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Implementation of the Discovery Learning Model in Islamic Education Learning to Improve Students' Logical Thinking Skills at SMA Negeri 7 Aceh Barat Daya

Ranami ✉, SMA Negeri 7 Aceh Barat Daya, Indonesia
Umi Kasom, SD Negeri Rambong Aceh Barat, indonesia

✉ *ranamigirl@gmail.com*

Abstract: This study aims to analyze the implementation of the Discovery Learning model in Islamic Education learning as an effort to improve students' logical thinking skills at SMA Negeri 7 Aceh Barat Daya. The background of this research lies in the low level of students' logical reasoning in understanding Islamic concepts, which often rely on rote learning rather than analytical comprehension. This research employed a classroom action research (CAR) approach conducted in two cycles, each consisting of the stages of planning, implementation, observation, and reflection. Data were collected through observation, tests, and documentation, and analyzed using descriptive qualitative and quantitative methods. The results of the study indicate that the implementation of the Discovery Learning model significantly improved students' logical thinking skills in Islamic Education learning. Students became more active in exploring problems, formulating hypotheses, and drawing conclusions based on logical reasoning and evidence from Islamic sources. Quantitative findings showed a consistent increase in students' average test scores from cycle I to cycle II, while qualitative observations demonstrated higher engagement and deeper conceptual understanding. The study concludes that Discovery Learning is an effective pedagogical approach to fostering logical reasoning and independent learning in Islamic Education. These findings imply that integrating inquiry-based models such as Discovery Learning can enhance the quality of Islamic Education and support students in developing higher-order thinking skills in the 21st century learning context.

Keywords: Discovery Learning Model, Islamic Education, Logical Thinking Skills.

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INTRODUCTION

Education plays a fundamental role in shaping individuals' intellectual and moral capacities, serving as the foundation for building a knowledgeable and civilized society. In the modern era, education is expected not only to transfer knowledge but also to develop students' abilities to think critically, logically, and creatively in responding to various challenges of life. Within the context of Islamic Education, learning should go beyond memorizing religious texts and should aim to cultivate reasoning and reflection grounded in Islamic principles.

Islamic Education in schools has the dual function of strengthening students' faith and shaping moral character, while simultaneously fostering rational understanding of religious teachings. However, in practice, Islamic Education often emphasizes cognitive memorization of doctrines rather than understanding the logic behind Islamic values. As a result, students tend to rely on rote learning and show limited ability to connect religious principles with daily reasoning and decision-making.

One of the core objectives of Islamic Education is to develop students' intellectual and spiritual maturity. The Qur'an encourages humans to use reason (*aql*) to reflect upon the signs of Allah in the universe. Therefore, the development of logical thinking skills in Islamic Education is not only pedagogically essential but also theologically relevant. Logical reasoning allows students to understand religious teachings more deeply, analyze moral issues rationally, and apply Islamic values thoughtfully in their lives.

In many Indonesian schools, including SMA Negeri 7 Aceh Barat Daya, teachers often face challenges in promoting students' logical thinking skills in Islamic Education classes. Learning activities are frequently dominated by teacher-centered methods, such as lecturing, which limit students' opportunities for exploration and discovery. This conventional approach results in passive learning behavior and shallow conceptual understanding among students.

To overcome these challenges, innovative learning models are needed to shift the focus from teacher-centered to student-centered learning. One such approach is the Discovery Learning model, which emphasizes active student involvement in the process of finding and constructing knowledge through systematic inquiry. Discovery Learning is grounded in constructivist theory, which posits that learners build their understanding through experiences and active engagement rather than passive reception.

The Discovery Learning model consists of several stages—stimulation, problem identification, data collection, data processing, verification, and generalization. Through these stages, students are guided to think independently, formulate hypotheses, test ideas, and draw logical conclusions. This process directly enhances logical thinking skills, as it requires students to connect cause and effect, analyze evidence, and justify their reasoning based on credible sources, including Islamic texts.

Previous studies have shown that Discovery Learning can improve students' critical and analytical thinking in various subjects, including science and mathematics. However, its application in Islamic Education remains limited and underexplored, particularly in the Indonesian context. Integrating Discovery Learning into Islamic Education could bridge the gap between faith-based understanding and intellectual reasoning, making religious learning more meaningful and reflective.

