



Application of Mind Mapping Learning Model To Improve The Thematic Learning Outcomes of Students

Fikriana¹ and Chintia Maharani²

1. Universitas Muhammadiyah Metro, Lampung, Indonesia
2. SDN 4 Way Serdang Mesuji, Lampung, Indonesia

ARTICLE INFO	ABSTRACT
<p>Artikel History: Received : 11 November 2024 Revised : 31 December 2024 Published: 24 January 2025</p> <p>Keywords: Learning Outcomes Mind Mapping Learning Models</p>	<p>The problem in this study is the low learning outcomes of students grade VI at SD Negeri 3 Rajabasa Jaya. The purpose of research is to analyze the influence of applying of mind mapping learning model in improving students thematic learning outcomes. The research method used in this study was quasi-experimental group design, which the type used was nonequivalent control group design. The sample in this study was 52 students. The sample was determined using non-probability sampling technique. Then, the data were collected through test technique, documentation, and observation. The data is in the analysis using simple linear regression test to get r_{hitung} 0,888 with $n = 26$ for $\alpha = 0,05$ to get r_{tabel} 0,374, so that $r_{hitung} > r_{tabel} = 0,888 > 0,374$.</p> <p>2025 © Authors retain the copyright of their work without any restrictions. License Agreement: By publishing with Journal of Adaptive Education, authors agree that their work will be licensed under the Lisensi Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA).</p>

Corresponding Author:
Chintia Maharani

SDN 4 Way Serdang Mesuji Lampung, Indonesia

*e-mail : chintia.maharani282@guru.sd.belajar.id

INTRODUCTION

Integrated thematic learning, a distinctive feature of the 2013 Curriculum in primary schools, is designed to provide students with meaningful and contextual learning experiences by integrating various disciplines into a central theme (Ministry of Education and Culture, 2013). However, this approach presents its own complex challenges. Students often find it difficult to organize, synthesize, and visualize the relationships between concepts from different subjects, which can ultimately hinder their in-depth understanding of the theme as a whole (Adodo 2013; Polat, and Aydın, 2020). As a result, the primary objective of thematic learning, which is to build integrated knowledge, is often not optimally achieved.

The reality of this problem is evident in Grade VI of SD Negeri 3 Rajabasa Jaya. Data from the thematic evaluation of the previous theme shows that, on average, more than 48% of students have not achieved the Minimum Completion Criteria. Field observations reveal the root of the problem, namely the dominance of conventional teacher-centred learning models, with lectures and routine assignments as the mainstay. This condition causes students to be passive, less mentally engaged, and ultimately only achieve a superficial understanding that is easily forgotten. Therefore, learning interventions are needed that can activate students and help them build a clear knowledge structure.

One learning model proposed to overcome this challenge is Mind Mapping. Unlike linear notes, Mind Mapping is a non-linear graphic technique that utilises keywords, symbols, colours, and images to map information radially around a core concept (Astawa 2019 Septiana, et.al (2025). Pedagogically, this model functions as an external knowledge organisation tool that represents students' internal cognitive structures. The process of creating mind maps encourages deeper information processing, increases engagement, and facilitates long-term memory by utilising visual and semantic associations (Alimah, and Indihadi 2022; Eliyanti, et.al 2020; Masriani, and Mayar, 2021). This makes it particularly suitable for simplifying the complexity of thematic material.

Empirical evidence from various educational contexts supports the potential effectiveness of this model. A study of secondary school students found that the group that used mind mapping showed significantly better memory retention than the group that studied conventionally (Sujino, et.al 2023; Ika and Putri, 2023; and Pawitra, 2013). Similarly, research in the field of medical education has demonstrated that this technique not only facilitates information retrieval but also fosters critical thinking skills (Siti and Honest 2023; Erwanda, et.al 2022; Kurniawati, 2022). However, a specific and in-depth exploration of its application in the context of thematic learning in Indonesian primary schools, particularly in upper grades with dense conceptual content, remains relatively limited and warrants further examination.

Previous national studies, such as those conducted by Astawa (2019) and Lestari (2021), have touched on the benefits of mind mapping. However, this study aims to complement these by providing a more specific focus on pure thematic learning, in accordance with the 2013 Curriculum, and measuring the increase in learning outcomes quantitatively using a rigorous quasi-experimental design. Thus, this study aims to fill the gap by investigating the effectiveness of mind mapping in the context of the current national curriculum, which is a daily challenge for teachers in Indonesia.

