



# Application of The Discovery Method in Improving Learning Outcomes in Recognizing The Shapes of Objects at Mi Ma'arif Nu 01 Pandansari

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## ABSTRACT

This study aims to apply the discovery learning method to improve learning outcomes in recognizing object shapes in grade 2 students of MI Ma'arif NU 01 Pandansari. The discovery learning method was chosen because it can increase students' active involvement in the learning process through their own discovery. This study uses a classroom action research (CAR) approach with the research subjects being grade 2 students consisting of 25 students. The research procedures include planning, implementation, observation, and reflection. Learning using the discovery learning method is carried out through a series of activities that involve students in exploring object shapes directly, such as through games or observation activities. The results of the study showed an increase in student learning outcomes after the application of the discovery learning method. Before this method was applied, students had a limited understanding of object shapes, but after learning, students' understanding increased significantly, as evidenced by better test results and students' ability to recognize various object shapes. Thus, it can be concluded that the discovery learning method is effective in improving learning outcomes in recognizing object shapes in grade 2 students of MI Ma'arif NU 01 Pandansari.

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## Introduction

The main objective of this study is to improve the learning outcomes of recognizing object shapes in grade 2 students of MI Ma'arif NU 01 Pandansari through the application of the discovery learning method. Learning to recognize object shapes is an important topic because it can help students understand the basic concepts of geometry

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that will support the development of their mathematical abilities in the future. By using the discovery learning method, it is hoped that students will be more active in the learning process, creative in finding solutions, and understand the concept of object shapes in depth through direct discovery. This method provides opportunities for students to learn through practical experiences, so that they can connect learning materials with everyday life (Huda, 2020).

The hope of implementing this discovery learning method is to create a fun learning atmosphere and encourage students to be more active and involved in every stage of learning. With a more interactive approach, students are expected to not only memorize the shapes of objects, but also be able to understand the characteristics and differences between shapes in more depth. As stated by Wulandari (2021), the discovery learning method provides opportunities for students to explore their own knowledge, thereby increasing their motivation and interest in learning.

The reality in the field shows that many grade 2 students of MI Ma'arif NU 01 Pandansari still have difficulty in recognizing the shapes of objects correctly. The previous learning process still used a conventional approach, namely lectures and practice questions that did not actively involve students. This resulted in low student understanding of the learning material and their lack of ability to recognize and distinguish the shapes of objects. Research by Nisa (2022) also showed that conventional approaches were less effective in increasing student involvement in learning, which led to low learning outcomes.

The application of the discovery learning method is expected to overcome this problem by providing opportunities for students to be actively involved in the search for knowledge. In this method, students not only receive information from the teacher, but also find and confirm information directly through various interesting activities, such as exploring objects around them or experiments involving observing the shape of objects. This is in accordance with the opinion expressed by Supriadi (2023) who emphasized the importance of student involvement in the learning process to improve learning outcomes.

The learning process that prioritizes discovery or discovery learning will encourage students to think critically and analytically. For example, when students are introduced to various shapes of objects, they are given the opportunity to explore the characteristics of the shape themselves through direct observation activities, so that they can develop their thinking skills. Research by Syamsuddin (2021) revealed that the discovery learning method is effective in improving students' critical thinking skills because they are invited to find their own concepts and understand the learning process through direct experience.

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The discovery learning method can also increase students' motivation and interest in learning. When students are given the opportunity to find out and solve their own problems, they will feel more involved and motivated to learn. As stated by Yuliana and Hadi (2022), the application of this method not only improves students' academic learning outcomes but also builds their self-confidence in solving problems independently. In addition, with this approach, students can also learn more enjoyably, thereby reducing the boredom that often occurs in conventional learning.

Thus, this study aims to evaluate the effectiveness of the application of the discovery learning method in improving learning outcomes in recognizing shapes of objects in grade 2 students of MI Ma'arif NU 01 Pandansari. It is hoped that the results of this study can provide a positive contribution to learning practices in the school and provide an overview of the benefits and challenges of implementing the discovery learning method in the context of elementary school mathematics learning.