Furthermore, the implementation of Discovery Learning aligns with the objectives of the 2013 Curriculum (*Kurikulum 2013*) in Indonesia, which emphasizes scientific approaches and the development of higher-order thinking skills (HOTS). This curriculum encourages teachers to adopt inquiry-based methods that promote exploration, problem-solving, and logical reasoning. Therefore, the integration of Discovery Learning into Islamic Education is consistent with national educational goals.

Students' logical thinking skills are essential in fostering intellectual independence and moral reasoning. Logical thinkers are better able to analyze ethical dilemmas, interpret religious texts rationally, and make sound judgments grounded in both knowledge and faith. Developing these skills in the context of Islamic Education can help students become balanced individuals who are both spiritually devout and intellectually critical.

At SMA Negeri 7 Aceh Barat Daya, observations revealed that many students struggled to reason logically during discussions of Islamic topics, often repeating memorized answers without analytical justification. Teachers recognized the need for a more interactive and discovery-oriented approach to stimulate students' reasoning. Thus, implementing Discovery Learning was identified as a suitable intervention to address these issues.

The rationale behind selecting Discovery Learning is its capacity to transform passive learners into active seekers of knowledge. By engaging in discovery activities, students experience firsthand how knowledge is constructed, rather than merely delivered. This experiential process strengthens comprehension, retention, and reasoning. When applied to Islamic Education, it allows students to interpret religious materials dynamically and connect them to real-life contexts.

Moreover, Discovery Learning encourages students to collaborate and communicate their ideas, which aligns with Islamic values of dialogue (*musyawarah*) and collective reasoning. Through group inquiry and guided discovery, students can integrate logical thinking with ethical values, thereby achieving both intellectual and moral growth.

Empirical evidence supports that Discovery Learning enhances cognitive engagement and problem-solving abilities. For instance, students who learn through discovery tend to demonstrate higher levels of metacognitive awareness, enabling them to monitor their thinking processes and evaluate the soundness of their arguments. In Islamic Education, this reflective capability is crucial for understanding the reasoning behind moral teachings.

This study therefore seeks to explore the implementation of the Discovery Learning model in Islamic Education learning to improve students' logical thinking skills at SMA Negeri 7 Aceh Barat Daya. The research employs a classroom action research (CAR) design, enabling iterative improvements through cycles of planning, implementation, observation, and reflection. The study contributes to both theoretical and practical perspectives. Theoretically, it enriches the literature on constructivist pedagogy in religious education by demonstrating how Discovery Learning supports cognitive and spiritual development simultaneously. Practically, it provides insights for educators and policymakers on effective strategies for promoting logical reasoning in faith-based learning contexts.

This research underscores the importance of integrating modern pedagogical approaches with Islamic educational principles. By fostering logical thinking within the framework of Discovery Learning, Islamic Education can evolve into a more interactive, reflective, and intellectually engaging discipline—preparing students to navigate contemporary challenges while upholding moral and religious integrity.

The implementation of the Discovery Learning model represents a transformative step in Islamic Education pedagogy. It not only enhances students' logical thinking skills but also revitalizes religious learning to be more inquiry-oriented and relevant to 21st-century education.

METHODS

This study employed a Classroom Action Research (CAR) design, which is an effective approach to improving teaching practices and enhancing students' learning outcomes through systematic reflection and iterative intervention. The research was carried out collaboratively between the researcher and the Islamic Education teacher at SMA Negeri 7 Aceh Barat Daya. The primary purpose of using CAR was to identify and solve real classroom problems specifically, the low level of students' logical thinking skills in Islamic Education learning through the implementation of the Discovery Learning model.

Research Design

The study followed the model of action research proposed by Kemmis and McTaggart (2014), consisting of four cyclical stages: planning, action, observation, and reflection. Each cycle represented a complete process of identifying problems, implementing teaching interventions, and evaluating outcomes to determine the effectiveness of the Discovery Learning model. The research was conducted over two cycles, with each cycle spanning two weeks of instructional activities. Improvements made after the first cycle informed the design of the second cycle, ensuring progressive enhancement in teaching strategies and student learning outcomes.

