

## Implementation of Problem-Solving Learning Model in Improving Learning Outcomes at Islamic Education : A Classroom Action Research

Sutiono <sup>1\*</sup>, Ifham Choli <sup>1</sup>, Mu'allimah Rodhiyana <sup>1</sup>

<sup>1</sup> Universitas Islam As Syafi'iyah, Indonesia

 sutionoaz.fai@uia.ac.id\*

### ABSTRACT

In general, students' perceptions of Islamic religious education subjects tend to be negative. So far, students consider Islamic religious education as the least favorite subject. This type of research is descriptive. (Classroom Action Research, Problem Solving Model with two cycles) Descriptive research describes or answers problems of phenomena or events that occur today, both about phenomena in single variables and correlations and/or comparisons in various variables. Based on the implementation and results of the study, students' learning activities in the Islamic Religious Education (PAI) learning process using the problem solving model (Cycle I) showed that out of 30 students, in terms of the readiness of the Islamic Religious Education learning process, 7 students (23.3%) were classified as strong, 12 students (40%) were classified as moderate, and 11 students (36.6%) were classified as weak. In terms of concentration during the Islamic Religious Education learning process, 11 students (36.6%) were classified as strong, 10 students (33.3%) were classified as moderate, and 9 students (30%) were classified as weak. In terms of motivation during the Islamic Religious Education learning process, 5 students (16.6%) were classified as strong, 14 students (46.6%) were classified as moderate, and 11 students (36.6%) were classified as weak. Meanwhile, in terms of learning achievement measured by grades or report cards, the average score of Islamic Religious Education was 61.3. In terms of motivation during the Islamic Religious Education learning process, 8 students (26.6%) were classified as strong, 9 students (30%) were classified as moderate, and 13 students (43.3%) were classified as weak. Meanwhile, in terms of achievement measured by grades or numbers, the average score of Islamic Religious Education was 80. Thus, the researcher found that there was a significant achievement so that the application of the problem-solving method was considered successful.

**Keywords:** : Problem-Solving Learning Model, Learning Outcomes, Classroom Action Research

### ARTICLE INFO

*Article history:*

Received  
February 04, 2025  
Revised  
March 19, 2025  
Accepted  
April 30, 2025

Published by  
Website  
Copyright



Institut Agama Islam Ma'arif NU (IAIMNU) Metro Lampung  
<https://journal.iaimnumetrolampung.ac.id/index.php/ji/index>  
This is an open access article under the CC BY SA license  
<https://creativecommons.org/licenses/by-sa/4.0/>  
© 2025 by the author (s)

### INTRODUCTION

The The entire learning process in schools must be well-planned and continuous to realise the ideals of the Proclamation of Independence within the framework of educating the nation's life. It is also emphasized and elaborated in the Law of the Republic of Indonesia No. 20 of 2003 on the National Education System (Yasdin et al., 2023; Siregar, 2024; Mulyani et al., 2023ss). Which states that "national education functions to develop capabilities and shape the character and civilization of a dignified nation in order to educate the nation's life, aiming to develop the potential of students to become people who are faithful and devoted to God Almighty, have noble character, are healthy, knowledgeable, competent, creative, independent, and become democratic and responsible citizens." Therefore, in its implementation, education is a shared responsibility among families, the state, and society (Štubňa, 2020).

Despite its importance, Islamic Education often suffers from negative perceptions among students. It is frequently viewed as a less appealing subject, lacking the engagement and

enthusiasm in other study areas (Zadorozhna, 2022). This negative perception poses a significant challenge, as it can lead to disengagement and poor learning outcomes, undermining the subject's potential to contribute to the student's overall development (Hu et al., 2022). Some students have used the term "bogeyman" to describe their feelings towards Islamic Education, indicating a sense of dread or anxiety associated with the subject (Boskeljon-Horst et al., 2023).

Given these challenges, it becomes imperative for educators, particularly Islamic Education teachers, to adopt effective teaching strategies that can transform these negative perceptions and foster a more engaging and positive learning experience (Bouilheres et al., 2020). One such strategy is the problem-solving learning model, which has been identified as a potential solution. The problem-solving learning model emphasizes active student participation, critical thinking, and the application of knowledge to real-world situations (Fernández et al., 2018). By focusing on problem-solving, this model helps students grasp the material more effectively and encourages them to develop essential skills crucial in today's complex world (Lo et al., 2022).

Based on the above, the researcher intends to conduct classroom action research to improve the quality of Islamic Education learning outcomes for students in Grade X by using the problem-solving learning model (Hourigan & Leavy, 2023). This model is an alternative approach to addressing issues or problems in Islamic Education, involving all students simultaneously and emphasizing the engagement of students' full potential—cognitive, affective, and psychomotor—in the learning process (Asamoah et al., 2023).

The reality of Islamic Religious Education learning at SMA PKP JIS shows that the approach used in the learning process is still dominated by lecture and memorization methods, which do not actively involve students in the process of critical and reflective thinking (Holbah, 2022). Initial observations conducted in class X showed that most students showed little interest and involvement in Islamic Religious Education learning. Students tend to be passive, only taking notes of the material presented by the teacher without showing a deep understanding of the contents of the material, let alone linking it to the actual problems they face (Jung et al., 2022).

Furthermore, the results of the learning evaluation show that most students' scores in the Islamic Religious Education subject have not reached the Minimum Completion Criteria (KKM) set (Zhu et al., 2022). This incompleteness is especially evident in competencies that require analytical and application skills, such as the application of sharia concepts in everyday life, tolerance in diversity, and decision-making based on Islamic values in the current context (Assen & Otting, 2022). The results of interviews with several students also indicate that they find Islamic Religious Education material difficult to understand because it is not sufficiently linked to the real world they face (Hirscher et al., 2024).

The problem shows an urgent need to improve the PAI learning strategy at SMA PKP JIS, to make it more interesting, meaningful, and able to improve student learning outcomes as a whole (Kang & Keinonen, 2018). One of the relevant and potential approaches to be applied is the problem solving learning model. This model places students as active subjects who are trained to recognize and formulate contextual religious problems (Golder et al., 2023).

The problem-solving learning model is a pedagogical approach that emphasizes the role of problem-solving in educational activities. This model prioritizes the development of students' reasoning abilities and understanding of the material by engaging them in real-world problems and scenarios (Suharyat et al., 2023). According to Pepkin, the problem-solving method is characterized by its focus on teaching problem-solving skills and reinforcing those skills through practice and application. This approach aims to enhance students' ability to analyze, evaluate, and resolve various issues, thus deepening their comprehension of the subject matter (Rahmawati et al., 2023).

Problem-solving is crucial in learning as it helps students integrate and apply their knowledge meaningfully (Istami Suharti, 2023). Understanding how to approach and solve problems makes the learning process more engaging and ensures that the knowledge gained is more enduring. This approach aligns with the principles of contextual learning, which suggests that learning is most effective when it is related to real-life situations and problems that

students are likely to encounter (Toheri et al., 2020). By tackling problems relevant to their lives, students can better connect theoretical concepts with practical applications (Priska et al., 2021).

Argues that the problem-solving model is a systematic process involving specific strategies, methods, or techniques to address new and complex situations (Rahmadi et al., 2024). This model requires students to actively identify, analyze, and resolve problems, equipping them with essential skills needed in the modern world. The ability to navigate and solve problems is increasingly recognized as a vital skill that supports students' academic and professional success (Kartikasari et al., 2022).

The theoretical underpinnings of the problem-solving learning model are rooted in cognitive and constructivist learning theories. Cognitive theories emphasize the importance of mental processes in understanding how individuals perceive, think, and solve problems (Tokuhama-Espinosa et al., 2023). On the other hand, constructivist theories focus on how learners actively construct their own understanding and knowledge through experiences and interactions with their environment (Lindqvist & Forsberg, 2023). The problem-solving model integrates these theories by encouraging students to build and refine their understanding through hands-on problem-solving activities (Moy et al., 2019).

