Effect of Using Snowball Throwing Method and SQ4R Method for Students' Reading Comprehension Skill at SMA Negeri 1 Kuala Stabat. Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences, 4 (4), 10990-10997

Khadijah, K., & Pasaribu, A. N. (2022). The Effect of Reading Interest on Reading Coprehension of Grade XII High School Students of SMA Negeri 1 Brandan Barat. Jurnal Ilmiah Aquinas, 5 (1), 1-9. https://doi.org/10.54367/aquinas.v5i1.1668

Levy, P.S. and Lemeshow, S., (2008). Sampling of Population, Methods and Application. 3rd Edition, John Wiley & Sons, New York.

Purba, P. B., Mawati, A. T., Juliana, J., Kuswandi, S., Hulu, I. L., Sitopu, J. W., Pasaribu, A. N., Yuniwati, I., & Masrul, M. (2021). Penelitian Tindakan Kelas. Medan: Yayasan Kita Menulis.

Sugiono, (2011). Metode Penelitian Kuantitatif Kualitatif dan R&D, alfabeta, Bandung.

Wallace, Catherine. (2003). Reading. Oxford: Oxford University Press.

Willis, J., (2008). Teaching the Brain to Read. Virginia: Stanley Network.

Tampubolon, N. C., & Pasaribu, A. N. (2022). The Effect of Using Herringbone Technique (HT) and Numbered Head Together Technique (NHTT) for Elementary Students'Reading Comprehension Skill. IDEAS: Journal of Language Teaching and Learning, Linguistics and Literature, 10 (1), 791 – 812. https://doi.org/10.24256/ideas.v10i1.2429