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# The Effectiveness of the Discovery Learning Method as a Solution to Improve Elementary School Students' Learning Outcomes

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**ABSTRACT**

*This study was motivated by the low learning outcomes of Grade V students at SD Negeri 1 Nganganaumala in the subject of Natural and Social Sciences (IPAS), which were caused by unvaried and predominantly passive teaching methods. The aim of this research was to examine the effectiveness of the discovery learning method in improving student learning outcomes. This study employed a Classroom Action Research (CAR) approach involving 21 students as subjects. The research was conducted in two cycles, each consisting of planning, implementation, observation, and reflection stages. Data collection techniques included observation of learning activities, student achievement tests, and documentation. Data were analyzed both qualitatively and quantitatively by examining improvements in student engagement and test scores from the pre-cycle to the second cycle. The results showed a significant improvement in student learning outcomes, with the class mastery increasing from less than half of the students achieving passing scores in the pre-cycle to nearly all students achieving mastery by the second cycle. Furthermore, students' motivation and participation in the learning process also showed positive growth. In conclusion, the discovery learning method is effective in improving student learning outcomes and fostering a more active, creative, and enjoyable learning process. Therefore, this method is recommended for continuous implementation in elementary schools to enhance learning quality.*

***Keywords:*** *Discovery Learning; Outcomes; Classroom Action Research*

## 1. Introduction

Education at the elementary school level plays a crucial role in building the foundation of students' knowledge, skills, and attitudes. At this stage, the use of appropriate learning approaches is essential in creating meaningful and enjoyable learning experiences. In an effort to improve the quality of education, teachers are required not only to deliver material in a conventional manner, but also to encourage students' active participation in the learning process (Wahida et al., 2018). One emerging approach that aligns with the demands of the

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*Merdeka Curriculum* is the discovery learning method a teaching strategy that emphasizes concept discovery through direct experience (Ardita & Anas, 2022).

The discovery learning method encourages students to actively seek, process, and construct their own understanding through exploratory activities. Students are no longer passive recipients of information, but become active learners who are expected to think critically and creatively (Wahida et al., 2018). This approach aligns with the cognitive development of elementary school children, who are typically in the concrete operational stage, where they begin to understand cause-and-effect relationships and can think logically through tangible objects or real-life situations. Through this method, learning becomes more contextual, and students are better able to grasp the material because it is acquired through direct, hands-on experiences (Hsiao & Zhang, 2019). The effectiveness of the discovery learning method has been widely studied across various levels of education. However, its implementation in elementary schools still presents unique challenges (Isnaeni, 2020). Common obstacles include time constraints, teachers' readiness to design engaging and challenging activities, and the varying abilities of students in exploring and processing information (Hasan et al., 2022). Therefore, it is essential to conduct an in-depth examination of how this method can be effectively applied at the elementary level, and to what extent it can improve student learning outcomes particularly in terms of conceptual understanding and thinking skills (Hartini et al., 2018).

The implementation of the discovery learning method in elementary schools is also in line with the goals of 21st-century education, which emphasizes higher-order thinking skills such as problem-solving, innovation, and collaboration (Naila, 2020). By providing students with opportunities to independently discover concepts, this method has the potential to foster characteristics such as independence, self-confidence, and responsibility for their own learning. This represents a long-term investment in shaping a generation of lifelong learners. Given the significant role of discovery learning in enhancing the quality of education, this study aims to examine the effectiveness of the method within the context of elementary school learning. The research focuses on improving student learning outcomes as the main indicator of its effectiveness (Hunaidah et al., 2022). The results of this study are expected to contribute to teachers, schools, and education policymakers in designing learning strategies that are more active, creative, and supportive of students' holistic development (Aspari & Hartono, 2021).

