The Efficacy of the Reading, Mind Mapping, and Sharing Learning Model in Boosting Students' Problem-Solving Skills

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Abstract

This research is motivated by the fact that there are still many teaching practices by teachers who still apply conventional learning approaches. Therefore, this research wants to test a new learning approach that emphasizes aspects of student involvement in their active cognitive processes by using the Reading, Mind Mapping, and Sharing (RMS) learning model. The main objectives of this study include two things. First, to test the effectiveness of the RMS learning model in improving students' academic performance in the form of problem-solving abilities. Second, to see how much influence the RMS learning model has in enhancing the ability to solve these problems. This study used a quasi-experimental research design on two groups of research subjects. Data analysis was carried out using several statistical techniques, namely the independent sample t-test to test the effectiveness of the RMS learning model on problem-solving abilities and calculating the effect size value to see how much influence the RMS learning model had in influencing the increase in problem-solving skills. This study found two findings: the RMS learning model has proven effective in improving problem-solving skills and has a high influence on improving problem-solving abilities. The RMS Learning Model is a foundational strategy for educators in Islamic Religious Education to boost student cognitive engagement.

Keywords: *Akidah Akhlak*, Problem-Solving Skills, RMS Learning Model.

Abstrak

Penelitian ini dilatarbelakangi oleh kenyataan bahwa masih banyak praktik mengajar oleh guru yang masih menerapkan pendekatan pembelajaran konvensional. Oleh karena itu, penelitian ini ingin menguji pendekatan pembelajaran baru yang menekankan aspek keterlibatan siswa dalam proses kognitif aktifnya dengan menggunakan model pembelajaran *Reading, Mind Mapping, and Sharing* (RMS). Tujuan utama penelitian ini meliputi dua hal. Pertama, menguji keefektifan model pembelajaran RMS dalam meningkatkan prestasi akademik siswa berupa kemampuan pemecahan masalah. Kedua, melihat seberapa besar pengaruh model pembelajaran RMS dalam meningkatkan kemampuan pemecahan masalah tersebut. Penelitian ini menggunakan desain penelitian kuasi eksperimen terhadap dua kelompok subjek penelitian. Analisis data dilakukan dengan menggunakan beberapa teknik statistik yaitu *independent sample t-test* untuk menguji keefektifan model pembelajaran RMS terhadap kemampuan pemecahan masalah dan menghitung nilai *effect size* untuk melihat seberapa besar pengaruh model pembelajaran RMS dalam mempengaruhi peningkatan kemampuan pemecahan masalah. Penelitian ini menemukan dua temuan yaitu model pembelajaran RMS terbukti efektif dalam meningkatkan kemampuan pemecahan masalah dan memiliki pengaruh yang tinggi terhadap peningkatan kemampuan pemecahan masalah. Model Pembelajaran RMS merupakan strategi dasar bagi pendidik Pendidikan Agama Islam untuk meningkatkan keterlibatan kognitif siswa.

Kata kunci: Akidah Akhlak, Keterampilan Pemecahan Masalah, Model Pembelajaran RMS.

Introduction

Problem-solving skills are the most basic and authentic things in everyday life (Akben, 2020; Tambak et al., 2023), so all the most relevant learning activities should be directed at these activities. People permanently solve problems in everyday life, personal life, society, and work. No one in an academic or professional context has been paid just for memorizing information and completing exams. Problem-solving is an essential competency of the 21st century (Kennedy & Sundberg, 2020; Sholihah & Lastariwati, 2020), especially the ability to solve various problems that ordinary people cannot. Study reports have corroborated that knowledge built in the context of problem-solving is more easily understood, retained, and therefore more readily transferred.

Problem-solving skills require planned learning. Learners must be determined to understand the system or context in which the problem occurs so they can solve it effectively. Meaningful learning will only happen if students display the determination to learn. All individual behavior is based on goals. The clearer our goals for learning, the more likely we are to learn meaningfully and attentively. Therefore, the main task of a learner is to design contextual and meaningful learning to train problem-solving skills (Jonassen, 2011).

