UKAZ: International Journal of Islamic Studies
https://journal.staisni.ac.id/index.php/ukaz

Mind Mapping Solutions to Improve Learning Outcomes in Islamic Education and Natural Sciences

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Article Information:
Received March 15, 2024
Revised April 28, 2024
Accepted May 19, 2024

Keywords: *Learning Islamic education and natural sciences, learning methods, learning outcomes*

Abstract

Mind mapping is a method that can be used in learning natural and social sciences. In fact, this research aims to explain the planning, implementation and improvement of learning outcomes in Islamic education and natural sciences using the mind map method. This research uses classroom action research methods. The research subjects were all 7 class V students consisting of four boys and three girls. Data sources were obtained from teachers and fifth grade students using observation and tests. Data were analyzed through four steps, namely the planning stage, action stage, observation and reflection stage. The results of the research showed that there was an increase in the average student score from cycle I of 66.42, then increased to 85.00 in cycle II and student success was seen to increase from cycle I, 42.85% of students completed, while in cycle II this occurred. enhancement. Complete learning outcomes were 85.71%. For this reason, it is recommended that teachers use the mind map method in science learning and create a comfortable learning atmosphere so that children are interested and do not get bored easily when studying.

INTRODUCTION

Education is one of the main pillars in human resource development. An effective and efficient learning process greatly determines the quality of student learning outcomes. Islamic education and natural sciences are two important subjects in the elementary school curriculum, which play a role in developing students' scientific knowledge, skills and attitudes. However, based on observations in various elementary schools, many students experience difficulties in understanding and mastering science and social studies material. This has an impact on low student learning outcomes in these two subjects (Amalina et al., 2023; Chaliq & Toifur, 2024; Mabruroh et al., 2023).

One learning method that can help students understand the material better is mind mapping. Mind mapping is a visualization technique that uses diagrams to describe information systematically and structured (Febriani et al., 2022; Ho et al., 2023). This technique was developed by Tony Buzan and has been widely applied in various fields, including education, with mind mapping allows students to see the relationship between the concepts being studied, thereby facilitating understanding and memory (Buran & Filyukov, 2015; Dahlani, 2019; Feng et al., 2023; Rifa'at, 2019; Saputra et al., 2023; Sukandar et al., 2024).

How to cite: Sari, J. P., Sukandar, W., Yumna, Y., Nurhasanah, N., Dahliana, D., Yolanda, S. A., Cahyani, R. I. (2024). Mind Mapping Solutions to Improve Learning Outcomes in Islamic Education and Natural Sciences. *UKAZ: International Journal of Islamic Studies*, *1*(1), 9-17.

E-ISSN: xxxx-xxxx
Published by: Institute of Research and Community Service

Many studies have shown that the use of mind mapping in the learning process can improve student learning outcomes. By using mind mapping, students can more easily organize information, connect main ideas with sub-ideas, and remember and repeat lesson material more effectively. Apart from that, mind mapping can also increase students' creativity and motivation to learn. As previous research revealed that students' grades in learning natural and social sciences are still low and there is a need to use interesting learning methods (Alsokari et al., 2024; Jaafar et al., 2024).

Related to this problem, it has an impact on students' daily test scores which are presented in table 1 below.

Table. 1. Daily Test Assessment of Natural and Social Sciences Learning

No	Subject	KKM	Value	Completeness	
				Complete	Not Completed
1	Subject 1	70	50		√
2	Subject 2	70	40		√
3	Subject 3	70	45		√
4	Subject 4	70	60		√
5	Subject 5	70	80	√	
6	Subject 6	70	50		√
7	Subject 7	70	75	√	
8	Subject 8	70	40		√
	Amount		440	2	6
	Class Average		55	25.00	75.00

Based on the data in Table 1, many students have not reached the minimum completeness criteria in the daily assessment of natural and social sciences, indicating the need for more effective learning methods. Mind mapping is an innovative solution that can help students organize information visually and systematically and stimulate creativity and deep understanding of the material. The uniqueness of this method lies in its ability to integrate various concepts into one holistic thinking map, making it easier to understand and remember information. In addition, this research offers a new, more interactive and collaborative approach to the use of mind mapping, which is expected to improve student learning outcomes significantly.

METHOD

The research used in this research is classroom action research (Anwar, 2020; Edwards & Burns, 2016; Meesuk et al., 2020; Yuslia et al., 2021). This research was conducted in a fifth grade elementary school. The data sources in this research were seven fifth grade elementary school students. The data collection techniques are observation, tests and documentation. Data were analyzed through four steps, namely the planning stage, action stage, observation and reflection stage. The research procedure consists of two cycles, each cycle includes planning, implementing actions, observing actions, and evaluating actions (Haryanti et al., 2024; Sukandar et al., 2024; Syaflinar et al., 2024).