The problem-solving learning model offers several benefits for educational practice:

1. **Enhances Critical Thinking:** By engaging students in problem-solving activities, this model helps develop their critical thinking and analytical skills. Students learn to evaluate perspectives, consider solutions, and make informed decisions (Sáenz-Rodríguez et al., 2021).
2. **Promotes Active Learning:** The model encourages active participation and engagement, as students are required to work through problems rather than passively receive information. This active involvement enhances their learning experience and knowledge retention (Kousloglou et al., 2023).
3. **Fosters Practical Skills:** Problem-solving activities often simulate real-world scenarios, allowing students to apply theoretical knowledge in practical contexts. This practical application helps students understand the relevance of their learning and prepares them for future challenges (Comesaña-Comesaña et al., 2022).
4. **Improves Retention:** Understanding how to solve problems helps students remember and apply their knowledge more effectively. The contextual relevance of the problems being addressed enhances Retention (Salomone & Kling, 2017).

Despite its advantages, the problem-solving learning model also presents certain challenges **Time-Consuming:** Implementing problem-solving activities can be time-consuming, both in preparation and execution (Chong et al., 2019). Teachers must carefully plan and design problem-solving tasks to ensure they are effective and aligned with learning objectives (Lee-Robbins & Adar, 2023). **Variability in Student Ability:** Students may have varying proficiency levels in problem-solving skills. Some students may excel in these activities, while others may struggle. Differentiated instruction and support must address these differences and ensure that all students benefit from the model (Harahap et al., 2023).

The problem-solving learning model is a valuable approach that enhances students' reasoning abilities, critical thinking skills, and practical knowledge application (Alberida et al., 2022). Educators can create more engaging and effective learning experiences by integrating problem-solving into the learning process. However, careful consideration must be given to the challenges associated with this model to ensure its successful implementation and maximize its benefits for students (Suhirman et al., 2020).

## **METHOD**

The research method employed in this study is descriptive, focusing on Classroom Action Research (CAR) (Atinafu, 2021). The following procedures were undertaken:

### **a. Identification and Analysis of the Problem:**

The research begins with identifying and analyzing issues directly observed in the classroom. The selected problem genuinely occurs within the class, is significant and beneficial for discussion, and is within the researcher's scope. The rationale behind conducting this research and the methods to solve the problem are discussed (Jaybhay et al., 2018).

**b. Formulation of the Action Hypothesis:**

The next step involves formulating an action hypothesis that outlines proposed actions to achieve the desired improvements. The researcher or teacher selects the most feasible and effective actions. The hypothesis is tested through a defined method, with the researcher engaging in discussions with peers and experts and referring to literature or previous research to refine the actions (Piva & Chang, 2018).

**c. Action Plan Development:**

This phase involves selecting the Islamic Education material to be covered in the CAR, developing instructional tools based on the CAR approach, determining instruments for data collection, and planning the recording and processing of data (Peach & Taylor, 2021).

**d. Implementation of Action:**

The planned actions are implemented in the learning process, guided by the detailed lesson plans (RPP) developed during the planning stage (Vasconcellos et al., 2022).

**e. Observation:**

Observations were conducted directly by researchers during the learning process in class X of SMA PKP JIS. The purpose of this observation was to record various teacher and student activities during the implementation of the problem solving model, such as student involvement in group discussions, the ability to formulate and solve problems, and participation in linking teaching materials to real-life contexts. The observation instrument was in the form of an observation sheet for teacher and student activities designed based on indicators of the implementation of problem solving-based learning. Observations were conducted in each action cycle to assess the development of student learning behavior in stages. Observations are conducted according to the pre-developed instruments, with data collection focused on the variables under investigation (J. Liu et al., 2023).

**f. Interview**

Interviews were conducted with several students purposively to explore their perceptions, experiences, and responses to the applied learning model. In addition, interviews were also conducted with Islamic Religious Education teachers who were collaborative partners in this study. The interviews aimed to obtain data on the dynamics of classroom learning, the effectiveness of the problem-solving approach, and the challenges faced during the action process (Bunga & Warni, 2024).

**g. Reflection:**

The collected data is analyzed descriptively and qualitatively, categorized, and conclusions are drawn. This step involves reflecting on the actions taken to assess their effectiveness and areas for further improvement (Luttenberg et al., 2017).

**h. Data Processing and Interpretation:**

Data and information gathered through observations are analyzed to identify changes in student behaviour, attitudes, motivation, and learning outcomes, both through tests and observations of the learning process conducted by the teacher or researcher (Nguyen et al., 2015). Scores for each student are calculated using the formula:

$$\text{Score} = \frac{\text{Obtained Score}}{\text{Maximum Score}} \times 100\%$$

The average class score is determined, and data categorization (grading scale) is established.

**i. Data Validation and Research Credibility:**

To ensure validity and credibility, member checking is conducted by revisiting the information obtained during observations or interviews with relevant sources in the CAR (Ekström, 2023). Validation through triangulation is also performed by comparing the researcher's analysis with the results from research partners. Triangulation involves perspectives from three angles: the teacher as the researcher, the students, and an observing researcher (Syam et al., 2022).

**j. Reporting the Research Findings:**

The analyzed data is reported in writing, including a comprehensive review of the completed actions and the changes observed in the learning process following the CAR intervention (Milton, 2019).

## RESULT AND DISCUSSION

### Pre-Cycle Data

Based on initial observations conducted before the action, information was obtained that most students had difficulty in understanding Islamic Education material in depth, especially when the material presented was related to the application of Islamic values in everyday life. Students seemed less able to understand the material presented by their teachers.

In addition, other observation results saw that conventional learning approaches that focused more on lectures and memorization caused students to tend to be passive and lack critical reasoning in understanding contextual religious issues. This was reflected in the previous daily test scores, where more than half were below the class average, still below the Minimum Completion Criteria (KKM).

The reality of the Islamic Education learning process in Grade X at SMA PKP JIS Jakarta reveals that each class session primarily focuses on a passive learning approach. Students are typically positioned as passive recipients, where they sit, listen, take notes, and memorize information. The learning process predominantly emphasizes cognitive aspects and does not encourage the exploration of students' full potential, nor does it stimulate their cognitive, affective, and psychomotor abilities in an integrated manner.

This description highlights a need to examine and seek solutions and alternative ideas that could enhance the design of a more meaningful learning process. Such a process should involve all aspects of students' potential, utilize interdisciplinary approaches, and incorporate enjoyable and engaging learning experiences. It should also address social life comprehensively and holistically. One model designed to enhance student activity and the meaningfulness of the learning process is the problem-solving learning model. This model focuses on involving students collectively, fostering intense collaboration, and facilitating communication between students and between students and teachers.

The results of interviews with Islamic Education Teachers revealed that so far the Islamic Education learning process is still dominated by lecture approaches and memorization assignments. *This causes most students to be less actively involved in learning and view Islamic Education lessons as something normative, rigid, and non-contextual*.

Mrs. Ir, another PAI teacher, *“said that she emphasized the importance of learning that encourages students to think critically and be able to solve problems in the social context they experience, such as socializing, using social media, and moral issues in the youth environment. According to her, the Problem Solving learning model is one of the most relevant approaches to answering these challenges”*.

From the students' side, interviews were conducted with several students of class XI IPA 2 RA. stated that Islamic Education lessons so far felt monotonous and less challenging. He felt that learning would be more interesting if given case studies that were close to their lives. He said: *“If I just take notes and memorize, I get bored quickly.” But when I was given a case study about free association and social media, I became more enthusiastic. We started to think about how Muslims should respond to these problems. We can also discuss with friends, so it's more fun and understandable.*”

Another student, YJ, added that the Problem Solving method made him feel more valued because he could express his opinion and see that Islam is very relevant to everyday problems. He said: *“It turns out that studying religion is not just about memorizing verses. But also about how we respond to life. I understand more why Islam forbids something, and how to solve problems in a good way.”*

From the interview results, it can be concluded that the implementation of the Problem Solving learning model is seen as an urgent need by teachers, schools, and students. Teachers need a more effective approach to transform Islamic values into a more lively and applicable form. The school supports the implementation of this model as part of a curriculum reform that favors students and fosters critical thinking skills. Meanwhile, students themselves feel that

learning with the Problem Solving approach is more meaningful, challenging, and relevant to their lives.