One aspect that supports problem-solving abilities is using strategies in teaching and learning (Valdez & Bungihan, 2019). This learning strategy must stimulate students to think creatively and innovatively critically about occurring phenomena and have communication and collaboration skills to solve problems (Baroroh et al., 2023). Apart from that, the choice of strategy must also follow the students' needs, interests, characteristics, and motivations. Thus, it is crucial for teachers to carefully select and determine tools and strategies that suit their context (Fernando & Marikar, 2017).

However, the problem of determining the right strategy to improve students' problem-solving skills turns out to open up other issues. Several study reports state that the main problem lies in the teacher aspect (Mupa & Chinooneka, 2015). It found several problems related to teacher performance in the classroom. For example, many teachers still do not apply teaching methods and media according to the objectives and characteristics of the field of study (Abdulrahaman et al., 2020; Irnidayanti & Fadhilah, 2023). So, they recommend that schools be more selective in hiring quality teachers who know effective teaching. Apart

from that, the principal also needs to supervise teachers so that proper planning and implementation of learning can be carried out (Triansyah et al., 2023). Therefore, there is a need for learning innovation to deal with these problems (Cholid et al., 2023).

Several authors suggested that teachers should be able to apply innovative strategies that match the expected skills (Bakar et al., 2023; Fadila Andesa et al., 2010). Some researchers suggest teachers implement student-centered learning strategies to improve communication, collaboration, critical thinking, and problem-solving skills (Hidayati & Wagiran, 2020; Muflihah et al., 2024). One strategy that teachers need to consider implementing is the Reading, Mind-Mapping, Sharing (RMS) model. The formation of the RMS model is based on the principles of 21st-century learning proclaimed by UNESCO, which are based on several learning approaches of constructivism, collaboration, and connection (Muhlisin, 2019).

In its application, many studies report the superiority of the RMS model in improving student learning outcomes. Recently, the RMS model was tested on simple aircraft subjects in class VIII students, and it was concluded that the RMS model could improve the student's initial abilities (Nainggolan et al., 2023) and higher-order thinking skills (Diani et al., 2018). At the tertiary level, RMS is applied to school laboratory courses. This study shows a difference in the average student learning outcomes before and after studying using the RMS model (Widyaningsih & Yusuf, 2019). In science courses, an experiment shows higher concept mastery in science courses taught with the RMS model than in the conventional model (Muhlisin, 2019).

Apart from improving the ability to master concepts, the RMS Model has also been proven to enhance cognitive skills to a higher level (Muhlisin et al., 2018). It was found that the RMS learning model effectively improved students' metacognitive skills while harmonizing these skills in other academic contexts. If we look at the presentation of previous research reports, most of the applications of RMS were carried out in the fields of science and mathematics. More applications need to be made in the field of social sciences, such as in the subject of moral beliefs. The principles in the material on moral beliefs relate to many aspects surrounding individual life problems in society.

In general, the *akidah akhlak* subject aims to grow and increase students' faith, manifested in their commendable morals, through providing and cultivating students' knowledge, appreciation, experience, and practice of Islamic *akidah* and *akhlak* (morals). If we analyze in detail, the aim of this moral belief subject requires students to carry out more

in-depth cognitive processing to be able to present themselves as individuals who reflect commendable behavior targeted at faith (Ardiansyah & Bagus Cahyanto, 2022). Students must be involved in receiving information while understanding the meaning of the information they receive if we refer to Bloom's taxonomy of cognitive abilities (Anderson & Krathwohl, 2001). In accepting and appreciating information, if we compare these two processes with Bloom's cognitive domain abilities, we enter the stage of understanding and analyzing. This ability to analyze falls into higher-order thinking Skills (Brookhart, 2010). As a result, learning designs that can stimulate the active processing of students' cognitive aspects need to be considered (Ardiansyah et al., 2022; Chiu & Churchill, 2016).