Research Setting and Participants

The research took place at SMA Negeri 7 Aceh Barat Daya, a public senior high school located in the province of Aceh, Indonesia. The participants were 30 students from class XI who were enrolled in Islamic Education during the academic year 2024/2025. The class was chosen purposively based on initial observations indicating that students exhibited difficulties in reasoning logically when discussing Islamic concepts. The researcher worked closely with the classroom teacher to implement the Discovery Learning model during regular lesson hours.

Research Procedures

The research procedure was systematically structured according to the four main phases of Classroom Action Research:

1. Planning:
   In this stage, the researcher and the teacher collaboratively identified existing problems related to students' logical thinking abilities. Lesson plans were then developed based on the principles of the Discovery Learning model. The teaching materials were aligned with the Islamic Education curriculum, particularly focusing on topics that required reasoning and interpretation. Teaching instruments such as worksheets, observation checklists, and assessment rubrics were also prepared.
2. Action (Implementation):
   The Discovery Learning model was implemented through six structured steps: stimulation, problem identification, data collection, data processing, verification, and generalization. The teacher acted as a facilitator, guiding students to discover key concepts through exploration, questioning, and logical reasoning. Students were encouraged to work collaboratively, engage in discussion, and connect new knowledge with prior understanding.
3. Observation:
   During implementation, both the researcher and teacher observed classroom activities to monitor student engagement, participation, and logical reasoning processes. Observations focused on indicators such as students' ability to identify problems, make hypotheses, analyze evidence, and draw conclusions. Field notes and observation sheets were used to document students' behavior and responses throughout the learning process.
4. Reflection:
   After each cycle, the researcher and teacher jointly analyzed the findings to evaluate the strengths and weaknesses of the learning process. Reflection was used to refine the instructional strategy for the following cycle. Adjustments were made to improve the quality of student engagement and the depth of logical analysis in subsequent lessons.

Data Collection Techniques

Data were collected using a triangulation approach combining qualitative and quantitative methods to ensure validity and reliability. Three primary instruments were employed:

1. Observation Sheets: Used to record students' activities, participation, and logical reasoning behaviors during lessons.
2. Tests: Administered at the end of each cycle to measure students' logical thinking skills quantitatively. The test consisted of analytical and reasoning-based questions related to Islamic Education topics.
3. Documentation: Included photographs, student worksheets, and teacher lesson plans to provide contextual support for the data analysis.

Data Analysis Techniques

Data analysis was conducted using both qualitative descriptive analysis and quantitative comparative analysis. Qualitative data obtained from observations were analyzed through data reduction, data display, and conclusion drawing, as suggested by Miles, Huberman, and Saldaña (2014). The focus was on identifying patterns of student engagement, interaction, and reasoning development. Quantitative data from tests were analyzed by calculating the mean scores and the percentage of improvement in logical thinking skills between cycles.
The formula used to determine improvement was:

$$P = \frac{X_2 - X_1}{X_1} \times 100\%$$

Where Prepresents the percentage of improvement, $X_1$is the mean score of the first cycle, and $X_2$is the mean score of the second cycle. This quantitative measure was complemented by qualitative insights to provide a comprehensive interpretation of the findings.

Indicators of Success

The success of the research was determined by both process indicators and outcome indicators.

1. The process indicators referred to the increase in student participation, engagement in discussions, and ability to express reasoning during learning activities.
2. The outcome indicators were based on the improvement of students' test scores. The target criterion of success was that at least 85% of students achieved a minimum logical thinking score of 75 on the post-test in the second cycle.

Ethical Considerations

This study adhered to educational research ethics. Prior to implementation, informed consent was obtained from the school principal, participating teacher, and students. The confidentiality of participants' data was maintained, and all activities were conducted within normal classroom learning contexts to avoid disruption. The research also aligned with Islamic ethical values, ensuring that all discussions and materials were culturally and religiously appropriate.

Research Validity

To ensure data validity, triangulation of sources and methods was applied. Observational data were cross-checked with test results and documentation. Peer debriefing with other Islamic Education teachers was conducted to validate interpretations of student behavior and performance. This methodological rigor strengthened the credibility and trustworthiness of the study's findings.