The rationale for implementing the Problem Solving learning model in Islamic Education subjects at SMA PKP JIS is very strong, both pedagogically, curricularly, and psychologically. It is hoped that this model will not only be able to improve students' cognitive learning outcomes, but also form strong and contextual Islamic attitudes and characters.

During the pre-cycle phase, the activities of students in Islamic Education lessons, when implemented with the problem-solving learning mod Cycleel, can be described as follows:

**Table I Learning Activities of Islamic Religious Education for Students in Pre-Cycle**

No.	Sample	Cycle I		
		Readiness	Concentration	Motivasi
1	S1	weak	weak	weak
2	S2	Middle	weak	weak
3	S3	weak	weak	weak
4	S4	Middle	Strong	Middle
5	S5	Strong	Strong	weak
6	S6	weak	weak	weak
7	S7	weak	weak	weak
8	S8	weak	weak	weak
9	S9	weak	weak	weak
10	S10	weak	weak	weak
11	S11	Strong	weak	Strong
12	S12	weak	Middle	Middle
13	S13	weak	weak	weak
14	S14	weak	weak	weak
15	S15	weak	weak	weak

Based on the table above, it is evident that out of the 30 students, the readiness for the Islamic Education learning process is as follows: 4 students (13.3%) are classified as strong, five students (16.6%) are classified as moderate, and 20 students (66.6%) are classified as weak. In terms of concentration during the Islamic Education lessons, five students (16.6%) are classified as strong, four students (13.3%) are classified as moderate, and 21 students (70%) are classified as weak. Regarding motivation during the Islamic Education lessons, three students (10%) are classified as strong, six students (20%) are classified as moderate, and 21 students (70%) are classified as weak. These results fall significantly short of the ideal expectations.

The scores for the Islamic Education learning outcomes for students in the pre-cycle phase are detailed in the following table:

**Table 2 Acquisition of Learning Outcome Score Islamic Religious Education for Students in Pre-Cycle**

No.	Sample	Cycle I			Cycle I				
		Answer		Score	No.	Sample	Answer		Score
		True	Wrong				True	Wrong	
1	S1	5	5	50	17	S17	5	5	50
2	S2	5	5	50	18	S18	4	6	40
3	S3	6	4	60	19	S19	5	5	50
4	S4	5	5	50	20	S20	5	5	50

5	S5	5	5	50	21	S21	4	6	40
6	S6	5	5	55	22	S22	5	5	50
7	S7	5	5	50	23	S23	5	5	50
8	S8	4	6	40	24	S24	4	6	40
9	S9	5	5	50	25	S25	5	5	50
10	S10	6	4	60	26	S26	5	5	50
11	S11	7	3	70	27	S27	6	4	60
12	S12	5	5	50	28	S28	5	5	50
13	S13	5	5	50	29	S29	5	5	50
14	S14	5	5	50	30	S30	6	4	60
15	S15	8	2	80	<b>Average Score</b>				<b>52</b>
16	S16	5	5	55					

Based on the table above, the average score for students' Islamic Education learning outcomes is 52. This figure needs to meet the ideal expectations. This reality compels the researcher to explore alternatives for improving Islamic Education learning outcomes by employing various approaches, methods, and teaching models more suitable for their developmental stage. One effective technique that can be implemented to enhance the learning process for students in Islamic Education is the problem-solving learning model.

The problem-solving learning model is particularly relevant as it encourages active engagement and collaboration among students, which can lead to more meaningful learning experiences (Arsya et al., 2023). By focusing on problem-solving, students can apply their knowledge in practical situations, enhancing their understanding and retention of the material. This model also supports the development of critical thinking and problem-solving skills, which are essential for students' overall academic and personal growth (Azizah & Nasrudin, 2022).

Given the current performance levels and the need for improvement, integrating the problem-solving learning model into the Islamic Education curriculum can provide a structured approach to addressing students' learning challenges and achieving better educational outcomes. The implementation of this model aims to create a more dynamic and interactive learning environment that fosters student participation and motivates them to excel in their studies.

### 1. Data from Cycle I

#### a. First Stage: Lesson Planning

The initial stage involves preparing the lesson plan, commonly called the Learning Implementation Plan (RPP). The lesson plan is a detailed scenario for the learning process, outlining everything from the beginning to the end of the instructional period. The plan includes:

- 1) Standards of Competence: The overarching goals that the lesson aims to achieve.
- 2) Basic Competencies: Specific skills or knowledge that students should acquire.
- 3) Indicators: Measures or criteria used to assess whether the basic competencies have been met.
- 4) Learning Objectives: Clear, concise statements of what students are expected to learn.
- 5) Steps of the Learning Process: Detailed lesson delivery procedures, including teaching methods and activities.
- 6) Evaluation: Methods for assessing student understanding and performance.
- 7) Follow-up Actions: This includes analyzing student performance, providing remedial teaching for those who need additional help, and enrichment activities for advanced learners.

#### b. Second Stage: Implementation

Before the learning process begins, the researcher undertakes several preparatory actions:

- 1) Greeting and Classroom Management: The researcher starts by greeting the students and arranging the seating to facilitate effective learning. A prayer is led to set a positive tone for the class.
- 2) Attendance and Initial Assessment: The researcher takes attendance and conducts an initial assessment (apperception) to gauge students' prior knowledge and readiness.
- 3) Delivery of Learning Objectives: The researcher communicates the learning objectives for the session, emphasizes key aspects that students need to focus on, and provides motivational support to engage students.
- 4) Instructional Methods: During the learning process, the researcher employs various teaching methods, such as lectures and question-and-answer sessions, to facilitate understanding and encourage participation.

The researcher observes the intensity of student engagement and participation throughout the lesson. Evaluations are conducted to assess student learning outcomes in Islamic Education. The following observations summarize student activities during the problem-solving learning model applied in the Islamic Education lessons:

**Table 3 Learning Activities of Islamic Religious Education for Students in Cycle I**

No.	Sample	Cycle I			No.	Sample	Cycle I		
		Readiness	Concentration	Motivation			Readiness	Concentration	Motivation
1	S1	Middle	Middle	Strong	16	S16	Middle	Strong	Weak
2	S2	Middle	Weak	Weak	17	S17	Weak	Middle	Middle
3	S3	Weak	Strong	Weak	18	S18	Middle	Strong	Middle
4	S4	Middle	Strong	Middle	19	S19	Strong	Weak	Strong
5	S5	Strong	Strong	Weak	20	S20	Weak	Middle	Middle
6	S6	Weak	Middle	Middle	21	S21	Weak	Weak	Weak
7	S7	Strong	Weak	Middle	22	S22	Middle	Middle	Weak
8	S8	Middle	Strong	Middle	23	S23	Weak	Strong	Weak
9	S9	Middle	Strong	Weak	24	S24	Middle	Weak	Weak
10	S10	Weak	Middle	Middle	25	S25	Strong	Weak	Middle
11	S11	Strong	Weak	Strong	26	S26	Strong	Strong	Weak
12	S12	Weak	Middle	Middle	27	S27	Strong	Middle	Middle
13	S13	Middle	Middle	Weak	28	S28	Middle	Weak	Middle
14	S14	Weak	Weak	Middle	29	S29	Weak	Strong	Strong
15	S15	Weak	Strong	Middle	30	S30	Middle	Middle	Strong

Based on the table above, it is observed that out of the 30 students, their readiness for the Islamic Education learning process shows the following distribution: 7 students (23.3%) are classified as strong, 12 students (40%) as moderate, and 11 students (36.6%) as weak. Regarding concentration during the Islamic Education lessons, 11 students (36.6%) are classified as strong, 10 students (33.3%) as moderate, and nine students (30%) as weak. In terms of motivation, while participating in the Islamic Education lessons, five students (16.6%) are classified as strong, 14 students (46.6%) as moderate, and 11 students (36.6%) as weak. The score data for the Islamic Education learning outcomes can be seen in the following table



**Table 4 Acquisition of Learning Outcome Score Islamic Religious Education for Students in Cycle I**

No	Sample	Cycle I		Score
		Answer True	Answer Wrong	
1	S1	7	3	70
2	S2	5	5	50
3	S3	6	4	60
4	S4	8	2	80
5	S5	7	3	75
6	S6	5	5	55
7	S7	8	2	85
8	S8	4	6	40
9	S9	7	3	70
10	S10	6	4	60
11	S11	7	3	70
12	S12	7	3	75
13	S13	5	5	50
14	S14	5	5	50
15	S15	8	2	80
16	S16	5	5	55

Based on the table above, it is known that the average score for students' Islamic Education learning outcomes is 61.3. This figure is still below the ideal expectation.