Although discovery learning has been widely recognized as an effective approach to enhance student engagement and understanding, its implementation at SD Negeri 1 Nganganaumala has not yet reached its full potential. This gap is evident in students' learning outcomes, which remain below the minimum competency standards in several subjects, particularly those that require strong conceptual understanding, such as Science, Environment, and Social Studies (IPAS) and Mathematics (Hasdiani, 2020). Teachers still tend to rely on traditional lecture methods and routine assignments, resulting in passive student participation and low motivation in the learning process (Sintawati & Abdurrahman, 2020). In contrast, a more exploratory and interactive approach could help students develop a deeper and more contextual understanding of the material (Mulyawati et al., 2022). Another significant challenge is the limited availability of learning resources and the lack of teacher preparedness in designing discovery learning activities that are suited to the developmental

characteristics of elementary students (Dewi et al., 2022). These issues contribute to students' low abilities in critical thinking and independent problem-solving. If these challenges are not addressed, student achievement will likely remain stagnant, increasing the risk of a widening achievement gap between students who have access to active learning environments and those who do not. Therefore, the effective and well-planned implementation of discovery learning at SD Negeri 1 Nganganaumala is essential as a solution to improve student learning outcomes, and to foster independence and intrinsic motivation from an early age (Sidik et al., 2022).

The use of the discovery learning method is considered an appropriate solution, as it activates students' roles in the learning process through activities that involve discovering, concluding, and constructing knowledge independently. As a result, learning outcomes become more meaningful and long-lasting. This topic is particularly compelling to explore because it offers an approach that aligns with the demands of the Merdeka Curriculum, which emphasizes differentiated learning and the development of critical thinking skills from an early age. Furthermore, this study is highly relevant in addressing the issue of low learning outcomes at SD Negeri 1 Nganganaumala and is expected to make a concrete contribution to improving the quality of learning that is active, creative, and enjoyable at the elementary school level.

## 2. Methods

This study employs a Classroom Action Research (CAR) approach aimed at improving student learning outcomes through the implementation of the discovery learning method in the teaching and learning process. CAR was chosen because it allows the teacher as a practitioner and researcher to directly identify, plan, implement, and reflect on instructional actions in a continuous cycle within their own classroom setting (Ningsih et al., 2019) (Iyakrus & Ramadhan, 2021) (Nurkhojin et al., 2022). The research focuses on efforts to improve the learning process through a cyclical model of intervention, with the expectation of achieving progress in both the learning process and student outcomes. The subjects of this study are 21 fifth-grade students at SD Negeri 1 Nganganaumala. This class was purposively selected based on preliminary observations indicating that the majority of students struggled to understand lesson material and showed low engagement in classroom activities. Therefore, these students were chosen as the focus of the intervention to assess the effectiveness of the discovery learning method in improving their learning outcomes, particularly in conceptual subjects such as Natural and Social Sciences (IPAS).

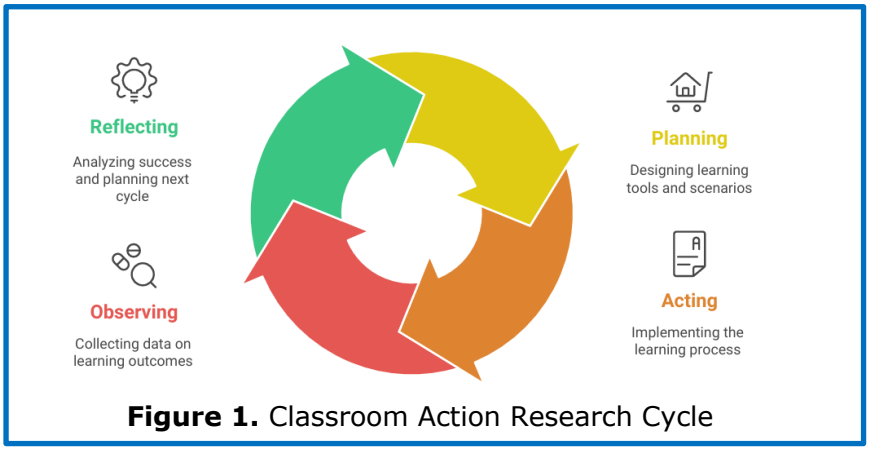


**Figure 1.** Classroom Action Research Cycle

The classroom action stages in this study follow the cyclical model by Kemmis and McTaggart, which consists of four main phases: (1) Planning, which involves designing the learning tools and the scenario for implementing the discovery learning method; (2) Acting, which is the implementation of the learning process according to the prepared plan; (3) Observing, which involves collecting data related to the learning process and outcomes; and (4) Reflecting, which is the analysis of the success of the actions and the planning for the next cycle if necessary. This study is designed to be conducted in at least two cycles in order to observe gradual and continuous improvements (Rumawatine & Seltit, 2022).