The methodological design described above provided a structured and reflective framework for improving Islamic Education learning through the Discovery Learning model. By combining action-oriented intervention with systematic data collection and analysis, the study ensured that observed improvements in logical thinking skills were empirically grounded and pedagogically meaningful.

RESULTS

The implementation of the Discovery Learning model in Islamic Education learning at SMA Negeri 7 Aceh Barat Daya was carried out through two cycles of classroom action research. Each cycle consisted of the stages of planning, action, observation, and reflection. The findings from each cycle showed progressive improvement in students' logical thinking skills, participation, and engagement throughout the learning process.

At the beginning of the study, students were generally passive and tended to depend on teacher explanations. Their understanding of Islamic Education concepts was largely based on memorization rather than reasoning. During discussions, most students found it difficult to connect abstract Islamic principles with real-life situations. This initial condition confirmed the necessity of implementing an inquiry-oriented approach such as Discovery Learning to stimulate analytical and reflective thinking.

In the first cycle, the Discovery Learning model was applied to lessons focusing on the theme of *Islamic ethics in daily life*. During the stimulation stage, students were presented with moral dilemmas taken from real situations, such as issues of honesty and responsibility. At first, many students struggled to formulate hypotheses or express their reasoning clearly. However, as the teacher guided them through data collection and verification activities, students gradually became more confident in exploring different perspectives and using logic to support their opinions.

Observations during the first cycle showed that approximately two-thirds of the students were actively involved in group discussions. Students began to demonstrate the ability to question, analyze, and justify their answers using evidence from the Qur'an and Hadith. However, the reflection phase revealed that several students still lacked confidence in presenting their conclusions in front of the class. The teacher's role as a facilitator became crucial in providing encouragement and scaffolding during this stage.

Quantitatively, the mean score of students' logical thinking ability in the first cycle reached 71.3, indicating moderate improvement from the pre-cycle average of 63.5. Despite the progress, it was clear that students had not yet reached the targeted mastery level. Therefore, revisions were made for the second cycle, focusing on enhancing problem formulation activities and encouraging deeper inquiry.

In the second cycle, the implementation of Discovery Learning was refined based on the reflections from the first cycle. The lesson topic shifted to *the application of reasoning in understanding Islamic law*. Students were assigned to analyze real-life cases related to worship and ethics, encouraging them to use analogical reasoning (*qiyas*) to derive conclusions. This stage challenged students to think logically and systematically while grounding their arguments in Islamic principles.

During this second cycle, the classroom atmosphere became noticeably more dynamic and interactive. Students actively posed questions, debated interpretations, and compared their findings with religious sources. The teacher facilitated these discussions by guiding students toward logical coherence and textual accuracy. This collaborative learning environment fostered a culture of inquiry where students felt empowered to express opinions supported by rational arguments.

The observation results revealed a substantial increase in students' participation and engagement. Nearly all students took part in group discussions and contributed to drawing conclusions. Their ability to formulate hypotheses improved significantly, as they were now capable of distinguishing between assumptions and evidence-based reasoning. The number of students who could articulate logical connections between concepts also increased.

From the post-test results of the second cycle, the mean score of students' logical thinking skills rose to 82.7, representing an improvement of approximately 16% from the previous cycle. This finding indicates that the Discovery Learning model effectively enhanced students' ability to reason logically, interpret Islamic concepts, and apply them in problem-solving contexts. The success criterion—where 85% of students achieved a minimum score of 75 was achieved in this stage, confirming the effectiveness of the intervention.

Qualitative data from observations also revealed that the Discovery Learning model contributed positively to students' affective and behavioral engagement. Students appeared more motivated and enthusiastic during class activities. They displayed curiosity, persistence in exploring issues, and openness to differing viewpoints. These behaviors are indicative of deeper cognitive engagement and are closely related to the development of logical reasoning abilities.

The improvement in logical thinking can be attributed to the core characteristics of the Discovery Learning model, which encourages students to actively construct knowledge rather than passively receive information. Through guided discovery, students learn how to observe phenomena, collect data, analyze relationships, and draw logical conclusions. These stages mirror the processes of critical and logical reasoning that are central to higher-order thinking skills.