**c. Third Stage: Observation**

The researcher conducted observations using an instrument (observation sheet) to monitor students' learning activities during the Islamic Education lessons using the problem-solving learning model. It was done to determine whether the method effectively increased students' engagement and learning outcomes in Islamic Education. The researcher also assessed and evaluated the quality of the learning process and the student's outcomes. Through this evaluation, the researcher could identify which aspects of the problem-solving method needed emphasis and what other efforts could stimulate students to engage more intensively in their learning activities. Therefore, the purpose of the observation was to gather data on the intensity of students' learning activities, which would then be used to refine the approach in the subsequent cycle (Cycle II).

**d. Fourth Stage: Reflection**

After collecting data on students' learning activities in Islamic Education by applying the problem-solving learning model from observations and academic performance tests, the researcher carefully reviewed all the data. This reflection allowed the researcher to consider what adjustments were necessary for the next round of teaching after identifying areas that required attention. The goal was to enhance the quality of the learning process by fully engaging all of the students' potential, ultimately leading to a positive impact on their Islamic Education learning outcomes.

**2. Data from Cycle II**

**a. First Stage: Lesson Planning**

As in the initial implementation of Cycle I, the first stage that needs to be prepared is the lesson plan, commonly referred to as the "*Rencana Pelaksanaan Pembelajaran*" (RPP). The lesson

plan is a scenario for the learning process that must be carried out from the beginning to the end of the session. It includes standard competencies, basic competencies, indicators, learning objectives, steps in the learning process, evaluation, and follow-up activities such as grade analysis, remedial teaching, and enrichment.

#### **b. Second Stage: Action**

Similar to the actions taken in Cycle I, before the learning process begins, the researcher first greets the students, organizes the seating arrangement, leads a prayer to commence the class, takes attendance, and then conducts a brief review (apersepsi) to assess the students' current understanding and mastery of the Islamic Education material. Once the researcher gauges the students' abilities and grasp of the subject matter, the learning process begins. The researcher outlines the learning objectives, emphasizes key aspects that need to be studied, and provides motivation to the students. During the learning process, various commonly used teaching methods are employed.

Additionally, the researcher implements the problem-solving learning model with the following general steps:

1. The teacher explains the learning objectives.
2. The teacher presents a problem that needs to be solved.
3. The teacher explains the correct procedures for problem-solving.
4. Students search for relevant literature to support solving the problem given by the teacher.
5. Students determine several possible solutions to address the problem.
6. Students report on the tasks assigned by the teacher.
7. The teacher concludes the lesson.

Throughout the learning process, the researcher observes the intensity of the students' learning activities and conducts evaluations to assess their learning outcomes in Islamic Education.

#### **c. Third Stage: Observation**

Throughout the learning process, the researcher maintains consistent observation, utilizing an instrument as an observation sheet to track and document the students' learning activities as they engage with the Islamic Education material using the problem-solving learning model. This systematic observation is essential for identifying whether the problem-solving model effectively boosts the students' learning engagement and improves their academic outcomes. In addition to observing, the researcher evaluates the quality of the learning process and the results achieved by the students. The evaluation focuses on whether the learning model meets its intended goals of fostering active participation, enhancing understanding, and promoting higher-order thinking skills among the students.

The data gathered from the observations after the second implementation cycle provides insight into the effectiveness of the learning model and helps identify areas that may require further refinement. The researcher pays close attention to the nuances of the students' interactions, challenges, and overall progress. After applying the problem-solving model in Cycle II, This information is compiled into a table, showcasing the students' activities and learning outcomes in Islamic Education. This table serves as a critical tool for analyzing the impact of the teaching strategy and planning subsequent instructional improvements.

Based on the data in the table, it is observed that out of the 30 students surveyed, 17 students (56.6%) demonstrated strong readiness in the Islamic Religious Education learning process, ten students (33.3%) showed moderate readiness, and three students (10%) exhibited weak readiness. Furthermore, in terms of concentration during the learning process, 13 students (43.3%) were found to have strong concentration, five students (16.6%) showed moderate concentration, and 12 students (40%) displayed weak concentration. In terms of motivation, while participating in Islamic Religious Education learning, eight students (26.6%) were highly motivated, nine students (30%) were moderately motivated, and 13 students (43.3%) showed low motivation. The students' scores in the Islamic Religious Education subject can be seen in the following table.

**Table 5 Acquisition of Learning Outcome Score Islamic Religious Education for Students in Cycle II**

No.	Sample	Cycle II		Score
		Answer		
		True	Wrong	
1	S1	8	2	80
2	S2	9	1	90
3	S3	7	3	75
4	S4	8	2	80
5	S5	7	3	75
6	S6	8	2	80
7	S7	8	2	85
8	S8	8	2	80
9	S9	7	3	70
10	S10	9	1	90
11	S11	7	3	70
12	S12	7	3	75
13	S13	8	2	80
14	S14	8	2	80
15	S15	8	2	80
16	S16	8	2	85

Description: S1 (Sample 1) etc. Based on the table above, it is known that the average score of students' Islamic religious education learning outcomes is 80. This figure is quite ideal

Based on the data above, it is evident that students' learning outcomes in Islamic Religious Education have undergone significant improvement after the teacher implemented the problem-solving learning model. In the pre-cycle stage, the student's average score was 52. After applying the problem-solving learning model in Cycle I, the average score increased to 61. Following further intervention in Cycle II, the average score reached 80. This improvement demonstrates that using the problem-solving learning model can effectively enhance students' learning outcomes in Islamic Religious Education in Grade X at SMA PKP JIS Jakarta. This success indicates that the problem-solving approach can increase students' understanding, concentration, and motivation in learning.

#### **d. Reflection**

Based on the evaluation of students' learning outcomes in Islamic Religious Education and the observations conducted by the researcher, it is evident that there were significant changes after the implementation of the first and second cycles. Both cycles involved the application of the problem-solving learning model. Through the use of this model, as well as improvements in the approach to students, the management of the learning process, and more systematic evaluations, there was a noticeable change in the students' learning outcomes in Islamic Religious Education.

These changes indicate that the problem-solving learning model not only enhances students' learning outcomes but also positively impacts their motivation and engagement in the learning process. However, these changes also emphasize the importance of teachers continuously developing new ways of managing the learning process. After observing the significant changes in students through various interventions conducted by the researcher, it becomes clear that

teachers need to experiment with different methods, techniques, approaches, and learning models that can stimulate students' interest and willingness to learn.

Therefore, it is crucial for teachers to constantly innovate and develop their creativity in teaching to create a learning process that is not only of higher quality but also enjoyable and meaningful for students. Teachers should strive to create a dynamic and adaptive learning environment where students feel motivated and inspired to reach their full potential.