Data collection techniques in this study employed multiple complementary methods to obtain accurate and in-depth information. The techniques used included observation, learning outcome tests, and documentation (Sudirman & Arini, 2022). Observation was conducted directly during the learning process, using observation sheets to record both teacher and student activities in implementing the discovery learning method. Learning outcome tests were administered at the end of each cycle as a tool to measure students' competency achievements related to the material that had been taught (Rosmilasari & Adoe, 2021). Meanwhile, documentation was used to gather supporting data such as photographs of learning activities, teacher notes, lesson plans (RPP), and samples of student work. The purpose of observation was to assess the quality of the learning process and the level of student participation throughout the classroom action cycles. Through the observation sheets, the researcher could evaluate the extent of student engagement, teacher performance, and the alignment of implementation with the planned learning activities. The results of these observations were analyzed qualitatively to provide a comprehensive picture of the teaching and learning process using the discovery learning approach. In contrast, the data obtained from the learning outcome tests were analyzed quantitatively by calculating the number of students who met the Minimum Mastery Criteria (KKM) and comparing improvements from one cycle to the next.

Data analysis was carried out using two approaches: qualitative descriptive and quantitative descriptive analysis. The qualitative descriptive analysis was used to process data from observations and documentation in order to examine the dynamics of the learning process and identify any challenges encountered during the implementation of the intervention. Meanwhile, the quantitative descriptive analysis was employed to measure the level of learning success based on students' scores from the learning outcome tests (Firmansyah et al., 2018). Quantitative data were analyzed using a percentage formula for learning mastery, and the results were used as key indicators of the effectiveness of the actions taken. Through this dual approach, the researcher was able to assess the extent to which the discovery learning method had a positive impact on improving student learning outcomes at SD Negeri 1 Nganganaumala.

## 3. Findings and Discussion

To facilitate understanding and reading, the research results are described first, followed by the discussion section. The results subtitle and the discussion subtitle are presented separately. This section must be the most numerous, at least 60% of the entire body of the article.

## 3.1 Findings

### Pre-Cycle Stage

The initial condition of the IPAS (Integrated Natural and Social Sciences) learning process in Grade V at SD Negeri 1 Nganganaumala indicated that instruction was still largely dominated by lecture and note-taking methods, in which the teacher primarily delivered information directly without engaging students in exploratory activities. As a result, students tended to be passive, showed low enthusiasm, and demonstrated minimal involvement in discussions or simple observation tasks that should be essential components of IPAS learning. The pre-test results revealed that only a small portion of the students met the Minimum Mastery Criteria (KKM), while the majority had not yet grasped the fundamental concepts, such as understanding cause-and-effect relationships in natural or social phenomena. These low learning outcomes reflected the urgent need for a more active and student-centered learning approach, such as discovery learning, which allows students to build understanding through discovery and direct experience.

**Table 1.** Pre-Cycle Scores

| Description | Number / Score |
|---|---|
| Total number of students | 21 |
| Average score | 66.0 |
| Classical learning mastery | 47.6% (10 out of 21 students) |
| Number of students who passed | 10 |
| Number of students who did not pass | 11 |

Based on the data collected from 21 fifth-grade students at SD Negeri 1 Nganganaumala, the average learning outcome score was 66.0, indicating that students' overall performance was approaching the Minimum Mastery Criteria (KKM) of 65. However, only 10 students managed to reach or exceed the KKM, while 11 students were still below the required standard. This means that nearly half of the students had not yet fully understood the IPAS subject matter, indicating the need for more effective and engaging learning strategies to improve overall student achievement.

The classical learning mastery level reached only 47.6%, which fell short of the ideal target of at least 75%. This low mastery rate may have been caused by learning methods that failed to activate students, leading them to remain passive and less capable of independently exploring concepts. Therefore, the application of the discovery learning method was considered a promising solution to enhance student engagement and understanding, with the aim of improving both individual and group learning outcomes in the upcoming cycles.