Based on the above description, the research question is: 'Does the application of the mind mapping learning model significantly improve the thematic learning outcomes of Grade VI students at SD Negeri 3 Rajabasa Jaya compared to those taught using conventional methods?' This study is expected to provide valid empirical evidence for educators in choosing effective learning strategies to optimise student understanding in thematic learning.

METHOD

Type of Research

The type of research used was a quasi-experimental design with a quantitative approach. The design used in this study was a non-equivalent control design. This study used two classes, namely an experimental class that received treatment in the form of a mind mapping learning model and a control class that did not receive treatment.

Population and Sample

The population in this study was all sixth-grade students at SD Negeri 3 Rajabasa Jaya, consisting of two classes, VI A and VI B, each with 26 students for a total of 52. A saturated sample was used, so all 52 students were included: 26 from class VI A and 26 from class VI B. All samples will participate in an experiment comparing two learning models. Class VI A will serve as the Experimental Class using the Mind Mapping Model, while Class VI B is the Control Class using the Conventional Model. The treatment will occur over several meetings as detailed in the following table 1.

Tabel 1. Implementation of learning between experimental and control classes

Learning sessions	Experimental class (Mind Mapping model)	Control class (Conventional model)
1	Phase 1: The teacher introduces the concept and rules of Mind Mapping, explaining their purpose in organizing information.	Phase 1 objective: Ensure students understand key concepts through teacher-led lectures and Q&A.
	Phase 2: The teacher guides students in creating collaborative Mind Maps on the board to demonstrate group idea organization.	Phase 2 objective: Have students identify and record the most important concepts in a linear format.
	Phase 3: Students work in groups to create Mind Maps for sub-sections of the material, focusing on content breakdown and teamwork. Phase 1: Review the material using the Mind Maps that have been created to reinforce retention and comprehension.	Phase 3 objective: Provide opportunities for students to apply knowledge through Student Worksheet exercises. Phase 1 objective: Reinforce understanding of the material through a teacher-led review lecture.
2	Phase 2: Students individually create Mind Maps for all the material that has been studied, demonstrating personal understanding and synthesis.	Phase 2 objective: Facilitate deeper exploration of concepts via class discussion led by the teacher.
	Phase 3: Presentation and reflection, allowing students to showcase their maps and discuss their learning process.	Phase 3 objective: Assess student comprehension and stimulate further discussion through a quiz and follow-up class dialogue.

Data Collection Techniques

The data collection techniques used in this study were observation, testing, and documentation. Observation was conducted when the researcher carried out the study at SD Negeri 3 Rajabasa Jaya. The documentation technique was used to determine the learning outcomes of the students and to obtain images or photos during the research activities.

The test technique was used to measure the learning outcomes of sixth-grade students in the cognitive domain. The test instrument grid in this study used theme 6 (Towards a Prosperous Society), sub-theme 3 (Prosperous Society, Strong Country), lesson 3, which consisted of Indonesian Language, SBdP, and Natural Sciences (IPA) subjects.

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The test format used was multiple choice with 25 questions. Each correct answer was given a score of 1 and each incorrect answer was given a score of 0. Students were given two tests, namely a test before the learning process took place (pre-test) and a test at the end of learning (post-test).

The test instrument was trialed in the sixth grade of Tri Sukses Pemanggilan Elementary School, Natar. The validity test results were measured using Pearson's product moment correlation, while the reliability test used KR-20 and obtained a result of $r_{count} > r_{table}$, namely $0.853 > 0.374$.

Data Analysis Techniques

The data analysis technique used in this study was quantitative data analysis. The data analysis prerequisite tests included normality tests, homogeneity tests, and hypothesis tests. The normality test in this study used the Liliefors test with the testing criteria that if $L_{count} < L_{table}$, then the data is normally distributed, but if $L_{count} > L_{table}$, then the data is not normally distributed. The homogeneity test in this study uses the F-test formula with the test criteria that if $F_{count} < F_{table}$, then the data is homogeneous, but if $F_{count} > F_{table}$, then the data is not homogeneous. Meanwhile, the hypothesis test in this study uses a simple linear regression test formula. The hypothesis proposed in this study is that there is an effect of the mind mapping learning model on the thematic learning outcomes of sixth-grade students at SD Negeri 3 Rajabasa Jaya.

RESULT AND DISCUSSION

This study was conducted at SD Negeri 3 Rajabasa Jaya in grade VI. The data collected were the cognitive learning outcomes of students on theme 6 (Towards a Prosperous Society), sub-theme 3 (Prosperous Society, Strong Country), lesson 3. This study was conducted in April 2022 during two meetings in each experimental and control class.