This research investigates two primary questions. First, How effective is the RMS learning model in improving problem-solving ability learning outcomes? Second, How much influence does the RMS learning model have in improving problem-solving skills? The study seeks to enhance our comprehension of the connection between teaching strategies and student outcomes in problem-solving activities by exploring these inquiries. In addition, the research aims to determine how the RMS learning model facilitates improving students' problem-solving ability.

Methods

This research is experimental, more precisely, a quasi-experimental design. The sampling technique used was cluster random sampling. The research subjects were students of class X IPS 3 and X IPS 2 at Madrasah Aliyah Al-Ma'arif Singosari, Malang, in the 2022-2023 academic year. The control group using the discussion method was the 10th grade of IPS 3, while the experiment group using the RMS was the 10th grade of IPS 2. This research aims to evaluate the effectiveness of RMS learning strategies in improving problem-solving skills, excluding other influencing variables to maintain focus on the study's objectives.

The data collection technique used in this research was a written test. Before the test instrument is given, the researcher carries out a pilot test on the instrument to ensure aspects such as the validity and reliability of the test instrument that will be used. The research uses independent-sample-t-test analysis to test the proposed hypothesis. The research instrument used in this study was an essay test with five questions. An essay test is given to students after a learning process of 8 meetings. The essay test was chosen because it better met the

criteria for measuring problem-solving abilities. The developed test questions refer to the question grid described in Table 1.

Table 1. Problem-Solving Ability Test Question Grid *Akidah Akhlak* Subject

Basic Competency on Disgraceful Behavior Material	Question Indicator	Questions Number
3.10 Analyze the causes, examples, and ways to avoid cunning, greedy, unjust, and discriminatory behavior. 4.10 Presents the results of an analysis of the causes, examples, and ways to avoid cunning, greed, injustice, and discrimination	1. Identify examples of cunning behavior 2. Explain the causes of cunning behavior 3. Criticize the negative impact of cunning behavior	1
	1. Identify examples of forms of greedy behavior 2. Explain the causes of greedy behavior 3. Criticize the negative impacts of greedy behavior	2
	1. Identify examples of unjust behavior 2. Criticize forms of unjust behavior 3. Formulate solutions to avoid unjust behavior	3
	1. Identify examples of unjust behavior 2. Criticize forms of unjust behavior 3. Formulate solutions to avoid unjust behavior	4
	1. Identify examples of forms of discriminatory behavior 2. Criticize the negative impact of discriminatory behavior 3. Formulate solutions to avoid discriminatory behavior	5

An assessment rubric for problem-solving ability test questions was developed to facilitate and guide the assessment process for essay test questions. Table 2 presents a description of the test question scoring rubric.

Table 2. Scoring Rubric for Test Questions on Ability to Solve *Akidah Akhlak* Problems

Question Number	Score	Description	Value Weight
Question 1 Crafty material	1	Provide answers that do not fit the context of the problem	10 %
	2	The answer is by the context of the problem, but the answer is not by the question indicators.	
	3	The answer already answers the question but is less relevant.	
	4	The answer is correct and almost complete, but it does not answer all the question indicators.	
	5	The answer is correct and has answered all the question indicators.	
Question 2	1	Provide answers that do not fit the context of the problem	10 %
	2	The answer is by the context of the problem, but the answer is not by the question indicators.	