Furthermore, the use of authentic and contextual problems during lessons helped bridge abstract religious concepts with students' real-world experiences. When learners were invited to investigate issues relevant to their daily lives, they became more capable of understanding the logical implications of Islamic teachings. This contextualization made learning more meaningful and fostered the integration of faith and reason—an essential goal of Islamic Education.

The findings of this study align with previous research emphasizing that Discovery Learning enhances students' analytical and reasoning skills across disciplines. In the context of Islamic Education, this model proves particularly effective because it aligns with Islamic epistemology, which values *ijtihad* (independent reasoning) as a legitimate method of deriving understanding from religious sources. Thus, Discovery Learning not only strengthens students' cognitive development but also resonates with the spiritual and intellectual traditions of Islam.

Another key finding is the shift in the teacher's role from a source of knowledge to a facilitator of learning. In the Discovery Learning environment, the teacher provides scaffolding by asking guiding questions, offering feedback, and encouraging exploration. This shift promotes learner autonomy and accountability, both of which are crucial for nurturing logical and reflective thinkers.

Students' improved logical thinking skills were also evident in their verbal communication. During group discussions and presentations, students began to structure their arguments more coherently, using logical connectors and evidence-based reasoning. They could explain not only *what* they believed but also *why* they believed it, demonstrating the transition from surface to deep learning.

The study also found that Discovery Learning fostered a sense of collaboration and mutual respect among students. Working in groups allowed them to share ideas, challenge each other's assumptions, and collectively construct understanding. These interactions mirror the Islamic value of *shura* (consultation), where dialogue and reasoning are essential components of decision-making. Thus, the model contributed not only to intellectual growth but also to character formation in accordance with Islamic values.

While the results of this study were highly positive, several challenges were noted during implementation. Some students initially struggled with the open-ended nature of inquiry-based learning, preferring structured instructions. Additionally, the model required more classroom time for exploration and discussion, which occasionally exceeded the allocated lesson duration. However, these challenges were manageable and outweighed by the overall benefits of deeper learning and improved reasoning skills.

In sum, the findings demonstrate that the Discovery Learning model effectively improved students' logical thinking skills in Islamic Education at SMA Negeri 7 Aceh Barat Daya. The combination of inquiry, collaboration, and contextual exploration helped students internalize religious concepts through reasoning rather than memorization. As students became more capable of logical analysis, they also showed increased interest and responsibility in their learning process.

From a pedagogical perspective, this study confirms that Discovery Learning aligns well with the goals of the 21st-century curriculum and the vision of Islamic Education to produce intellectually mature and morally upright individuals. By engaging students in discovery-based activities, educators can cultivate not only logical and critical thinking but also the reflective understanding necessary for lifelong learning and ethical decision-making.

DISCUSSION

The results of this study demonstrate that the Discovery Learning model effectively improved students' logical thinking skills in Islamic Education learning. The observed increase in students' ability to reason, analyze, and synthesize information aligns with the core principles of constructivist learning theory, which emphasizes that knowledge is actively constructed through experience and inquiry rather than passively received from the teacher (Bruner, 2017). This finding supports the notion that when students are given opportunities to explore, question, and discover, their cognitive engagement and reasoning capacity increase significantly.

One of the main factors contributing to this improvement was the shift from teacher-centered instruction to a more student-centered approach. Traditional teaching methods in Islamic Education often emphasize memorization of doctrines, which limits opportunities for reasoning and reflection. In contrast, the Discovery Learning model encourages learners to construct meaning through inquiry and exploration, which fosters logical and analytical thinking (Hosnan, 2019). This shift is consistent with the educational transformation promoted by the 21st-century learning paradigm, where critical, creative, and logical thinking are considered essential competencies (Partnership for 21st Century Learning, 2019).

The process of guided discovery in this study provided students with structured yet flexible opportunities to engage in hypothesis formulation, evidence collection, and conclusion drawing. These activities mirror the scientific thinking process, which naturally enhances logical reasoning. Similar results were reported by Astuti and Lestari (2020), who found that Discovery Learning significantly increased students' logical and critical thinking in social studies classes. In the context of Islamic Education, such cognitive engagement helps students move beyond rote memorization to a deeper understanding of religious principles grounded in rational justification.