## **DISCUSSION**

### **1. Data Analysis**

#### **a. Pre-Cycle Data Analysis**

The data on students' learning outcomes in Islamic Religious Education for Grade X at SMA PKP JIS Jakarta revealed unsatisfactory results before implementing the problem-solving learning model. From the perspective of the learning process, the pedagogical competence principles had yet to be effectively applied. It was evident from the students' weak readiness to learn and low motivation, particularly in Islamic Religious Education classes. These issues became a key motivation for the researcher to redesign the learning process by implementing the problem-solving learning model, expecting that this model would improve students' learning outcomes in Islamic Religious Education and lead to a more effective learning process. Based on the student scores, the average learning outcome in Islamic Religious Education during the pre-cycle stage was 52. This figure is far from the ideal expectation, highlighting the need for intervention by applying a more innovative and effective learning model.

#### **b. Cycle I Data Analysis**

Several key findings emerged based on the researcher's observations during the learning activities in Islamic Religious Education using the problem-solving learning model in Cycle I. Among the 30 students observed, it was found that in terms of readiness for the learning process, only seven students (23.3%) were considered to have strong readiness. In comparison, 12 students (40%) had moderate readiness, and 11 (36.6%) exhibited weak readiness. Regarding concentration during the learning process, 11 students (36.6%) were found to have strong concentration, 10 students (33.3%) showed moderate concentration, and nine students (30%) displayed weak concentration. In terms of motivation to participate in Islamic Religious Education, only five students (16.6%) were deemed highly motivated, 14 students (46.6%) had moderate motivation, and 11 students (36.6%) exhibited low motivation.

Moreover, based on the student's scores, the average learning outcome in Islamic Religious Education for Cycle I was 61.3. Although this score represents an improvement compared to the pre-cycle stage, it still needs to catch up to the ideal target. These findings suggest that while implementing the problem-solving learning model has begun to show its effects, further improvements are necessary in the learning process to enhance students' readiness, concentration, and overall motivation.

#### **c. Cycle II Data Analysis**

Through the second intervention (Cycle II), the learning activities in Islamic Religious Education using the problem-solving learning model showed significant improvement. Based on the data collected, out of 30 students, there was a noticeable enhancement in their readiness for the learning process. A total of 17 students (56.6%) were found to have strong readiness, 10 students (33.3%) displayed moderate readiness, and only three students (10%) exhibited weak readiness.

In terms of concentration during the learning process, 13 students (43.3%) demonstrated strong concentration, five students (16.6%) had moderate concentration, and 12 students (40%) showed weak concentration. Regarding motivation, eight students (26.6%) were considered highly motivated, nine students (30%) had moderate motivation, and 13 students (43.3%) still exhibited low motivation.

Furthermore, based on the student scores, the average learning outcome in Islamic Religious Education for Cycle II was 80. This score indicates that the student's learning outcomes have reached an ideal level. This improvement demonstrates that the problem-solving learning model is effective in enhancing students' academic performance and improving their readiness, concentration, and motivation during the learning process.

#### d. Data Interpretation

Based on the data analysis above, it is evident that student learning activities in Islamic Religious Education using the problem-solving learning model (Cycle I) indicated that out of 30 students, only seven students (23.3%) were highly prepared, 12 students (40%) had moderate readiness, and 11 students (36.6%) showed weak readiness. In terms of concentration during the learning process, 11 students (36.6%) had strong concentration, 10 students (33.3%) exhibited moderate concentration, and nine students (30%) displayed weak concentration. Regarding motivation, only five students (16.6%) were highly motivated, 14 students (46.6%) had moderate motivation, and 11 students (36.6%) were weakly motivated. The average student's learning outcomes score in Cycle I was 61.3, which is still below the ideal category.

In contrast, during Cycle II, a significant improvement was observed with the continued application of the problem-solving learning model. Out of 30 students, 17 students (56.6%) showed strong readiness, 10 students (33.3%) exhibited moderate readiness, and only three students (10%) displayed weak readiness. In terms of concentration, 13 students (43.3%) demonstrated strong concentration, five students (16.6%) had moderate concentration, and 12 students (40%) still exhibited weak concentration. There was also an improvement in motivation, with eight students (26.6%) being highly motivated, nine students (30%) having moderate motivation, and 13 students (43.3%) still displaying low motivation. The average score of students' learning outcomes in Cycle II was 80, which falls into the ideal score category.

These findings reveal that implementing the problem-solving learning model over two cycles has significantly enhanced the intensity of Islamic Religious Education learning activities and student academic achievement. Additionally, strong motivation, encouragement, stimulus, and teacher praise greatly influence students' enthusiasm for learning. Teachers' efforts to create an enjoyable learning process also proved effective in fostering students' interest and enthusiasm for learning. Therefore, teachers must possess high professional qualifications, supported by genuine interest and talent and a sincere dedication and commitment to their profession.

Teachers should consistently implement the problem-solving model in Islamic Education and other subjects (Priambodo & Lie, 2021). This approach has been proven effective in enhancing student learning outcomes and engagement. Educators should explore ways to integrate problem-solving strategies into their teaching practices to create a more meaningful, student-centered learning environment (Singh et al., 2018).

Teachers should receive ongoing professional development and training to strengthen their understanding and application of problem-solving models in education. Workshops, seminars, and collaborative learning sessions can help teachers develop innovative teaching techniques that cater to diverse student needs and learning styles (Wren et al., 2021).

Teachers should actively seek and incorporate student feedback to continuously improve the effectiveness of the problem-solving model (Kirisci et al., 2020). Understanding students' perspectives on the learning process can guide educators in refining their teaching methods and addressing any challenges students may face (Xu et al., 2023). Schools should create a supportive and stimulating learning environment that encourages students to participate in problem-solving activities actively. This includes providing adequate resources, fostering a culture of inquiry, and encouraging collaborative learning among students (Y. Liu, 2023). Teachers should pay particular attention to strategies that enhance student motivation and engagement, which are crucial for successful learning outcomes. Incorporating varied instructional methods, providing positive reinforcement, and addressing individual student needs can help maintain high levels of student motivation (Yu et al., 2020).

Future research could explore the problem-solving model's comparative effectiveness against other instructional models, such as project-based learning, inquiry-based learning, or cooperative learning. These studies could provide insights into which models are most effective for specific subjects or student populations. Longitudinal studies could examine the problem-solving model's long-term impact on student learning outcomes. By tracking student performance over multiple academic years, researchers can assess whether the model's benefits are sustained over time and how it influences students' overall academic growth.

Further research could explore applying the problem-solving model across different age groups and educational levels, from elementary to higher education. It would provide a broader understanding of the model's versatility and effectiveness in various educational contexts. As technology becomes increasingly integrated into education, future studies could investigate how digital tools and platforms can enhance the problem-solving model. Research could focus on using educational software, online collaboration tools, and interactive simulations to support problem-solving activities in the classroom. Given the diverse cultural and educational contexts in which teaching occurs, further research could explore how the problem-solving model can be adapted to different cultural settings. Studies could investigate how cultural factors influence the effectiveness of this model and identify best practices for adapting it to various educational environments.

This research is relevant in the context of Islamic Education. It contributes to the broader discussion on how innovative teaching strategies can be leveraged to improve student outcomes across various subjects (Naz & Murad, 2017). By focusing on problem-solving as a core teaching approach, this study aims to provide valuable insights that inform future educational practices, particularly in subjects traditionally perceived as challenging or less engaging by students (Salas-Pilco et al., 2022). The findings of this research are expected to offer practical recommendations for educators and policymakers aiming to enhance the quality of education and student engagement in Islamic Education and beyond (Jin et al., 2024).

These findings were obtained based on the results of classroom observations, interviews with teachers and students, and analysis of student learning outcome data during two learning cycles. The Problem Solving model significantly increased active participation and student involvement in the learning process (Şenocak & Demirkıran, 2023). Before the action was taken, Islamic Education learning in the classroom tended to be one-way, where the teacher was the center of information and students were more passive. However, after the Problem Solving model was implemented, there was a quite striking change in the classroom atmosphere (Kaynak et al., 2023). Students became more active in asking questions, discussing, and expressing their opinions on various contextual problems given. Interactions between students and between students and teachers became more dynamic and meaningful (Li et al., 2023).