RESULTS AND DISCUSSION

This classroom action research consists of two cycles, each cycle consisting of three meetings and 1 learning outcomes test at the end of the cycle. Implementation of learning uses the mind mapping method. This research used four research instruments in the form of student activity observation sheets, teacher activity observation sheets, learning results tests, and interviews. The learning implementation in cycle I used the subject of "biodiversity in Indonesia" which was carried out over two meetings, namely meeting I on Monday 15 January 2024, and meeting II on

Tuesday 16 January 2024, with a time allocation of 3 x 35 minutes for each meeting times; plus meeting III on Monday 22 February 2024 to hold a learning outcomes test at the end of the cycle. Meanwhile, the implementation of learning in cycle II uses the subject of "Natural Resources" which is carried out over two meetings, namely meeting I on Wednesday 31 January 2024, and meeting II on Thursday 1 February 2024, with a time allocation of 3 x 35 minutes for each meeting times; plus meeting III on Monday 5 February to hold a learning outcomes test at the end of the cycle. The learning process at each meeting refers to the high class science and science learning material book and the science and science package book published by Erlangga for class V, second semester of elementary school.

Learning using the mind mapping method is something new for students, so in its implementation students still feel confused. To overcome this, researchers carried out the planning and implementation stages of learning through the mind mapping method. However, the use of this mind mapping method also causes changes in the way of learning for each student. Usually students get material only from what the teacher explains, so students are passive in learning and have very little interaction, but after using the mind mapping method students can show good overall activity, which in the end will improve student learning outcomes.

Table 2. Daily assessment learning test results (PH) cycle I

No.	Name	Value	Completeness	
			Complete	Not Completed
1	AA	60		√
2	AD	55		√
3	AS	60		√
4	AS	70	√	
5	HH	80	√	
6	IW	60		√
7	SPF	80	√	
Average		66,42		

Table 2 above illustrates that the average daily test results (PH) in cycle I increased, namely 66.42 (the average science learning result before this PTK was held was 62.85. However, this has not been able to reach the target The learning outcomes specified in the success indicator are 70. Apart from that, research data was also obtained from observations of students' activities in elementary schools.

Table 3. The Activity Observations of Class V Students at Elementary School in Cycle I

Indicator	Meeting				Average percentage	Information
	I		II			
	Amount	%	Amount	%		
1	4	57,14	5	71,42	64,28 %	Enough
2	4	57,14	4	57,14	57,14 %	Enough
3	3	42,85	5	71,42	57,13%	Enough
4	4	57,14	5	71,42	64,28%	Enough
5	5	71,42	6	85,71	78,56	Good
Number of Students	7		7			
Number of Average percentages					63,07%	Enough

Science and science learning in cycle I.
Information:
Indicator 1: Student activities listen to the teacher's explanation of the lesson material
Indicator 2: Student activities in making mind maps
Indicator 3: Student activities in presenting the results of the mind mapping the created
Indicator 4: Student activity in responding to the percentage of friends who appear
Indicator 5: Student activities in following the lesson until completion

Apart from observations, research data is also obtained from student learning outcomes.

Table 4. Completeness and Average Student Learning Outcomes in Cycle I

Description	Number of Students
The number of students who took the test	7
Number of students who have completed their studies	3
Number of students who did not complete their studies	4
Minimum Completion Criteria	70
Percentage of students' learning completeness	42,85%
Average learning outcomes	66,42

Looking at table 4 above, it can be seen that the average student learning outcomes are still relatively low, namely 66.42, while the minimum completion criteria set by the school is 70 and the percentage of students' learning completion is also low, namely 42.85%. Thus, from the results of observer interviews with students, it can be concluded that students feel happy learning science using the mind mapping method. Reflection activities are carried out collaboratively between researchers and class teachers at the end of each cycle. This cycle of reflection includes reflection on planning, implementation of actions, observation, evaluation, and results obtained by students. At the planning stage, researchers prepared teaching modules, student activity observation sheets, teacher activity observation sheets in the learning implementation process, and end-of-cycle tests which were still not optimal.

In carrying out actions and observations in cycle I, student activities include students listening to the teacher's explanation of the subject matter with an average percentage of 64.28%, students making mind maps with an average percentage of 57.14%, students in presenting the results of the mind mapping created with an average percentage of 57.13%, students in responding to the percentage of friends who appeared with an average percentage of 64.28%, and students in following the lesson to completion with an average percentage 78.57%. Of the five indicators, they are categorized as quite good, but none have yet reached the success indicators.

Researchers and observers concluded that the problems faced by researchers in managing learning were that researchers lacked mastery of the subject matter to be taught to students, researchers did not use their time optimally in the learning process and researchers did not interact enough with students in the learning process. Looking at the analysis of student learning outcomes in cycle I, it can be concluded that the desired target learning outcomes have not been achieved. This percentage can be seen from the percentage of students' learning completion which is 42.85%. To overcome these weaknesses, teachers need to motivate students to do more activities in learning, maximize time in the learning process according to the teaching module, the next action for students to make mind maps individually, not in groups, mind maps displayed by teachers should use focus. so that students always listen and pay attention to the teacher during the learning process. Before the exam takes place, the teacher will repeat the learning material that has been studied so that students can obtain maximum daily assessment scores.