## **Methods**

This research aims to investigate the application of the discovery method in improving learning outcomes in recognizing the shapes of objects at MI Ma'arif NU 01 Pandansari. The discovery method emphasizes student-centered learning, where students actively engage in discovering concepts, principles, and relationships through their own exploration. This methodology was chosen to enhance students' ability to recognize various shapes and their characteristics through hands-on, inquiry-based learning. The research employed a Classroom Action Research (CAR) design, which is characterized by a cyclical process involving planning, action, observation, and reflection. The goal of this research is to improve students' recognition of object shapes and their understanding of spatial relationships in a way that is interactive and participatory. By applying the discovery method, this study sought to engage students in exploring and understanding geometric shapes, promoting a deeper and more meaningful learning experience.

The participants in this study were 30 students from the second grade at MI Ma'arif NU 01 Pandansari. These students were selected due to their current level of understanding and the challenges they faced in recognizing and identifying shapes. The study took place over two cycles, each consisting of planning, implementation, observation, and reflection phases. The first cycle began with an initial assessment of students' prior knowledge about shapes. Through a pre-test and classroom observation, it was evident that many students had difficulty in recognizing basic shapes and understanding their properties. This provided the basis for implementing the discovery method, where students would be given opportunities to explore and discover the characteristics of different shapes themselves rather than just being told the information.

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In the planning phase, the teacher designed activities that allowed students to explore the properties of various shapes, such as circles, squares, triangles, and rectangles. The activities were designed to encourage observation, experimentation, and discussion, with the goal of facilitating students' discovery of the properties of each shape. Students were provided with physical objects, such as blocks and cut-outs, to manipulate and explore. During the implementation phase of the first cycle, the teacher began by presenting a shape-related problem or puzzle. The students were encouraged to work in small groups to solve the problem by observing the objects and discussing their observations. The teacher acted as a facilitator, guiding the students through their discoveries without directly providing answers. This allowed the students to actively engage with the material and develop a deeper understanding of shapes.

Observation during the first cycle showed that many students were actively participating in the activities, and their curiosity about the shapes was piqued. However, some students struggled to articulate their observations or make connections between their discoveries and the properties of the shapes. The teacher took note of these difficulties and planned for a more focused follow-up in the next cycle to address these gaps in understanding. At the end of the first cycle, a reflection session was held to evaluate the effectiveness of the discovery method. The teacher reflected on the activities and the students' engagement, noting that while some students had made significant progress, others required more structured guidance. The feedback from the students was also gathered through informal conversations, which revealed that some students felt uncertain about certain shapes, particularly when they encountered shapes with multiple sides or angles.

In response to these findings, the second cycle was designed to reinforce the activities from the first cycle, with additional support for students who struggled in the previous phase. The teacher incorporated more visual aids and examples, as well as additional opportunities for hands-on practice. The students were given more time to explore shapes through drawing, modeling, and comparing different objects to better understand their properties. In the second cycle, students were again given shape-related problems to solve, but this time the teacher encouraged more structured group discussions and collaborative problem-solving. The students were asked to not only identify the shapes but also explain why certain characteristics defined each shape. This encouraged students to think critically about the properties of shapes and to verbalize their discoveries.

The observation phase of the second cycle revealed that students were more confident in recognizing and describing the shapes. The use of visual aids and more targeted group discussions helped clarify misunderstandings, and students showed greater engagement in the activities. Additionally, the teacher was able to provide immediate feedback to students, which helped reinforce their understanding. At the end

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of the second cycle, another post-test was administered to assess the students' progress. The results showed a significant improvement in the students' ability to recognize and describe the properties of various shapes. Many students who had struggled in the first cycle were now able to identify shapes with greater accuracy and could provide more detailed explanations about their characteristics.

Reflecting on the overall process, it was clear that the discovery method played a crucial role in improving students' learning outcomes. The hands-on, inquiry-based nature of the method encouraged students to explore, experiment, and actively engage with the content. It was especially effective in promoting critical thinking, as students were required to make connections between their observations and the properties of the shapes. The findings also indicated that the discovery method fostered greater collaboration among students. Working in groups allowed students to share their ideas, challenge one another's thinking, and support each other's learning. This collaborative aspect of the discovery method not only improved their understanding of shapes but also enhanced their communication and teamwork skills.