In addition to the cognitive aspect, another equally important finding is the increase in students' affective and social aspects, such as empathy, tolerance for other people's opinions, responsibility for group assignments, and the ability to work together. When students work in groups to solve religious problems, they are naturally trained to listen, consider, and agree on solutions together (Tsai et al., 2023). This strengthens the values of Islamic character which have been the main objectives of Islamic Religious Education learning, but are often difficult to realize in conventional approaches (Javaid & Usmani, 2024).

This study shows that the Problem Solving approach is not only feasible to be applied in exact or social studies subjects, but is also very relevant and has a positive impact when applied in the context of Islamic Education (Saada, 2023). This model is able to change the learning paradigm from merely transferring knowledge to a process of developing the intellect, conscience, and character of students as a whole (Peschl, 2023).

This study enriches the treasury of Islamic Religious Education learning strategies by offering a Problem Solving approach that not only develops cognitive aspects, but also affective and psychomotor in an integrated manner. In this context, the model has been successfully adapted specifically for Islamic materials that are often considered difficult to be used as active discussion materials. This study shows that even normative materials can be packaged in an interesting and meaningful way through a problem-solving approach.

Although it provides significant contributions, this study also has a number of limitations, including the measurement of learning outcomes which still focuses on improving cognitive values and observing class activities, while students' affective and spiritual aspects have not been fully measured quantitatively. This is due to time constraints, measuring instruments, and the action research approach which focuses more on improving the process directly.

The success of this model also depends heavily on the competence and readiness of teachers in designing relevant problem scenarios and facilitating class discussions effectively. Not all teachers have a background in training or experience in implementing active learning. It is recommended that Islamic Education teachers start making the Problem Solving learning model the main alternative in the learning process, especially when dealing with materials related to social life and moral values. Research can be developed in other subjects and levels of education with the aim of improving the quality of learning.

## CONCLUSION

Implementing the problem-solving model in Islamic Education has proven effective in enhancing student learning outcomes. This approach made the learning process more meaningful, efficient, and effective. From a psychological perspective, the problem-solving model successfully stimulated and engaged the students' full potential. Applying the problem-solving model significantly improved the Islamic Education learning outcomes for Grade X students at SMA PKP JIS Jakarta. Initially, the average score in the pre-cycle was 52, which was far from the ideal target. After the first cycle, there was an improvement to 61.3, though still below the ideal level. Following the second cycle, the average score increased to 80, which met the ideal category. The intensity of student engagement during the learning process using the problem-solving model showed significant improvement between the first and second cycles. In the first cycle, out of 30 students, 7 (23.3%) were classified as highly prepared, 12 (40%) as moderately prepared, and 11 (36.6%) as poorly prepared. In terms of concentration, 11 students (36.6%) were highly focused, 10 (33.3%) were moderately focused, and 9 (30%) were poorly focused. Regarding motivation, five students (16.6%) were highly motivated, 14 (46.6%) were moderately motivated, and 11 (36.6%) were poorly motivated. After the second cycle, the readiness for learning improved, with 17 students (56.6%) classified as highly prepared, 10 (33.3%) as moderately prepared, and 3 (10%) as poorly prepared. In terms of concentration, 13 students (43.3%) were highly focused, 5 (16.6%) were moderately focused, and 12 (40%) were poorly focused. For motivation, eight students (26.6%) were highly motivated, 9 (30%) were moderately motivated, and 13 (43.3%) were poorly motivated. These findings highlight the significant impact of the problem-solving model on improving the learning outcomes and engagement levels of students in Islamic Education. The approach fostered academic achievement and positively influenced the students' readiness, concentration, and motivation during the learning process.

## ACKNOWLEDGEMENT

We as researchers would like to express our gratitude to the PKP principal and the teachers who have facilitated the author to complete this paper.

## REFERENCES

- Alberida, H., Sari, M., Razak, A., Syamsuriza, S., & Rahmi, Y. L. (2022). Problem Solving: A Learning Model to Foster Argumentation and Critical Thinking Ability for Students with Different Academic Abilities. *Jurnal Penelitian Pendidikan IPA*, 8(3). <https://doi.org/10.29303/jppipa.v8i3.1208>
- Arsya, G. T., Wahidin, W., & Ali, M. (2023). The Effect of the Double Loop Problem Solving Model on Problem Solving Ability and Critical Thinking Skills. *Bioeduca : Journal of Biology Education*, 5(1). <https://doi.org/10.21580/bioeduca.v5i1.13428>
- Asamoah, K. O., Darko, A. P., Antwi, C. O., Kodjiku, S. L., Aggrey, E. S. E. B., Wang, Q., & Zhu, J. (2023). A Blockchain-Based Crowdsourcing Loan Platform for Funding Higher Education in Developing Countries. *IEEE Access*, 11. <https://doi.org/10.1109/ACCESS.2023.3252917>
- Assen, J. H. E., & Otting, H. (2022). Teachers' collective learning: To what extent do facilitators stimulate the use of social context, theory, and practice as sources for learning? *Teaching and Teacher Education*, 114. <https://doi.org/10.1016/j.tate.2022.103702>
- Atinafu, B. (2021). Higher education students' social media literacy in Ethiopia: A case of Bahir

- Dar University. *Journal of Media Literacy Education*, 13(3). <https://doi.org/10.23860/JMLE-2021-13-3-7>
- Azizah, U., & Nasrudin, H. (2022). Problem Solving Thinking Skills: Effectiveness of Problem-Solving Model in Teaching Chemistry College Students. *Jurnal Penelitian Pendidikan IPA*, 8(3). <https://doi.org/10.29303/jppipa.v8i3.1700>
- Boskeljon-Horst, L., Boer, R. J. D., Steinmetz, V., & Dekker, S. W. A. (2023). Aircrews, Rules and the Bogeyman: Mapping the Benefits and Fears of Noncompliance. *Safety*, 9(1). <https://doi.org/10.3390/safety9010015>
- Bouilheres, F., Le, L. T. V. H., McDonald, S., Nkhoma, C., & Jandug-Montera, L. (2020). Defining student learning experience through blended learning. *Education and Information Technologies*, 25(4). <https://doi.org/10.1007/s10639-020-10100-y>
- Bunga, R. J., & Warni, S. (2024). X Users' perspectives toward the use of alternate universe as an online platform to improve EFL writing skill. *CAHAYA PENDIDIKAN*, 9(2). <https://doi.org/10.33373/chypend.v9i2.5636>
- Chong, M. S. F., Shahrill, M., & Li, H. C. (2019). The integration of a problem-solving framework for Brunei high school mathematics curriculum in increasing student's affective competency. *Journal on Mathematics Education*, 10(2). <https://doi.org/10.22342/jme.10.2.7265.215-228>
- Comesaña-Comesaña, P., Amorós-Pons, A., & Alexeeva-Alexeev, I. (2022). Technocreativity, Social Networks and Entrepreneurship: Diagnostics of Skills in University Students. *International Journal of Emerging Technologies in Learning*, 17(5). <https://doi.org/10.3991/ijet.v17i05.28183>
- Ekström, B. (2023). Thousands of examining eyes: credibility, authority and validity in biodiversity citizen science data production. *Aslib Journal of Information Management*, 75(1). <https://doi.org/10.1108/AJIM-10-2021-0292>
- Fernández, J. M., Zúñiga, M. E., Rosas, M. V., & Guerrero, R. A. (2018). Experiences in Learning Problem-Solving through Computational Thinking. *Journal of Computer Science and Technology*, 18(02). <https://doi.org/10.24215/16666038.18.e15>
- Golder, P. N., Dekimpe, M. G., An, J. T., van Heerde, H. J., Kim, D. S. U., & Alba, J. W. (2023). Learning from Data: An Empirics-First Approach to Relevant Knowledge Generation. *Journal of Marketing*, 87(3). <https://doi.org/10.1177/00222429221129200>
- Harahap, Y. S., Sya'bana, D. F., Nurhaliza, S., & Nurmawati, N. (2023). TAXONOMY OF LEARNING OBJECTIVES. *Ta Dib Jurnal Pendidikan Islam*, 12(1). <https://doi.org/10.29313/tjpi.v12i1.11927>
- Hirscher, A. L., Iran, S., Schrader, U., & Müller, M. (2024). Real-world experiments as a teaching and learning approach for sustainable consumption education. *International Journal of Sustainability in Higher Education*, 25(6). <https://doi.org/10.1108/IJSHE-01-2023-0011>
- Holbah, W. (2022). Investigating the Effectiveness of Professional Development Presentations in Language Institute: Needs More or Enough. *World Journal of English Language*, 12(8). <https://doi.org/10.5430/wjel.v12n8p355>
- Hourigan, M., & Leavy, A. M. (2023). Elementary teachers' experience of engaging with Teaching Through Problem Solving using Lesson Study. *Mathematics Education Research Journal*, 35(4). <https://doi.org/10.1007/s13394-022-00418-w>
- Hu, N., Li, S., Li, L., & Xu, H. (2022). The Educational Function of English Children's Movies From the Perspective of Multiculturalism Under Deep Learning and Artificial Intelligence. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.759094>
- Istami Suharti, D. (2023). Analysis Study of Application of Problem Solving and Creative Problem-Solving Learning Models, Research Literacy-Based Learning and Connectivism-Based Learning. *International Journal of Research Publications*, 124(1). <https://doi.org/10.47119/ijrp1001241520234967>
- Javid, Q., & Usmani, A. (2024). Effectiveness of problem-based learning strategies compared to conventional anatomy teaching approaches. *Journal of the Pakistan Medical Association*, 74(2). <https://doi.org/10.47391/JPMA.8448>
- Jaybhay, S. A., Taware, S. P., Varghese, P., & Nikam, V. R. (2018). Soybean cultivation by