Question Number	Score	Description	Value Weight
Greedy behavior material	3	The answer already answers the question but is less relevant.	
	4	The answer is correct and almost complete, but it does not answer all the question indicators.	
	5	The answer is correct and has answered all the question indicators.	
Question 3 Unjust behavior material	1	Provide answers that do not fit the context of the problem	25 %
	2	The answer is by the context of the problem, but the answer is not by the question indicators.	
	3	The correct answer is to criticize unjust behavior, but it does not provide a solution to avoid unfair behavior.	
	4	The answer is correct and almost complete in criticizing unjust behavior but less precise in formulating solutions to avoid unfair behavior.	
	5	Correct and complete answers by criticizing unjust behavior and formulating solutions to avoid unjust behavior	
Question 4 Unjust behavior material	1	Answers, but it is wrong.	25 %
	2	The answer is almost correct regarding unjust behavior.	
	3	The correct answer is to criticize unjust behavior, but it does not provide a solution to avoid unfair behavior.	
	4	The answer is correct and almost complete in criticizing discriminatory behavior but less precise in formulating solutions to avoid unjust behavior.	
	5	Correct and complete answers by criticizing discriminatory behavior and formulating solutions to avoid unjust behavior.	
Question 5 Discriminatory behavior material	1	Answers, but it is wrong.	30%
	2	The answer regarding discriminatory behavior is almost correct.	
	3	The correct answer is to criticize discriminatory behavior but not provide solutions to avoid discriminatory behavior.	
	4	The answer is correct and almost complete in criticizing discriminatory behavior, but it is less precise in formulating solutions to avoid it.	
	5	Correct and complete answers by criticizing discriminatory behavior and formulating solutions to avoid discriminatory behavior	
Total Value Percentage			100%

Results and Discussion

Result

Data Exposure

Based on the research carried out, the researcher has obtained data results that will be used to answer the problem formulation related to the effectiveness of the RMS learning model. The data obtained were divided into the learning outcome values in the control and experimental groups after treatment. Table 3 presents data on learning outcomes from the control and experimental groups.

Table 3. Description of Learning Results for Control and Experimental Groups

Data Centralization and Dispersion	Control Group Learning Results	Experimental Group Learning Results
Minimum Scores	52	64
Maximum Scores	96	100
Mean	73,71	83,62
Median	72	84
Modus	72	84
Standard Deviation	12,150	9,670

Based on the data presented in Table 3, quite significant differences can be seen. The lowest score for learning outcomes in the control group was 52, while in the experimental group, it was 64. Furthermore, the highest score for learning outcomes in the control group was 96, while in the experimental group, it was 100. The mean score in the control group was smaller than the experimental group, namely 73.71 <83 .62. The median value in the control group was smaller than the experimental group, namely 72 < 84. The mode value in the control group is smaller than the experimental group, namely 72 < 84. The standard deviation value in the control group is greater than the experimental group, namely 12.150 < 9.670.

The Influence of the RMS Model in Improving Problem-Solving Ability in *Akidah Akhlak* Subjects

Before testing the hypothesis about the effectiveness of the RMS model in improving students' problem-solving abilities on moral beliefs, several prerequisite tests need to be carried out. The data normality test in this study produced numbers as in Table 4 below.

Table 4. Kolmogorov-Smirnov Normality Test Results

		Statistic	df	Sig.
Learning Outcomes Problem-Solving Ability	Control Group X IPS 3 (discussion)	.104	42	.200*
	Experimental Group X MIPA 3 (RMS)	.103	42	.200*

The Sig column in Table 4 shows that all the data used in this study is normally distributed because of the Sig. value > 0.05, namely 0.200 > 0.05.

Table 5. Results of Levene's Homogeneity Test

Levene Statistic	df1	df2	Sig.
2,523	1	82	,116

The Sig column in Table 5 shows that the variance of problem-solving ability is 0.116. Because the Sig value is 0.116 > 0.05, it can be concluded that the variance in the data on learning outcomes for problem-solving skills in classes X IPS 3 and X IPS 2 is homogeneous.

After the two tests, the prerequisites for the independent sample t-test are met. The next step is to test the hypothesis using the independent sample for the test analysis itself. Table 6 describes the results of the independent sample t-test in this study.

Table 6. Independent Sample T-Test Analysis Results

		F	Sig.	t	df	Sig. (2-tailed)
Learning Outcomes Problem-Solving Ability	Equal variances assumed	2,523	,116	-4,134	82	,000
	Equal variances are not assumed.			-4,134	78,068	,000

Value Sig. (2-tailed) Table 5 is 0.000, meaning it is less than the alpha level of 0.05. It indicates that there is a significant difference in problem-solving abilities between the group of students who were taught using the RMS (reading, mind mapping, and sharing) learning model and the group of students who were taught using the discussion method in class X *akidah akhlak* subject at MA Al-Maarif Singosari.

