THE EFFECTIVENESS OF USING MIND MAPPING LEARNING MEDIA IN ECONOMICS LESSONS FOR 10TH GRADE STUDENTS AT SMAS MUHAMMADIYAH 1 PONTIANAK

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Abstract

This study aims to achieve the following objectives: 1) Determine the effectiveness of using Mind Mapping learning media to enhance learning outcomes. 2) Compare the learning outcomes of students using Non-Mind Mapping media with those using Mind Mapping media. 3) Assess the effectiveness of Mind Mapping in improving student learning outcomes. This research follows a quantitative approach with a quasi-experimental design, where two groups (control and experimental) receive different treatments. The sample for this study consists of 64 students from class X IPS in the odd semester of the 2023/2024 academic year. The findings of this research indicate that: 1) The use of Mind Mapping improves learning outcomes in the classroom. 2) There is a significant difference in learning outcomes between the Non-Mind Mapping class and the Mind Mapping class, specifically in the Economics subject. This is supported by the average posttest results of the control group (67.27) and the experimental group (79.83), as well as the Wilcoxon Rank Sum Test which yielded a significance value of 0.000 (smaller than 0.05) at a 5% significance level, leading to the rejection of H0 and acceptance of H1. 3) However, the use of Mind Mapping is found to be less effective in improving learning outcomes in the Economics subject for class X IPS at SMAS Muhammadiyah 1 Pontianak. This is evident from the average N-gain score of 47.33% for the experimental group.

Keywords: *Effectiveness, Learning Outcomes, Mind Mapping*

INTRODUCTION

Mind mapping is a way of developing one's thinking activities in all directions so that it can explore or get information from various sources, and can capture or understand the main points of discussion given by the teacher (Aini et al., 2012). With the use of learning media based on mind mapping applications, it is hoped that it can make it easier for students to understand the content of the material that has been conveyed by the teacher and also students can recall the information that has been obtained (Buzan, 2012). The application of learning media based on mind mapping applications can be used by students in the process of teaching and learning activities (Asrofin et al., 2022) so that students can describe the entire learning material by recording the concept of the material concept simply in the form,

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diagrams and charts (Al Azka et al., 2019). With the application of mind mapping application-based learning media, it is hoped that students can improve their memory and mindset and can improve their learning outcomes (Phanata & Suci, 2022; Siriphanich & Laohawiriyanon, 2010).

Based on previous research (Faiseh, 2021), it is known that the use of mind mapping media (X) has a positive and significant effect on student learning outcomes (Y). This can be seen from the results of the t test and the significance value, which can be concluded as follows, namely: From the results of the T test obtained a significance value of 0.000 <0.05. While the tstatistic> t table result is 1.858> 1.699127. So that Ho is rejected and Ha is accepted. Thus, the hypothesis of this study is proven that there is a significant positive effect of using mind mapping learning media on student learning outcomes in Economic Subjects at YKHS ISLAM High School Ten.

From the results of observations made in September 2023 in class X semester 1 of the 2023/2024 academic year, it can be seen that in teaching and learning activities in class X economics lessons at SMAS Muhammadiyah 1 Pontianak the teacher still uses learning media that is not in accordance with the characteristics of students and the material. The learning media used by the teacher makes students less interested in the material being taught. In addition, the use of innovative learning media has not been optimized so that it cannot make students actively involved in the learning process or students tend to be passive. This inactivity provides less learning experience for students. Another factor is that most participants prefer to group, play cellphones, sleep and chat about things outside of learning material during class hours. This causes student learning outcomes to be not optimal. The data on the learning outcomes of class X students in the Midterm Test can be seen in the table below.

Table 1. Average score of Odd Midterm Test of students in class X IPS

SMAS Muhammadiyah 1 Pontianak Academic Year 2023/2024

Class	Number of Learners	Minimum Criteria (KKM)	Average
X IPS 1	33	72	60.11
X IPS 2	32	72	58.32
X IPS 3	31	72	53.03
X IPS 4	33	72	66

Source: Research Data Results

From the data obtained by the researcher, it was found that the average score of the odd semester midterm exam of students in class X IPS 1 was 60.11, class X IPS 2 was 58.32,

class X IPS 3 was 53.03, and class X IPS 4 was 66. Based on the learning outcomes data, it is known that class X IPS 4 has the highest average score of 66 and class X IPS 3 has the lowest average score of 53.03. For this reason, the researcher took class X IPS 3 as the experimental class and class X IPS 4 as the control class, in order to clearly see the difference between the treated class and the untreated class.

Our research focuses on evaluating how Mind Mapping learning tools can improve academic performance, comparing results between students who use traditional methods versus those who utilize Mind Mapping techniques, and gauging the impact of Mind Mapping on overall learning outcomes.

RESEARCH METHOD

The research method used in this study is experimental research (Sugiyono, 2018). The author analyzes experiments conducted in an experimental class and compares it with a control class in terms of student learning outcomes. The experimental design used is Quasi Experimental Design type nonequivalent control group design to find out the difference between the two classes. The experimental class uses mind mapping learning media while the control class uses conventional learning media. The data for this study includes daily test scores of pre and post tests in the 2023/2024 school year.