During the learning process, the experimental class was given a mind mapping learning model, while the control class was not given a mind mapping learning model.

The pretest was conducted before the learning process, while the posttest was conducted at the end of the second meeting's learning process. The following are learning outcomes of pretest and posttest of students in the experimental class and control class.

Table 2. Pretest and Posttest Scores for the Experimental Class and Control Class

Score	EC				CC			
	Pretest		Posttest		Pretest		Posttest	
	F	%	F	%	F	%	F	%
≥ 70 (Complete)	6	23	19	73	6	23	12	46
< 70 (Incomplete)	20	77	7	27	20	77	24	54
Jumlah	26	100	26	100	26	100	26	100
Σ	56,154		74		61,692		63,385	

Based on the results of the above research, it can be illustrated in the histogram as follows:

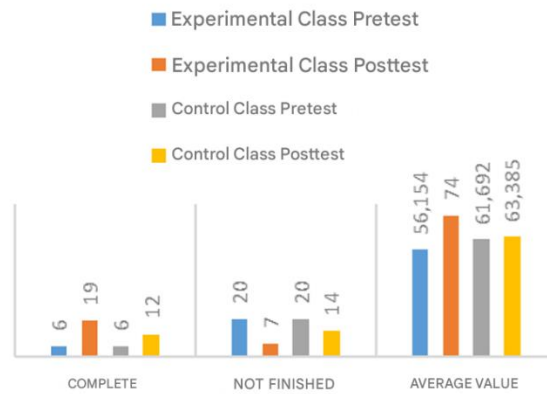


Figure 1. Histogram of Pretest and Posttest Scores

Based on the above explanation, it is known that the pretest and posttest scores in the experimental class and control class increased. This can be seen from the percentage of learning outcomes of students in the experimental class who completed the pretest, which was 23% with an average score of 56.154 and a posttest score of 73% with an average score of 74. while the percentage of learning outcomes of students in the control class who passed the pretest was 23% with an average score of 61.692 and the posttest score was 46% with an average score of 63.385.

Data Analysis Requirements Test

The results of the pretest and posttest normality test in the experimental class obtained the following data:

Table 3. Experimental Class Normality Test Data Results

Data	L_{count}	L_{table}	Decision
Pretest	0,1086	0,1738	Normal Distribution
Posttest	0,1255	0,1738	Normal Distribution

Based on the table above, it can be stated that the pretest and posttest data in the experimental class are normally distributed because the $L_{count} < L_{table}$. In the pretest data, $0.1086 < 0.1738$ and in the posttest data, $0.1255 < 0.1738$.

The normality test results for the pretest and posttest were also conducted on the control class, which obtained the following data:

Table 4. Control Class Normality Test Data Results

Data	L_{count}	L_{table}	Decision
Pretest	0,1314	0,1738	Normal Distribution
Posttest	0,1236	0,1738	Normal Distribution

Based on the table above, it can be stated that the pretest and posttest data in the control class are normally distributed because the $L_{count} < L_{table}$. In the pretest data, $0.1314 < 0.1738$ and in the posttest data, $0.1236 < 0.1738$.

The results of the homogeneity test for the pretest and posttest in the experimental class and control class obtained the following data:

Table 5. Results of the Homogeneity Test for Pretest and Posttest Data

Description	Pretest	Posttest
	EC	CC

Varians	227,18	144,94	141,12	268,41
F _{count}	1,57		1,90	
F _{table}	1,96		1,96	
F _{count} < F _{count} = Homogenous				
Desicion	Homogenous		Homogenous	

Based on the table above, the pretest and posttest data in the experimental class are homogeneous, which means that $F_{count} < F_{table}$. The calculation results of the pretest data in the experimental class show that F_{count} is 1.57 and the control class is 144.94, while the posttest data in the experimental class is 141.12 and the control class is 268.41.

Then, the researcher conducted a normal gain (N-Gain) test on the experimental class and the control class, obtaining the following data:

Table 6. Results of the Normal Gain (N-Gain)
 Test for the Experimental Class and Control Class

Classification	Frequency		Mean	
	KE	KK	KE	KK
N-Gain > 70 (high)	-	-		
$30 \leq$ N-Gain \leq (medium)	24	1	42,872	7,1
N-Gain < 30 (low)	2	25		

Based on the table above, there were 24 students who received a moderate classification and 2 students who received a low classification in the experimental class with an average of 42.872. Meanwhile, in the control class, there was 1 student who received a moderate classification and 25 students who received a low classification with an average of 7.1. Based on these calculations, it can be said that the mind mapping learning model in thematic learning has moderate effectiveness in improving students' thematic learning outcomes.