### Cycle I

The implementation of the discovery learning method began to show positive changes in the learning process in Grade V at SD Negeri 1 Nganganaumala. Student engagement improved, with more students actively asking questions, participating in discussions, and attempting to discover concepts on their own. The teacher also made greater use of instructional media and exploratory activities, creating a more dynamic and enjoyable classroom atmosphere. These changes had a positive impact on students' learning motivation, which showed improvement compared to the pre-cycle stage.

**Table 2.** Learning Outcomes, Cycle I

| Description | Number / Score |
|---|---|
| Total number of students | 21 |
| Average score | 68.7 |
| Classical learning mastery | 71.4% (15 out of 21 students) |
| Number of students who passed | 15 |
| Number of students who did not pass | 6 |

The learning outcome data from Cycle I show an improvement in the number of students who achieved the Minimum Mastery Criteria (KKM)—15 out of 21 students successfully met the standard. The average score also increased to 68.7, which is higher than the pre-cycle average of 66.0. This indicates that the implementation of the discovery learning method was effective in helping students understand the IPAS subject matter more deeply and in a contextual manner. However, there were still 6 students who did not achieve mastery, suggesting that although discovery learning had a positive impact, additional support and adjustments are still needed for students who are struggling. Differences in ability levels, learning interests, and learning styles remain challenges that must be addressed in the next cycle to ensure that all students can reach optimal learning outcomes. Overall, the results of Cycle I provide a strong indication that discovery learning can serve as an effective approach to improve student achievement at SD Negeri 1 Nganganaumala. Through a more active and student-centered learning process, it is expected that students' motivation and academic abilities will continue to grow. Therefore, the study will proceed to Cycle II to evaluate whether the improvements made can overcome the remaining challenges and lead to higher levels of learning mastery.

**Cycle II**

The implementation of the discovery learning method became more optimal in Cycle II, with improvements in the quality of learning activities that were more structured and varied. The teacher successfully facilitated students to be more actively involved in discovering concepts independently through various exploratory activities and group discussions. The classroom atmosphere became more conducive, and student participation increased, indicating that students were becoming more accustomed to and comfortable with a learning method that emphasizes independence and critical thinking. Overall, the results of Cycle II demonstrate that the discovery learning method is effective in improving student learning outcomes at SD Negeri 1 Nganganaumala. The enhancement of student-centered learning activities helped to foster learning autonomy and strengthen critical thinking skills. Therefore, this method is highly appropriate to be adopted as a primary teaching strategy in elementary school, especially for subjects like IPAS (Science and Social Studies), in order to achieve maximum and sustainable learning outcomes.

**Table 3.** Learning Outcomes, Cycle II

| Description | Number / Score |
|---|---|
| Total number of students | 21 |
| Average score | 73.3 |
| Classical learning mastery | 95.2% (20 out of 21 students) |
| Number of students who passed | 20 |
| Number of students who did not pass | 1 |

The learning outcomes in Cycle II show a significant improvement compared to the previous cycle. A total of 20 out of 21 students successfully reached the Minimum Mastery Criterion (KKM) of 65, with the average score increasing to 73.3. This indicates that the majority of students were able to understand the IPAS subject matter well and apply the concepts learned through various learning activities. The improvement in mastery also reflects the success of the discovery learning method in enhancing students' comprehension and thinking skills. Although a considerable improvement has been achieved, there remains one student who has not yet reached the mastery level. This suggests that there are still learners who require more intensive support and guidance to catch up with their peers. Factors such as learning motivation, psychological conditions, and educational background may influence the student's performance. Therefore, teachers need to continue monitoring student progress and provide appropriate interventions to ensure that all students can achieve optimal learning outcomes.

**Comparison of Learning Outcomes Across Each Cycle**

The comparison across the three stages clearly demonstrates that the implementation of the discovery learning method has had a positive impact on students' learning outcomes. Starting from the limitations observed during the pre-cycle phase, this method gradually improved student achievement, reaching near-maximum mastery in Cycle II. This indicates that student-centered learning, which allows room for exploration and independent discovery, is essential in enhancing students' understanding and engagement. Furthermore, the improvement in learning outcomes also highlights that changing the instructional method not only affects the cognitive domain but also positively influences students' motivation and learning attitudes. With the discovery learning method, students felt more confident, became more active in asking questions and participating in discussions, and showed greater enthusiasm during the learning process. These positive changes serve as a valuable foundation for teachers to continue developing creative and innovative learning strategies.