RESULT AND DISCUSSION

Research Result

The results showed that the use of mind mapping media was effective in attracting students' attention in learning activities.

### A.	Descriptive Test of Student Grades

Table 2. Descriptive Test of Student Grades

Statistics		pre-test experiment	post-test experiment	pre-test control	post-test control
N	Valid	31	31	33	33
	Missing	0	0	0	0
Mean		61.94	79.84	51.82	67.27
Median		60.00	80.00	55.00	70.00
Mode		60	80	45a	70
Std. Deviation		11.524	11.364	10.294	13.468
Range		45	50	40	50
Minimum		40	50	30	40
Maximum		85	100	70	90
a. Multiple modes exist. The smallest value is shown					

Source: SPSS Processed Data

In the descriptive table, it is known that the number of students in the experimental class was n = 31 students, with the lowest pre-test score of 40, the highest was 85, with Mean = 61.94, and SD = 11.524. Furthermore, the experimental class post-test obtained the lowest score of 50, the highest score of 100, Mean = 79.84 and SD = 11.364.

Furthermore, in the control class, it is known that the number of students n = 33 students, with the lowest pre-test score of 30, the highest score of 70, Mean = 51.82, and SD = 10.294. Furthermore, in the control class post-test, the lowest score was 40, the highest was 90, Mean = 69.27 and SD = 13.648.

B.   Homogeneity Test

Table 3. Homogeneity Test

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
mind mapping	Based on Mean	1.179	3	124	.321
	Based on Median	.678	3	124	.567
	Based on Median and with adjusted df	.678	3	118.682	.567
	Based on trimmed mean	1.094	3	124	.354

Source: SPSS Processed Data

According to the homogeneity test table in both the experimental and control classes, the significance value is 0.321, which is higher than 0.05 (p>0.05). Therefore, we can conclude that the data utilized in this study exhibit homogeneity.

C.   Hypothesis Test (Independent Sample T-test)

Table 4. Hypothesis Test

Group Statistics					
	Class	N	Mean	Std. Deviation	Std. Error Mean
mind mapping	pre-test Experiment	31	61.94	11.524	2.070
	pre-test Control	33	51.82	10.294	1.792

Source: SPSS Processed Data

Table 5. Independent Samples Test

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
Mind Mapping	Equal variances assumed	.003	.954	3.709	62	.000	10.117	2.728	4.664	15.570
	Equal variances not assumed	.003		3.696	60.148	.000	10.117	2.738	4.641	15.593

In the table above it is known that the pre-test of the experimental class and the pre-test of the control class there is a difference with a significant value of sig = 0.000, meaning that the learning outcomes of students in economic lessons before being given mind mapping learning media in experimental and control classes are the same.

Table 6. Hypothesis Test

Group Statistics					
	Class	N	Mean	Std. Deviation	Std. Error Mean
mind mapping	pre-test Experiment	31	79.84	11.364	2.041
	pre-test Control	33	67.27	13.468	2.345

Table 7. Independent Samples Test

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
Mind Mapping	Equal variances assumed	2.451	.123	4.021	62	.000	12.566	3.125	6.319	18.813
	Equal variances not assumed	2.451		4.043	61.317	.000	12.566	3.108	6.351	18.781

Source: SPSS Processed Data

Furthermore, it can be seen that the post-test of the experimental class and the post-test of the control class have a significant value of Sig = 0.000, which is a significant value smaller than 0.05 (p <0.05) so it can be concluded that there is a significant difference between student learning outcomes in economic subjects. Furthermore, if a comparison is made between tstatistic and ttable in this study, it can be determined using the t distribution table at a significance of 0.05 or 0.025 (two-sided test) with df = n-2 or df = 64 - 2 = 62, the

ttable is 1.998. With the test criteria tstatistic> from ttable or 4.021> 1.998 at the significance level (a) 5% then H0 is rejected and Ha is accepted, so it can be concluded that there is a significant difference between student learning outcomes in experimental classes and control classes with the effectiveness of using mind mapping learning media in class X social studies economics lessons at SMAS Muhammadiyah 1 Pontianak. So it can be concluded that the hypothesis proposed in this study is accepted.

D. N-Gain Test

The effectiveness of using Mind Mapping was determined using the N-Gain test . The effectiveness is interpreted based on the percentage of N-Gain results. If the percentage is less than 40, it is ineffective. If it falls between 40 and 55, it is less effective. If it falls between 56 and 75, it is quite effective. And if the percentage is greater than 76, it is effective. The N-Gain test results for the Mind Mapping group are shown in the table 8.