In addition, the magnitude of the influence provided by the mind mapping learning model can be determined through effect size analysis. The following is a table of effect size calculation data:

Table 7. Effect Size Calculation Results

\bar{x} (GN) _{Experiment}	\bar{x} (GN) _{Control}	S _{gab}	Effect Size
42,872	7,1	2259,2	42,869
Effect Size Interpretation			Big Effect

Based on the above calculations, it can be said that the mind mapping learning model has a significant effect on the learning outcomes of sixth grade students at SD Negeri 3 Rajabasa Jaya.

Hypothesis Testing

Hypothesis testing in this study was conducted using simple linear regression test formulas to determine the effect of the mind mapping learning model on students' thematic learning outcomes. Based on the results of calculations using the simple linear regression test formula, it is known that $r_{count} > r_{table}$, namely $0.888 > 0.374$, which means H_a , meaning that there is an influence of the mind mapping learning model on the thematic learning outcomes of sixth-grade students at SD Negeri 3 Rajabasa Jaya.

Based on the results of the analysis conducted on the experimental class and the control class, it was found that there were differences in the learning outcomes of the students. Before the treatment was given, the students in the experimental class obtained lower average pretest scores than those in the control class.

The average pretest score in the experimental class was 56.154, while in the control class it was 61.692. The score data was then tested for normality using the Liliefors formula. Based on the calculation results, the normality test results for the pretest in the experimental class obtained data of $0.1086 < 0.1738$ and the posttest after the treatment obtained data of $0.1255 < 0.1738$. Meanwhile, the normality test results for the pretest in the control class obtained data of $0.1314 < 0.1738$ and the posttest obtained data of $0.1236 < 0.1738$.

Then, the pretest homogeneity test was calculated using the F-test formula. In the pretest data for the experimental class, the Fcount data was $< F_{table}$, namely $1.57 < 1.96$, while in the posttest for the control class, the data was $1.90 < 1.96$. Based on the above calculations, both classes were normally distributed and had homogeneous variance.

Next, the researcher conducted a normal gain (N-Gain) test and an effect size test on both classes. The normal gain test results in the experimental class had an average of 42.872 in the moderate category, while in the control class, it had an average of 7.1 in the low category. As for the effect size results, the data obtained was 42.869 in the large effect category.

Hypothesis testing in this study was conducted using a simple linear regression formula. From the results of hypothesis testing using linear hypothesis testing, a calculated r of 0.888 was obtained with $n = 26$ for $\alpha = 0.05$, and a table r of 0.374 was obtained, so that the calculated $r > \text{table } r = 0.888 > 0.374$. Based on these calculations, it was found that the mind mapping learning model can influence students' thematic learning outcomes. The mind mapping learning model is a learning and thinking system that presents information effectively and efficiently in the form of keywords, images (symbols), and colors that can engage both sides of the brain. This is in line with the opinion of Fathurrohman (2015:206), who argues that mind mapping is the presentation of information related to a central topic in keywords, images (symbols), and colors so that information can be learned and remembered effectively and efficiently.

The results of this study are reinforced by relevant research conducted by Astawa (2019:94), which states that the average score obtained by students who applied the mind mapping learning model (experimental class) was 73.05, higher than the average score of students who applied the conventional learning model (control class), which was 60.63. Based on the above statement, the mind mapping learning model has an effect on student learning outcomes.

Based on the above description, it can be concluded that the hypothesis proposed by the researcher in this study can be accepted because $r_{hitung} > r_{tabel} = 0.888 > 0.374$, so that in this study there is an effect of the mind mapping learning model on the thematic learning outcomes of sixth-grade students at SD Negeri 3 Rajabasa Jaya.

CONCLUSION

Based on the above description of the results of the study on the effect of the mind mapping learning model on the thematic learning outcomes of grade VI students at SD Negeri 3 Rajabasa Jaya in the 2021/2022 academic year, there was a difference in the average pretest scores between the control class and the experimental class, with the control class scoring higher. However, the average posttest scores for both classes showed that the experimental class scored higher than the control class. Based on the results of the hypothesis test, the researcher can conclude that there is an effect of the mind mapping learning model on the thematic learning outcomes of sixth grade students at SD Negeri 3 Rajabasa Jaya.

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