**Table 4.** Comparison of Student Learning Outcomes Between Pre-Cycle, Cycle I, and Cycle II

| Description | Pre-Cycle | Cycle I | Cycle II |
|---|---|---|---|
| Number of Students | 21 | 21 | 21 |
| Average Score | 66.0 | 68.7 | 73.3 |
| Number of Students Achieving Mastery | 10 | 15 | 20 |
| Number of Students Not Achieving Mastery | 11 | 6 | 1 |
| Classical Mastery (%) | 47.6% | 71.4% | 95.2% |

These results affirm that discovery learning is not only effective in improving academic performance, but also instrumental in fostering student autonomy, critical thinking, and a more active learning culture in the classroom. The research conducted at SD Negeri 1 Nganganaumala demonstrated a significant improvement in students' learning outcomes from the pre-cycle to Cycle II. In the initial stage (pre-cycle), the learning process was still dominated by conventional methods, primarily relying on lectures and passive instruction. This was reflected in the students' average score of 66.0, with only 10 out of 21 students achieving the Minimum Mastery Criteria (KKM)—a classical mastery level of approximately 47.6%. This condition indicates that nearly half of the

students had not yet adequately mastered the IPAS (Integrated Science and Social Studies) subject matter.

During Cycle I, there was a noticeable improvement in both the average score and the number of students who met the mastery criteria. The average score increased to 68.7, and the number of students achieving mastery rose to 15 students, or 71.4% classical mastery. This improvement was largely attributed to the initial implementation of the discovery learning method, which enabled students to actively engage in the learning process, thereby improving conceptual understanding. However, there were still 6 students who did not meet the mastery criteria, indicating the need for further instructional refinement.

In Cycle II, student performance showed a much more substantial improvement. The average score rose to 73.3, with 20 out of 21 students meeting the mastery criteria, equivalent to 95.2% classical mastery. This result illustrates the effectiveness of discovery learning in fostering student independence and critical thinking skills. Additionally, the more varied and interactive learning activities contributed to increased student motivation and a deeper understanding of the material. Only one student remained below the mastery threshold, highlighting the method's overall effectiveness in reaching nearly all students.