Another significant aspect of the study is the alignment between Discovery Learning and Islamic epistemology. Islam encourages the use of *aql* (reason) to reflect upon creation and to seek truth through understanding. This integration of faith and logic resonates with the Qur'anic principle of contemplation and reasoning (*tafakkur* and *tadabbur*). According to Al-Attas (2018), Islamic Education should not only nurture faith but also cultivate intellectual discernment based on reason. Therefore, Discovery Learning serves as a pedagogical bridge that unites spiritual understanding with intellectual development, making religious learning more meaningful and rational.

The findings also highlight the critical role of teacher facilitation in supporting students' reasoning processes. In Discovery Learning, the teacher acts as a guide who scaffolds students' inquiry rather than delivering direct instruction. This approach is supported by Vygotsky's (1978) concept of the "zone of proximal development," which suggests that learners achieve higher cognitive performance with appropriate guidance. In this study, the teacher's use of probing questions and feedback helped students refine their logic, evaluate arguments, and draw accurate conclusions based on Islamic teachings.

Moreover, the use of authentic and contextual problems was instrumental in fostering logical thinking. When students were presented with real-life moral or ethical dilemmas, they were compelled to reason through the issues and justify their positions with logical arguments supported by Islamic sources. Contextualized learning has been shown to increase relevance and motivation, which in turn enhances cognitive engagement (Fathurrohman, 2021). This approach reflects the Qur'anic method of teaching through stories and real situations that invite reflection and reasoning.

Another implication of this study is that collaborative discovery enhances not only individual reasoning but also social and moral learning. Group discussions allowed students to exchange ideas, debate respectfully, and collectively construct understanding. These interactions nurtured critical dialogue and mutual respect—values that are deeply embedded in Islamic ethics. According to Duran and Dökme (2021), collaborative inquiry

encourages students to consider multiple perspectives, thereby strengthening their reasoning and communication skills. Such peer interaction also develops social intelligence, an essential component of holistic Islamic education.

The improvement in logical thinking skills observed in this study aligns with previous empirical research demonstrating the positive impact of Discovery Learning on higher-order thinking skills (Fitriyani et al., 2020; Setiawan & Mustadi, 2022). The model's inquiry-based structure challenges students to identify relationships, analyze data, and draw conclusions—core elements of logical reasoning. In addition, the reflective process at the end of each learning cycle reinforced metacognitive awareness, enabling students to evaluate their thought processes and improve their reasoning in subsequent tasks.

In the broader educational context, the successful implementation of Discovery Learning in Islamic Education suggests that faith-based subjects can effectively incorporate modern pedagogical strategies without compromising their spiritual objectives. As noted by Ahmad and Nor (2023), integrating active learning strategies into religious education fosters intellectual curiosity, critical awareness, and moral responsibility—qualities necessary for students to thrive in contemporary society. Thus, this study contributes to the ongoing discourse on the modernization of Islamic pedagogy while maintaining the integrity of its values.

Finally, this study reinforces the idea that logical thinking in Islamic Education is not merely a cognitive skill but also a moral and spiritual pursuit. Logical reasoning enables students to understand and apply Islamic principles more thoughtfully, promoting balanced development between intellect and faith. The Discovery Learning model, therefore, emerges as an effective approach to realizing the holistic vision of Islamic Education, where knowledge, reasoning, and faith are harmoniously integrated.

CONCLUSION

Based on the findings and discussion of this study, it can be concluded that the implementation of the Discovery Learning model in Islamic education learning at SMA Negeri 7 Aceh Barat Daya has proven to be effective in improving students' logical thinking skills. Through stages that encourage exploration, hypothesis formulation, and concept discovery, students demonstrated increased analytical ability, reasoning power, and deeper understanding of Islamic teachings. The learning process shifted from teacher-centered to student-centered, fostering greater engagement and autonomy in knowledge construction. The results also indicate that Discovery Learning not only enhances cognitive skills but also supports the development of reflective and critical thinking aligned with Islamic values. Therefore, the Discovery Learning model is recommended as an innovative pedagogical approach for Islamic education teachers to cultivate students' logical, creative, and moral reasoning in harmony with modern educational demands.

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