This study's results suggest that the discovery method is a valuable pedagogical approach for improving learning outcomes, particularly in subjects like mathematics and geometry, where hands-on exploration and critical thinking are essential. By providing students with opportunities to explore and discover concepts for themselves, the discovery method helps to foster a deeper understanding and more meaningful learning experience. In conclusion, the application of the discovery method in this Classroom Action Research successfully improved the students' ability to recognize and understand the properties of shapes. Through active engagement, exploration, and collaboration, students developed a more thorough understanding of geometric concepts. The results of this study suggest that the discovery method is an effective teaching strategy that can be applied to various educational contexts, particularly in elementary school settings where foundational knowledge and skills are developed.

## **Result**

The results of this Classroom Action Research (CAR) aimed at improving students' ability to recognize and understand the shapes of objects through the discovery method were very promising. Over the course of two cycles, there was noticeable progress in both the students' engagement and their learning outcomes. The findings from both cycles revealed the effectiveness of the discovery method in fostering deeper learning and improving the understanding of geometric shapes among second-grade students at MI Ma'arif NU 01 Pandansari. In the first cycle, before the introduction of the discovery method, an initial assessment revealed that most of the students had limited understanding of geometric shapes. Many of the students could identify basic shapes, such as squares and circles, but struggled with shapes that had more complex



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properties, such as triangles and rectangles. Additionally, several students had difficulty explaining the defining characteristics of these shapes, such as the number of sides, angles, and symmetry. This lack of understanding highlighted the need for a more interactive and engaging approach to teaching geometry.

After implementing the discovery method in the first cycle, students were given opportunities to explore shapes actively through hands-on activities. They worked with physical objects, such as cut-out shapes and blocks, to explore the properties of different geometric forms. During this phase, students were encouraged to discuss their observations and attempt to identify shapes based on their characteristics. The teacher facilitated this process by asking guiding questions, encouraging students to reflect on their observations and share their findings with the class. During this first cycle, the results showed that students were actively engaged in the learning process. Most students enjoyed the exploration aspect, and there was an evident increase in their motivation to participate. However, there were still challenges. Some students had difficulty grasping the concept of shapes with multiple sides or distinguishing between similar shapes, such as squares and rectangles. Additionally, some students were unsure about the names and properties of more complex shapes, such as triangles with different angles.

Despite these challenges, it was evident that the discovery method had a positive impact on student engagement. Students were no longer passive recipients of information but were actively involved in exploring and discovering the properties of shapes. This hands-on, inquiry-based approach allowed them to build a personal connection with the material, which made the learning process more meaningful and memorable. Following the completion of the first cycle, a reflection session was held, where the teacher reviewed the progress made and identified areas that needed further attention. The students' feedback, collected through informal interviews and observations, indicated that while many students felt more confident in their ability to identify and describe shapes, they still required more support to fully master the concepts. Some students still had difficulty distinguishing between certain shapes, especially those that appeared similar in form but had distinct properties.

Based on these reflections, the second cycle was planned to address the identified issues. The second cycle involved repeating the activities from the first cycle, with additional emphasis on reinforcing the concepts that the students found challenging. The teacher also included more structured activities, such as group discussions and peer collaboration, where students could help each other in identifying shapes and discussing their properties. In the second cycle, the students were given additional opportunities to manipulate objects and explore shapes. They worked in pairs or small groups to observe and identify shapes in a more focused manner. During this cycle, the teacher continued to ask open-ended questions, prompting the students to explain their

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thinking and justify their reasoning. This encouraged students to think more critically about the properties of shapes and how they could distinguish between them based on features such as the number of sides, angles, and symmetry.

The results of the second cycle showed significant improvement. Many students who had struggled in the first cycle were now able to recognize and describe shapes more accurately. They could differentiate between squares, rectangles, triangles, and circles, and they could explain the key characteristics of each shape. Additionally, the students became more confident in their ability to identify shapes both in the classroom and in the real world. By the end of the second cycle, the majority of students demonstrated a much clearer understanding of geometric shapes. The post-test administered at the end of the second cycle revealed a marked improvement in students' ability to correctly identify and describe shapes compared to their performance in the pre-test. Most students were able to recognize various shapes and explain their properties, such as the number of sides, angles, and symmetry. This was a clear indication that the discovery method had effectively enhanced their learning outcomes.