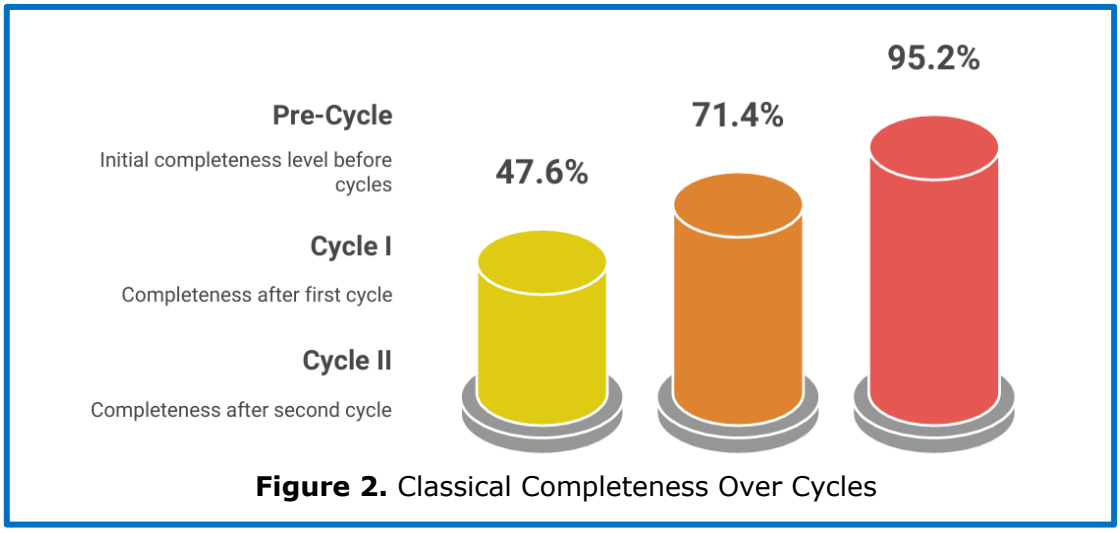


**Figure 2.** Classical Completeness Over Cycles

The comparison of learning outcomes between the pre-cycle, Cycle I, and Cycle II confirms that the discovery learning method is effectively applicable at SD Negeri 1 Nganganaumala. This method not only significantly improved students' academic achievement but also contributed to creating a more conducive and engaging learning environment. Therefore, it is recommended that the discovery learning method be continuously developed and implemented on an ongoing basis to enhance the quality of education at the elementary school level.

### 3.2 Discussion

In the pre-cycle condition, the learning process in Grade V at SD Negeri 1 Nganganaumala was still dominated by the lecture method, which caused students to be generally passive. The teacher delivered the material directly without involving students in activities that could stimulate curiosity and critical thinking skills. As a result, students' learning interest was low, and their engagement in the learning process was very limited. Students had few

opportunities to develop their skills in exploration and independent problem-solving, leading to suboptimal understanding of the subject matter. This situation also contributed to the overall low student learning outcomes. Many students found it difficult to grasp basic IPAS (Natural and Social Sciences) concepts because the learning process did not emphasize discovery and hands-on experiences. The lack of variation in instructional methods made the classroom atmosphere monotonous and failed to stimulate students' critical thinking and creativity. This condition highlights the urgent need for a shift toward more active and engaging learning strategies so that students can become more involved and gain a deeper understanding of the material being taught.

In Cycle I, the implementation of the discovery learning method began to show significant improvements in the classroom learning process. The teacher became more proactive in facilitating students to engage directly in exploration activities and concept discovery, allowing students to move beyond being passive listeners to becoming active participants in learning. The classroom atmosphere became more dynamic, with group discussions and assignments that required students to think critically and creatively. This change led to increased student motivation and greater enthusiasm in participating in the learning process. The shift in method also had a positive impact on students' understanding of the IPAS subject matter. Through learning by experience and self-discovery, students were able to construct concepts more deeply and meaningfully. However, there were still a few students who required further guidance to keep up with the new learning rhythm. Therefore, the teacher must continue to provide support and adapt instructional strategies to ensure that all students can achieve optimal learning outcomes. This cycle marked an important initial step in cultivating an active learning culture in the classroom.

In Cycle II, the implementation of the discovery learning method became more refined and structured, resulting in a more evident impact on improving student learning outcomes. The teacher was able to manage the learning process more effectively, facilitating students to remain actively engaged in exploration and developing understanding through discussions, experiments, and collective reflection. The learning environment became more enjoyable and intellectually stimulating, motivating students to learn and participate fully in each learning activity.

This approach not only enhanced students' cognitive abilities but also fostered their confidence and independence in learning. The outcomes of this more optimal learning process showed that nearly all students successfully understood the lesson material in depth and were able to apply the concepts they had learned. Although there were still a few students who required special attention, overall, the discovery learning method proved effective in helping students overcome learning difficulties and achieve mastery. This cycle reinforced the importance of student-centered learning that provides space for students to actively discover knowledge, thereby improving the overall quality of learning in the classroom.

## 4. Conclusion

Based on the research findings, it can be concluded that the implementation of the discovery learning method is effective in improving student learning outcomes at SD Negeri 1 Nganganaumala. This method successfully transformed

the learning approach from a passive model into one that is more active and participatory, allowing students to gain a deeper understanding of IPAS (Science and Social Studies) material through exploration and self-discovery. The significant improvement in learning outcomes from the pre-cycle to Cycle II indicates that this method can sustainably enhance students' motivation, engagement, and critical thinking skills. Moreover, the use of discovery learning also contributed positively to creating a more enjoyable and conducive learning environment. Although there were still a few students who required more intensive guidance, overall, this method proved successful in helping students achieve the expected learning mastery. Therefore, it is recommended that teachers continue to develop and apply the discovery learning method as a primary instructional strategy to improve the quality of education at the elementary level, while also fostering student independence and creativity.

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