The Great Influence of the RMS Model on Improving Problem-Solving Ability in
***Akidah Akhlak* Subjects**

To find out how much influence the RMS learning model has in improving problem-solving abilities, we can find out by calculating the effect size value. In this study, the effect

size value was calculated with the help of the "Good Calculator" to facilitate the calculation of Cohen's d test. Table 7 describes the effect size value of Cohen's d.

Table 7. Cohen's Effect Size Values

Class	Mean	Standard Deviation	Effect Size	Information
Experiment	83,62	9,670	0,903	High
Control	73,71	12,150		

Based on Table 7, the effect size value is 0.903. These results indicate that using the RMS (reading, mind mapping, and sharing) learning model greatly influences learning outcomes in problem-solving abilities because the d value > 0,8 (Cohen, 1988).

Discussion

The Influence of the RMS Model on Improving Problem-Solving Ability in *Akidah Akhlak* Subjects

The research findings from this study were confirmed by most research results that applied the RMS strategy in various fields of study. Recently, Nuraini, Mahanal, Susilo, and Sulisetijono found that a modification of the RMS strategy, called the Brain-Based Learning-Reading, Mind Mapping, and Sharing (BBLRMS) strategy, was proven to be effective in improving the creative thinking abilities of prospective Biology teacher students (Nuraini et al., 2023). Regarding the factors causing the success of the BBLRMS strategy in improving students' creative thinking skills, they concluded that the stages of the learning process in the BBLRMS model itself played the most role. It can happen because all activities carried out by students involve active cognitive processes, which are supported by interaction and cooperation in terms of exchanging ideas and knowledge between students.

Other research in mathematics shows almost the same conclusions regarding the effectiveness of RMS strategies (Mutiara et al., 2021). This research also modifies the implementation of RMS by integrating tools such as props, PowerPoint, and worksheets (PPW). In this study, the researchers found that the students taught using the RMS strategy assisted by PPW had critical thinking skills regarding the studied mathematical concepts. If we analyze this study more deeply, we can suspect that student-centered learning activities stimulate them to build their knowledge independently. Learning activities through reading enable students to understand material critically by identifying facts in a concept. So that these facts and ideas can be processed more deeply, students can compare them with the

thoughts of their peers. Ultimately, the internalization process through the visual representation of concept maps makes integrating new concepts more straightforward to connect with students' cognitive structures (Sung & Mayer, 2012).

The effectiveness of the RMS Model cannot be separated from the students' positive impressions of the activities that underlie the RMS strategy itself. In a pre-experimental study, Muhlisin found several essential points he gained after teaching using the RMS strategy (Muhlisin, 2018). First, students gave an upbeat assessment of 92% regarding implementing RMS in the classroom. Second, the most significant portion of the positive response lies in the attention dimension, which consists of variables such as enjoyment of learning, absence of misunderstandings, increased memory, and ease of learning content (Ardiansyah et al., 2021). Third, the next dimension is active learning, both individual and group. This analysis of student perceptions can be used as a basis for the effectiveness of the RMS strategy in improving student learning outcomes.

Apart from positive perception factors towards RMS, the philosophical factors underlying the RMS strategy itself also support the positive influence of implementing RMS on student learning outcomes. The development of the RMS learning model refers to the principles of the constructivist learning approach, which emphasizes independence in student learning. The pattern follows cognitive learning theory regarding information processing when implementing the RMS strategy (Sweller, 2016). The learning process begins with absorbing information through rehearsal before being stored in working memory. Mind mapping helps students process information by activating two cognitive channels, auditory and visual (Clark & Mayer, 2016). Sharing activities require students to repeat information in working memory before it is integrated into their cognitive structure (Sung & Mayer, 2012).