The teacher's observations during the second cycle revealed that the students were now more confident in their understanding of shapes. They were able to articulate their thoughts more clearly and had a better grasp of the spatial relationships between shapes. Additionally, the peer collaboration aspect of the second cycle was particularly beneficial. Students were able to discuss and refine their understanding of shapes through group work, and this peer interaction facilitated deeper learning. Furthermore, the discovery method also seemed to have a positive impact on students' critical thinking and problem-solving skills. During the activities, students were required to think critically about the characteristics of shapes and use their reasoning to identify and differentiate between them. This helped them develop their analytical skills, which are important not only in mathematics but in other areas of learning as well.

The findings from the research suggest that the discovery method is an effective pedagogical approach for teaching geometry, especially in early elementary grades. By encouraging students to explore, observe, and discuss the properties of shapes, the discovery method enabled them to construct their own understanding of geometric concepts. This approach also helped students develop important cognitive skills, such as observation, reasoning, and communication. Additionally, the use of hands-on activities and real-world applications helped bridge the gap between abstract geometric concepts and everyday experiences. The students were able to relate the shapes they studied in the classroom to objects and structures in their environment, making the learning process more meaningful and relevant to their daily lives.

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The research also highlighted the importance of providing opportunities for reflection and feedback. Throughout both cycles, the teacher regularly reflected on the students' progress and adapted the activities to address any challenges or misunderstandings. This ongoing reflection allowed the teacher to make timely adjustments and ensure that all students had the support they needed to succeed. One notable aspect of the discovery method was its ability to promote active learning and student engagement. Students were not simply memorizing the names and characteristics of shapes; instead, they were actively engaged in the process of discovery, which helped them retain the information more effectively. The hands-on nature of the activities, combined with the opportunity for collaboration and discussion, made learning more enjoyable and meaningful for the students. In conclusion, the application of the discovery method in teaching the recognition of shapes was highly effective in improving learning outcomes at MI Ma'arif NU 01 Pandansari. The method not only enhanced students' ability to identify and describe geometric shapes but also fostered critical thinking, collaboration, and communication skills. The results of this study suggest that the discovery method can be a valuable tool in promoting deeper understanding and active engagement in elementary education.

## **Discussion**

The results of this Classroom Action Research (CAR) demonstrate that the discovery method is an effective approach in improving students' understanding of geometric shapes. In the initial stages of the study, students exhibited difficulties in recognizing and describing shapes beyond basic forms like circles and squares. This highlights the need for more interactive and student-centered teaching strategies to engage students in a deeper exploration of geometric concepts. The discovery method proved to be a valuable pedagogical approach as it encouraged students to actively explore and engage with the material. Instead of passively receiving information from the teacher, students were given opportunities to interact with physical objects, such as cut-out shapes and blocks. This hands-on learning process enabled students to better understand the properties of shapes, as they could observe and manipulate the objects directly. This form of active learning allowed them to make their own discoveries, which is central to the discovery method's effectiveness.

One key advantage of the discovery method is its ability to promote critical thinking. Throughout the activities, students were required to think critically about the properties of each shape. They had to consider questions such as: "What makes this a square?" or "How do we differentiate a rectangle from a square?" This not only helped students improve their understanding of geometric shapes but also developed their reasoning and problem-solving skills, which are crucial in various aspects of learning and life. The second cycle of the research revealed a notable improvement in students'



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ability to identify and describe shapes. By emphasizing collaborative learning and peer discussions, students had the opportunity to share their observations and ideas with each other. Peer interaction is a crucial element in the discovery method, as it allows students to challenge one another's thinking, refine their understanding, and reinforce their knowledge through group discussions. This collaborative approach further strengthened their understanding of the shapes' properties.

Furthermore, the teacher's role as a facilitator was crucial in guiding the students through the discovery process. Rather than providing direct answers, the teacher posed thought-provoking questions and encouraged students to reflect on their findings. This teaching strategy helped the students to take ownership of their learning. The teacher's guidance helped to create a structured environment where students felt safe to explore, experiment, and make mistakes, ultimately leading to a deeper understanding of the material. The use of visual aids and real-world connections in the second cycle of the research also contributed to the students' success. By connecting geometric shapes to everyday objects, students could see the practical applications of what they were learning. This helped them relate the abstract concepts of geometry to tangible objects in their environment, making the learning experience more relevant and meaningful. This connection between classroom learning and real-world application is one of the strengths of the discovery method.