Table 5. Results of cycle II daily assessment (PH) learning tests

No.	Name	Value	Completeness	
			Complete	Not Completed
1	AA	80	√	
2	AD	65		√
3	AS	80	√	
4	AS	95	√	
5	HH	100	√	
6	IW	85	√	
7	SPF	90	√	
Average		85		

Based on table 5 above, it can be seen that the average daily assessment test (PH) results in cycle II increased, namely 85 (the average science learning result in cycle I was 66.42. Thus, this means that the learning outcomes specified in The success indicator, namely 70, has been achieved. Data from observations of student activity observation sheets, and used to see the process and development of student activities that occur during learning, can be seen in table 6.

Table 6. The Activity Observations of Class V Students at Elementary School in cycle II.

Indicator	Meeting				Average	Description
	I		II			
	Value	%	Value	%		
1	5	71,42	6	85,71	78,56 %	Good
2	5	71,42	6	85,71	78,56 %	Good
3	5	71,42	6	85,71	78,56 %	Good
4	6	85,71	6	85,71	85,71 %	Very Good
5	7	100	7	100	100%	Very Good
Number of students	7		7			
Total Average percentage					84,27%	Very Good

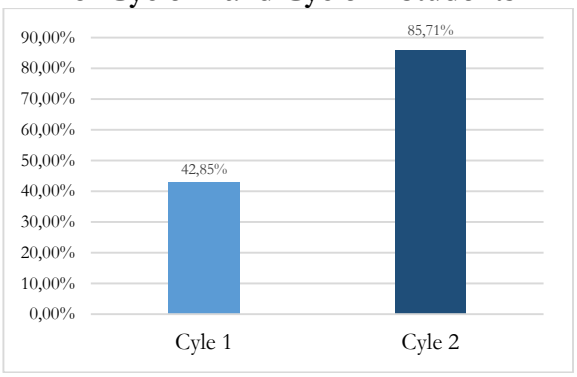
Information:
Indicator 1: Student activities listen to the teacher's explanation of the lesson material
Indicator 2: Student activities in making mind maps
Indicator 3: Student activities in presenting the results of the mind mapping the created
Indicator 4: Student activity in responding to the percentage of friends who appear
Indicator 5: Student activities in following the lesson until completion

Table 7. Completeness and Average Student Learning Outcomes in Cycle II

Description	Number of Students
Number of students who took the test	7
Number of students who complete their learning	6
Number of students who did not complete their learning	1
Minimum Completeness Criteria	70
Percentage of students' learning completeness	85,71%
Average learning outcome	85

Looking at table 7 above, it can be seen that of the 7 people who took the final test of cycle II, 6 people got a score equal to 70 which could be said to be complete in studying and 1 person who got a score below 70 and said to be incomplete. It can be seen that the percentage of completeness of students' learning outcomes in the final cycle test as a whole is 85.71%, and the average learning outcomes in cycle II is 85. It can be said that they have achieved more than the target set, namely 80%. Based on field notes, it can be described as follows: mastery of the subject matter is good so that students understand the subject matter better

Fig 1. Comparison of the Completeness of Learning Outcomes for Cycle II and Cycle II Students



Based on the researcher's conversation with the teacher after completing cycle II, the researcher concluded that the teacher felt helped by using the Mind Mapping Method. This is because the use of the Mind Mapping Method can improve student learning outcomes in science learning. This mind mapping learning model is a learning model that is able to arouse student enthusiasm and creativity in learning. here students' creativity is required to express various ideas which will then take the form of brainstorming so that several key words from learning will stick in the students' minds and memories (Aykac, 2015; Evrekli et al., 2009; Huang et al., 2017; Ratu et al., 2020; Van Hoof et al., 2014).

One of the advantages of mind mapping is that it allows students to express their ideas well and systematically. So by applying this technique, students' creative ideas in writing can be further activated because the organization of the information held by the brain will be more focused and better structured in write (Aprilia & Manurung, 2019; Friedrich-Reed Wienecke & Clandinin, 2017; Katagall et al., 2015; Luke et al., 2014; Pennebaker, 2017; Simonova, 2015). Mind mapping is an effective method for developing ideas through a series of map. To create a mind map, someone usually starts by writing the main idea in the middle of the page and from there students can spread it in all directions to create a kind of diagram consisting of keywords, phrases, concepts, facts and facts, facts, and figures (Kiong et al., 2012). Each cycle's student learning outcomes increase in the standard of completeness. This shows that using the mind mapping method in learning has achieved indicators of success.

CONCLUSION

From this research, it is clear that the application of the mind mapping method has a significant positive impact on student learning outcomes. The average student score increased from 66.42 in cycle I to 85.00 in cycle II. Apart from that, the percentage of students who achieved complete learning also increased from 42.85% in cycle I to 85.71% in cycle II. These results show that mind mapping not only helps students organize information better but also improves their ability to understand and remember lesson material. Therefore, mind mapping can be relied on as an effective learning strategy to improve student academic results in natural and social science subjects.

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