The Magnitude of the Influence of RMS on Learning Outcomes in Problem-Solving Abilities

The results of the independent sample t-test on the mid-term exam learning scores for the subject of moral beliefs show a significant influence of the RMS learning model on students' ability to solve problems for class X students. Next, the researchers conducted an effect size test to see how big the influence of the model RMS learning on problem-solving ability learning outcomes in the experimental group. The effect size test carried out by researchers used Cohen's d formula to make calculations easier. The study results produced

a d value of 0.903, indicating that using the RMS (reading, mind mapping, and sharing) learning model greatly influences learning outcomes in problem-solving abilities because of the value. d > 0,8.

Regarding the influence RMS has on learning outcomes, only a few research reports include this information. To the researcher's knowledge, only one study provides this information. The research report from Widyaningsih and Yusuf shows the positive influence of the RMS strategy in improving learning outcomes in school laboratory courses. Then, the researchers calculated the effect size of the RMS strategy and found a value of 1.36, which was classified as high (Widyaningsih & Yusuf, 2019).

The increase in students' ability to solve problems may be due to the activities carried out by students when taking part in learning using the RMS model. The first activity is a reading activity. The learning process will begin with reading activities by applying the RMS learning model. Critical reading activities (reading) will help students explore their knowledge by collecting various information through the critical reading stage (reading) (Nasrollahi et al., 2018). regarding the material "Let's Avoid Disgraceful Behavior." Students will be trained to absorb knowledge and information through reading activities and understand, analyze, synthesize, and evaluate (Wahyuni, 2018). Reading activities will also train students to examine their reading material critically to develop their critical thinking skills (Muhlisin et al., 2016). Through reading activities, students can construct their understanding by sorting information and taking the main ideas from each material they read (Nasrollahi et al., 2015). Analyzing material through the reading process is an application of cognitive abilities (Ulhusna, 2019).

Second, it is about making mind mapping. Making mind maps will train students to process information in reading activities into a concept, practice making the concept into creative work, and train students' communication skills through teamwork (Ardiansyah & Bagus Cahyanto, 2022). The theoretical basis for mind mapping is that students mentally determine and organize essential elements into a coherent structure. Mapping can be an effective learning method, especially for students with low learning abilities. Mapping can present facts, concepts, and their meaningful relationships. However, the mapping strategy is most suitable for learning material with a clear basic structure.

Third, namely, sharing activities. Sharing will foster students' self-confidence in sharing the results of the mind mapping they created through group presentations. Self-confidence is the ability where each individual can understand and know his capacity,

believe that he can achieve the goals he desires, is not anxious about acting, interacts well and politely, and believe in his abilities. A sense of self-confidence must be instilled and developed in each student to face various challenges, believe in their ability to overcome difficulties and think positively in every situation (Erdoğmuş et al., 2021). Confidence in a student's abilities in a particular area depends significantly on the educator's ability to work with them. Therefore, in implementing RMS, educators will act as guides who provide assistance, direction, and motivation to students so that students can easily understand the learning material (Alsmadi et al., 2023).

The sharing activity was carried out by presenting the results of the mind mapping that had been made alternately between groups to improve students' communication skills and activeness. This sharing activity can facilitate the process of cooperation and exchange of information between students and provide reinforcement and confirmation of material by educators (Kombat et al., 2023; Zakaria et al., 2023). Joint sharing activities are also carried out as a joint evaluation stage where groups can criticize by offering opinions, rebuttals, questions, and answers to the results of the mind mapping that has been created (Theabthueng et al., 2022).

Conclusion

Several significant findings in this research include two things. First, the RMS learning model has proven effective in improving problem-solving learning outcomes in the subject of moral beliefs for class X students. It has significantly contributed to scientific knowledge in the field of learning models. Second, the RMS learning model makes a solid contribution to improving students' problem-solving abilities in the social realm. It is proven by the effect size value, which is in the strong category. The results of this study complement other study reports regarding the magnitude of the influence of the RMS model on improving learning outcomes.

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