The study also highlighted the importance of ongoing reflection and feedback. Throughout both cycles, the teacher reflected on the students' progress, identified areas of difficulty, and adjusted the teaching methods accordingly. This cyclical process of reflection and adaptation ensured that the lessons were tailored to the students' needs, helping to address any challenges that arose during the learning process. Reflection also provided the teacher with insights into how well the discovery method was working and which aspects needed improvement. Despite the successes observed, it is important to note that some students still struggled with certain aspects of the content, particularly with shapes that had more complex properties, such as triangles with different angles. This suggests that while the discovery method was effective for most students, there may still be a need for additional support and scaffolding for those who face greater challenges. These students may benefit from more personalized or differentiated instruction to ensure they achieve mastery in recognizing and understanding shapes.

The research also underscores the value of the discovery method in fostering student engagement. The hands-on, inquiry-based nature of the activities captured students' interest and made learning enjoyable. By providing students with opportunities to explore and experiment with shapes, the discovery method moved away from traditional rote learning and made the lesson more dynamic and engaging. This increase in engagement likely contributed to the improvement in students' learning outcomes. In conclusion, the application of the discovery method in teaching the

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recognition of shapes at MI Ma'arif NU 01 Pandansari was highly successful in improving students' understanding and learning outcomes. The hands-on activities, collaborative discussions, and teacher facilitation allowed students to explore geometric concepts in an interactive and meaningful way. While some students still required additional support, the overall impact of the discovery method was positive, demonstrating its potential as an effective teaching strategy in elementary education.

## Conclusion

Based on the findings of this study, it can be concluded that the implementation of the Discovery Learning method has a positive impact on student learning outcomes. The increase in grades and learning completion shows that students are able to understand concepts better through this approach. This method not only improves students' academic outcomes but also has a positive impact on thinking skills, independence, and student involvement in the learning process. Therefore, this method is recommended to be applied more widely in elementary schools to improve the overall quality of learning.

## References

- Arikunto, S. (2002). *Prosedur Penelitian*. Bandung: Rineka Cipta.
- Dasopang, M. D., Lubis, A. H., & Dasopang, H. R. (2022). How do Millennial Parents Internalize Islamic Values in Their Early Childhood in the Digital Era? *AL-ISHLAH: Jurnal Pendidikan*, 14(1), 697–708.
- Dasopang, M. D., Nasution, I. F. A., & Lubis, A. H. (2023). The Role of Religious and Cultural Education as A Resolution of Radicalism Conflict in Sibolga Community. *HTS Theological Studies*, 79(1), 1–7.
- Erawadi, E., Hamka, H., & Juliana, F. (2017). The Analysis of Student's Stressed Syllables Mastery at Sixth Semester of TBI in IAIN Padangsidimpuan. *English Education: English Journal for Teaching and Learning*, 5(1), 44–57.
- Fatimah, A., & Maryani, K. (2018). Visual Literasi Media Pembelajaran Buku Cerita Anak. *Jurnal Inovasi Teknologi Pendidikan*, 5(1), 61–69. <https://doi.org/10.21831/jitp.v5i1.16212>
- Gogahu, D. G. S., & Prasetyo, T. (2020). Pengembangan Media Pembelajaran Berbasis E-Bookstory untuk Meningkatkan Literasi Membaca Siswa Sekolah Dasar. *Jurnal Basicedu*, 4(4), 1004–1015.
- Hamka, H. (2023). The Role of Principals on Teacher Performance Improvement in a Suburban School. *QALAMUNA: Jurnal Pendidikan, Sosial, Dan Agama*, 15(1), 371–380.