Table 8. N-Grain Testing Results

Descriptives				Statistic	Std. Error
	Class			**Statistic**	**Std. Error**
N-Grain Percent	Experiment	Mean		47.3336	4.78938
		95% Confidence Interval for Mean	Lower Bound	37.5524	
			Upper Bound	57.1148	
		5% Trimmed Mean		47.0373	
		Median		50.0000	
		Variance		711.082	
		Std. Deviation		26.66613	
		Minimum		.00	
		Maximum		100.00	
		Range		100.00	
		Interquartile Range		26.67	
		Skewness		.253	.421
		Kurtosis		.102	.821
	Control	Mean		31.9973	4.32113
		95% Confidence Interval for Mean	Lower Bound	23.1955	
			Upper Bound	40.7992	
		5% Trimmed Mean		32.7774	
		Median		36.3636	
		Variance		616.181	
		Std. Deviation		24.82299	
		Minimum		-25.00	
		Maximum		70.00	
		Range		95.00	
		Interquartile Range		37.12	
		Skewness		-.536	.409
		Kurtosis		-.551	.798

Source: SPSS Processed Data

Based on the table 8, it shows that the results of the calculation of the average N-gain score of the Non-Mind Mapping group show a value of 31.99% which is included in the ineffective category, while the results of the calculation of the average N-gain score of the Mind Mapping group show a value of 47.33% which is included in the less effective category (40-55) in accordance with the interpretation of the effectiveness of the N-gain test so that it can be said that the use of Mind Mapping media is less effective in improving learning outcomes in economics class X IPS SMAS Muhammadiyah 1 Pontianak.

Discussion

The research data analysis reveals the outcomes of statistical tests that provide answers to the research question. These test results are further explained in the subsequent discussion. The primary focus of the study on the effectiveness of Mind Mapping media is to examine the disparity in learning outcomes between the control group and the experimental group, and to determine whether the use of Mind Mapping media can truly enhance student learning outcomes. The improvement in student learning outcomes is evident from the analysis of pretest and posttest results. Both the pretest and posttest were administered once, consisting of a total of 15 questions, at the beginning and end of the study. The pretest was conducted prior to the implementation of any treatment, while the posttest was conducted after the treatment was given to the subjects.

The utilization of Mind Mapping media in enhancing learning outcomes in the field of Economics is noteworthy. The observations indicate that both the Non-Mind Mapping class and the Mind Mapping class followed all the prescribed learning procedures, including teacher-led explanations, group discussions, assignments, and presentation of assignment results. However, there was a discrepancy in the sequence of these procedures in the Non-Mind Mapping class. On the other hand, the use of Mind Mapping media adhered to the proper sequence of the learning process, which involved teacher-led explanations, group discussions, determining the center and branches of the Mind Map, assigning tasks, presenting task results, and providing recognition. The findings of this study, along with previous research (Asrofin et al., 2022), support the notion that the implementation of Mind Mapping media can indeed enhance student learning outcomes.

The use of Mind Mapping media in economic subjects has shown a significant impact on student learning outcomes. The results of hypothesis testing revealed a clear distinction between classes that utilized Mind Mapping and those that did not. The pre-test scores of both experimental and control groups were found to be similar, with a significant value of

sig=0.000. However, the post-test scores displayed a significant difference, with a value of Sig=0.000, indicating improved learning outcomes in the experimental class. By comparing tstatistic and ttable, it was evident that the Mind Mapping group outperformed the Non-Mind Mapping group in posttest results. The average posttest score of the Mind Mapping group was notably higher at 79.83 compared to 67.27 in the Non-Mind Mapping group. This study's findings support the conclusion that Mind Mapping positively influences student learning outcomes in economic subjects.

The effectiveness of mind mapping media in enhancing learning outcomes in class X social studies economics at SMAS Muhammadiyah 1 Pontianak is found to be lacking. According to the research findings, the Non-Mind Mapping group had an average N-gain score of 31.99%, which falls under the ineffective category (<40). On the other hand, the Mind Mapping group (Experiment) had an average N-gain score of 47.33%, which falls under the less effective category (40-55) based on the interpretation of the N-gain test's effectiveness. Therefore, it can be concluded that the use of Mind Mapping media is not very effective in improving learning outcomes in economics for class X social studies at SMAS Muhammadiyah 1 Pontianak.

CONCLUSION

This study examined the effectiveness of Mind Mapping in improving students' learning outcomes. Conducted at SMAS Muhammadiyah 1 Pontianak in the 2023/2024 academic year, the research involved 64 students from classes X IPS 3 and X IPS 4. The study included four sessions each for a control group (without Mind Mapping) and an experimental group (with Mind Mapping). Results indicated that Mind Mapping significantly improved learning outcomes.

In the Economics class, the Mind Mapping method included teacher presentations, group discussions, creating Mind Maps, assignments, presentations, and awards. Observations confirmed that all learning procedures were followed, leading to better outcomes for the experimental group compared to the control group. However, the improvement, measured by the average N-gain score, was modest.

Students should be encouraged to ask questions when they do not understand the material and to actively participate in discussions to enhance their understanding and creativity. Teachers are advised to implement Mind Mapping in Economics and other similar subjects to boost student motivation and responsibility, ensuring effective time management to cover all activities. Schools should support teachers by providing the necessary resources

and encouraging the use of diverse learning methods. Future researchers should explore similar studies with different subjects to improve research outcomes and refine methodologies to avoid errors.

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