- farmers of Maharashtra: Identification and analysis of the problems. *Legume Research*, 41(3). <https://doi.org/10.18805/lr.v0i0.7842>
- Jin, X., Jiang, Q., Xiong, W., Feng, Y., & Zhao, W. (2024). Effects of student engagement in peer feedback on writing performance in higher education. *Interactive Learning Environments*, 32(1). <https://doi.org/10.1080/10494820.2022.2081209>
- Jung, H., Park, S. W., Kim, H. S., & Park, J. (2022). The effects of the regulated learning-supported flipped classroom on student performance. *Journal of Computing in Higher Education*, 34(1). <https://doi.org/10.1007/s12528-021-09284-0>
- Kang, J., & Keinonen, T. (2018). The Effect of Student-Centered Approaches on Students' Interest and Achievement in Science: Relevant Topic-Based, Open and Guided Inquiry-Based, and Discussion-Based Approaches. *Research in Science Education*, 48(4). <https://doi.org/10.1007/s11165-016-9590-2>
- Kartikasari, I. A., Usodo, B., & Riyadi. (2022). The Effectiveness Open-Ended learning and Creative Problem Solving Models to Teach Creative Thinking Skills. *Pegem Egitim ve Ogretim Dergisi*, 12(4). <https://doi.org/10.47750/pegegog.12.04.04>
- Kaynak, S., Ergün, S., & Karadaş, A. (2023). The effect of crossword puzzle activity used in distance education on nursing students' problem-solving and clinical decision-making skills: A comparative study. *Nurse Education in Practice*, 69. <https://doi.org/10.1016/j.nepr.2023.103618>
- Kirisci, N., Sak, U., & Karabacak, F. (2020). The effectiveness of the selective problem solving model on students' mathematical creativity: A Solomon four-group research. *Thinking Skills and Creativity*, 38. <https://doi.org/10.1016/j.tsc.2020.100719>
- Kousloglou, M., Petridou, E., Molohidis, A., & Hatzikraniotis, E. (2023). Assessing Students' Awareness of 4Cs Skills after Mobile-Technology-Supported Inquiry-Based Learning. *Sustainability (Switzerland)*, 15(8). <https://doi.org/10.3390/su15086725>
- Lee-Robbins, E., & Adar, E. (2023). Affective Learning Objectives for Communicative Visualizations. *IEEE Transactions on Visualization and Computer Graphics*, 29(1). <https://doi.org/10.1109/TVCG.2022.3209500>
- Li, S., Pöysä-Tarhonen, J., & Häkkinen, P. (2023). Students' collaboration dispositions across diverse skills of collaborative problem solving in a computer-based assessment environment. *Computers in Human Behavior Reports*, 11. <https://doi.org/10.1016/j.chbr.2023.100312>
- Lindqvist, H., & Forsberg, C. (2023). Constructivist grounded theory and educational research: constructing theories about teachers' work when analysing relationships between codes. *International Journal of Research and Method in Education*, 46(2). <https://doi.org/10.1080/1743727X.2022.2095998>
- Liu, J., Huang, J., Li, Z., Zhao, Z., Zeren, Z., Shen, X., & Wang, Q. (2023). Recent Advances and Challenges in Schumann Resonance Observations and Research. In *Remote Sensing* (Vol. 15, Issue 14). <https://doi.org/10.3390/rs15143557>
- Liu, Y. (2023). Research on the Influence Mechanism of Campus Atmosphere on school bullying Phenomenon of Teenagers. *Journal of Education, Humanities and Social Sciences*, 7. <https://doi.org/10.54097/ehss.v7i.4757>
- Lo, K. W. K., Ngai, G., Chan, S. C. F., & Kwan, K. P. (2022). How Students' Motivation and Learning Experience Affect Their Service-Learning Outcomes: A Structural Equation Modeling Analysis. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.825902>
- Luttenberg, J., Meijer, P., & Oolbakkink-Marchand, H. (2017). Understanding the complexity of teacher reflection in action research. *Educational Action Research*, 25(1). <https://doi.org/10.1080/09650792.2015.1136230>
- Milton, C. L. (2019). Ethics and the Reporting of Research Findings. *Nursing Science Quarterly*, 32(1). <https://doi.org/10.1177/0894318418807934>
- Mulyani, S., Wahyudin, D., Caturiasari, J., Yogiarni, T., & Fajrussalam, H. (2023). The influence model contextual teaching and learning component community on social skills of elementary school students. *Bulletin of Science Education*, 3(3), 260-268. <https://doi.org/10.51278/bse.v3i3.856>

- Moy, B., Renshaw, I., Davids, K., & Brymer, E. (2019). Preservice teachers implementing a nonlinear physical education pedagogy. *Physical Education and Sport Pedagogy*, 24(6). <https://doi.org/10.1080/17408989.2019.1628934>
- Naz, F., & Murad, H. S. (2017). Innovative teaching has a positive impact on the performance of diverse students. *SAGE Open*, 7(4). <https://doi.org/10.1177/2158244017734022>
- Nguyen, P. K. T., Nam, M. J., & Park, C. (2015). A review on time-lapse seismic data processing and interpretation. In *Geosciences Journal* (Vol. 19, Issue 2). <https://doi.org/10.1007/s12303-014-0054-2>
- Peach, D., & Taylor, K. (2021). Net Environmental Benefit Analysis Embedded Action Plan Development. *International Oil Spill Conference Proceedings*, 2021(1). <https://doi.org/10.7901/2169-3358-2021.1.687529>
- Peschl, M. F. (2023). Learning from the future as a novel paradigm for integrating organizational learning and innovation. *Learning Organization*, 30(1). <https://doi.org/10.1108/TLO-01-2021-0018>
- Piva, M., & Chang, S. W. C. (2018). An integrated framework for the role of oxytocin in multistage social decision-making. In *American Journal of Primatology* (Vol. 80, Issue 10). <https://doi.org/10.1002/ajp.22735>
- Prabowo, I., & Jatmiko, A. (2025). The Influence of the Problem Based Learning Model on Critical Thinking Ability and Learning Motivation in Islamic Religious Education of Class X. *Bulletin of Pedagogical Research*, 5(1), 1-21. <https://doi.org/10.51278/bpr.v5i1.1746pro>
- Prijambodo, C. K., & Lie, A. (2021). Senior High School Students' Readiness and Motivation to Learn English Using Synchronous Video Conferences. *Journal of Information Technology Education: Research*, 20. <https://doi.org/10.28945/4880>
- Priska, M., Peni, N., & Wao, Y. P. (2021). Development of Acid-Base Devices Integrating ARCS Motivation Strategy in Problem-Solving Learning Model Scientific Attitude and Critical Thinking Skills of Students. *Jurnal Penelitian Pendidikan IPA*, 7(SpecialIssue). <https://doi.org/10.29303/jppipa.v7ispecialissue.1126>
- Rahmadi, J., Wahyu, Y., & Oktari, V. (2024). Implementation of creative problem-solving model with RME approach on mathematics problem-solving ability. *Jurnal Elemen*, 10(1). <https://doi.org/10.29408/jel.v10i1.19788>
- Rahmawati, A., Juandi, D., & Yulianti, K. (2023). The Effects of Creative Problem Solving Learning Model on Students' Mathematical Problem Solving Ability: Meta Analysis. *AL-ISHLAH: Jurnal Pendidikan*, 15(2). <https://doi.org/10.35445/alishlah.v15i2.2685>
- Saada, N. (2023). Educating for global citizenship in religious education: Islamic perspective. *International Journal of Educational Development*, 103. <https://doi.org/10.1016/j.ijedudev.2023.102894>
- Sáenz-Rodríguez, R. R., Ramirez-Asis, E. E., Dextre-Martinez, W. R., & Guerra-Muñoz, M. E. (2021). Cooperative learning enhances critical thinking in Peruvian economics university students. *Economic Annals-XXI*, 193(9-10). <https://doi.org/10.21003/ea.V193-18>
- Salas-Pilco, S. Z., Yang, Y., & Zhang, Z. (2022). Student engagement in online learning in Latin American higher education during the COVID-19 pandemic: A systematic review. In *British Journal of Educational Technology* (Vol. 53, Issue 3). <https://doi.org/10.1111/bjet.13190>
- Salomone, M., & Kling, T. (2017). Required peer-cooperative learning improves retention of STEM majors. *International Journal of STEM Education*, 4(1). <https://doi.org/10.1186/s40594-017-0082-3>
- Şenocak, S. Ü., & Demirkıran, F. (2023). Effects of problem-solving skills development training on resilience, perceived stress, and self-efficacy in nursing students: A randomised controlled trial. *Nurse Education in Practice*, 72. <https://doi.org/10.1016/j.nepr.2023.103795>
- Singh, S., Lotz, N., & Sanders, E. (2018). Envisioning Futures of Design Education: An Exploratory Workshop with Design Educators. *Dialectic*, 2(1). <https://doi.org/10.3998/dialectic.14932326.0002.103>
- Siregar, T. P. (2024). The effect of project-based learning method on understanding geometry concepts in secondary school students. *Attractive: Innovative Education Journal*, 6(3), 302-

310. <https://doi.org/10.51278/aj.v6i3.1545>
- Štubňa, P. (2020). Social and Educational Functions of [Literary] Narratives. *Poznanskie Studia Slawistyczne*, 19. <https://doi.org/10.14746/pss.2020.19.18>
- Suharyat, Y., Winiarsi, L., Santosa, T. A., Rahman, A., & Marzuki, K. (2023). Meta-analysis Study: Effect of Problem Solving Learning Model on Problem Solving Ability in Students' Science Learning SMP-SMA. *Jurnal Penelitian Pendidikan IPA*, 9(9). <https://doi.org/10.29303/jppipa.v9i9.2791>
- Suhirman, Nurlaili, Nelson, Syarifin, A., & Wiwinda. (2020). Differences of social sciences learning results using creative problem solving learning model using problem based learning learning model(Survey of public elementary school students in Bengkulu city). *International Journal of Pharmaceutical Research*, 12(4). <https://doi.org/10.31838/ijpr/2020.12.04.656>
- Susilowati, I., Mukmin, H., Rosidi, R., & Nopryana, R. D. (2023). Strategy of islamic religious instructors in religious development of the da'wah village community at punggur district. *Bulletin of Science Education*, 3(3), 370-383. <https://doi.org/10.51278/bse.v3i3.893>
- Syam, A. R., Wiyono, B. B., Imron, A., Burhanuddin, & Ikhwan, A. (2022). Leadership Behaviour of a Boarding Schools in Indonesia. *Pegem Egitim ve Ogretim Dergisi*, 13(1). <https://doi.org/10.47750/pegegog.13.01.12>
- Toheri, Winarso, W., & Haqq, A. A. (2020). Where exactly for enhance critical and creative thinking: The use of problem posing or contextual learning. *European Journal of Educational Research*, 9(2). <https://doi.org/10.12973/eu-jer.9.2.877>
- Tokuhama-Espinosa, T., Simmers, K., Batchelor, D., Nelson, A. D., & Borja, C. (2023). A Theory of Mental Frameworks: Contribution to the special issue in *Frontiers Psychology* on enhanced learning and teaching via neuroscience. *Frontiers in Psychology*, 14. <https://doi.org/10.3389/fpsyg.2023.1220664>
- Tsai, C. A., Song, M. Y. W., Lo, Y. F., & Lo, C. C. (2023). Design thinking with constructivist learning increases the learning motivation and wicked problem-solving capability – An empirical research in Taiwan. *Thinking Skills and Creativity*, 50. <https://doi.org/10.1016/j.tsc.2023.101385>
- Vasconcellos, L. H. R., Sampaio, M., & Fonseca, H. (2022). Pull Production Implementation: An Action Research Study. *Revista de Administracao Contemporanea*, 26(6). <https://doi.org/10.1590/1982-7849rac2022210151.en>
- Wren, Y., Pagnamenta, E., Peters, T. J., Emond, A., Northstone, K., Miller, L. L., & Roulstone, S. (2021). Educational outcomes associated with persistent speech disorder. *International Journal of Language and Communication Disorders*, 56(2). <https://doi.org/10.1111/1460-6984.12599>
- Xu, E., Wang, W., & Wang, Q. (2023). The effectiveness of collaborative problem solving in promoting students' critical thinking: A meta-analysis based on empirical literature. In *Humanities and Social Sciences Communications* (Vol. 10, Issue 1). <https://doi.org/10.1057/s41599-023-01508-1>
- Yasdin, Y., Parenrengi, S., Hasriani, H., & Mahande, R. D. (2023). Policies and politics development of vocational education in Indonesia: a historical perspective. *Asian Education and Development Studies*, 12(4-5). <https://doi.org/10.1108/AEDS-06-2023-0059>
- Yu, S., Jiang, L., & Zhou, N. (2020). Investigating what feedback practices contribute to students' writing motivation and engagement in Chinese EFL context: A large scale study. *Assessing Writing*, 44. <https://doi.org/10.1016/j.asw.2020.100451>
- Zadorozhna, L. V. (2022). EDUCATIONAL FUNCTIONS OF HISTORICAL DOCUMENTS. *Educational Dimension*, 7. <https://doi.org/10.31812/educdim.5650>
- Zhu, M., Wang, J., Yang, X., Zhang, Y., Zhang, L., Ren, H., Wu, B., & Ye, L. (2022). A review of the application of machine learning in water quality evaluation. In *Eco-Environment and Health* (Vol. 1, Issue 2). <https://doi.org/10.1016/j.eehl.2022.06.001>