- 
- Hamka, H., Suen, M.-W., Anganthi, N. R. N., Haq, A. H. B., & Prasetyo, B. (2023). The Effectiveness of Gratitude Intervention in Reducing Negative Emotions in Sexual Abuse Victims. *Psikohumaniora: Jurnal Penelitian Psikologi*, 8(2), 227–240.
- Harahap, S. M., & Hamka, H. (2023). Investigating the Roles of Philosophy, Culture, Language and Islam in Angkola's Local Wisdom of 'Dalihan Na Tolu.' *HTS Teologiese Studies/Theological Studies*, 79(1), 8164.
- Hendrawati, S., Rosidin, U., & Astiani, S. (2020). Perilaku hidup bersih dan sehat (PHBS) siswa/siswi di sekolah menengah pertama negeri (SMPN). *Jurnal Perawat Indonesia*, 4(1), 295–307. <https://doi.org/https://doi.org/10.32584/jpi.v4i1.454>
- Lubis, A. H. (2019). Upaya Peningkatan Hasil Belajar Siswa Sekolah Dasar melalui Model Cooperative Learning Tipe Numbered Heads Together. *FORUM PAEDAGOGIK*, 11(2), 127–143.
- Lubis, A. H. (2023). The Interactive Multimedia Based on Theo-Centric Approach as Learning Media during the Covid-19 Pandemic. *JPI (Jurnal Pendidikan Indonesia)*, 12(2), 210–222.
- Lubis, A. H., & Dasopang, M. D. (2020). Pengembangan Buku Cerita Bergambar Berbasis Augmented Reality untuk Mengakomodasi Generasi Z. *Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan*, 5(6), 780–791.
- Lubis, A. H., Dasopang, M. D., Ramadhini, F., & Dalimunthe, E. M. (2022). Augmented Reality Pictorial Storybook: How does It Influence on Elementary School Mathematics Anxiety? *Premiere Educandum: Jurnal Pendidikan Dasar Dan Pembelajaran*, 12(1), 41–53.
- Lubis, A. H., & Wangid, M. N. (2019). Augmented Reality-assisted Pictorial Storybook: Media to Enhance Discipline Character of Primary School Students. *Mimbar Sekolah Dasar*, 6(1), 11–20. <https://doi.org/10.17509/mimbar-sd.v6i1.16415>
- Lubis, A. H., Yusup, F., Dasopang, M. D., & Januariyansah, S. (2021). Effectivity of Interactive Multimedia with Theocentric Approach to the Analytical Thinking Skills of Elementary School Students in Science Learning. *Premiere Educandum: Jurnal Pendidikan Dasar Dan Pembelajaran*, 11(2), 215–226.
- Manshur, U., & Ramdlani, M. (2019). Media audio visual dalam pembelajaran PAI. *Al-Murabbi: Jurnal Pendidikan Agama Islam*, 5(1), 1–8.
- Mardhiyah, R. H., Aldriani, S. N. F., Chitta, F., & Zulfikar, M. R. (2021). Pentingnya Keterampilan Belajar di Abad 21 sebagai Tuntutan dalam Pengembangan Sumber Daya Manusia. *Lectura: Jurnal Pendidikan*, 12(1), 29–40.

- 
- Ningsih, Y. S., Mulia, M., & Lubis, A. H. (2023). Development of Picture Storybooks with TheoAnthropoEco Centric Approach for Elementary School Students. *AL-ISHLAH: Jurnal Pendidikan*, 15(2), 1888–1903.
- Nurhidayah, I., Asifah, L., & Rosidin, U. (2021). Pengetahuan , Sikap dan Perilaku Hidup Bersih dan Sehat pada Siswa Sekolah Dasar. 13(1), 61–71. <https://doi.org/10.32528/ijhs.v13i1.4864>
- Peptiyanti, I., Ahmad, A., Dzaky, M., Fauziah, S. N., Rendi, & Puspitasari, P. (2023). Peran kurikulum merdeka dalam meningkatkan harmonisasi antara masyarakat dan sekolah. *Jurnal Pacu Pendidikan Dasar*, 3(1), 269–277. <https://doi.org/https://doi.org/10.22021/pacu.v3i1.411>
- Rahmah, S., & Lubis, A. H. (2024). Problem Posing as a Learning Model to Improve Primary School Students' Mathematics Learning Outcomes in Gayo Lues. *Journal of Indonesian Primary School*, 1(4), 93–104.
- Rahman, A., Munandar, S. A., Fitriani, A., Karlina, Y., & Yumriani. (2022). Pengertian Pendidikan, Ilmu Pendidikan dan Unsur-Unsur Pendidikan. *Al Urwatul Wutsqa: Kajian Pendidikan Islam*, 2(1), 1–8.
- Ranisa, R., Erawadi, E., & Hamka, H. (2018). Students' Mastery in Identifying Adverbs at Grade VIII SMPN 2 Batang Toru Tapanuli Selatan. *ENGLISH EDUCATION JOURNAL: English Journal for Teaching and Learning*, 6(2), 241–252.
- Ricardo, R., & Meilani, R. I. (2017). Impak Minat dan Motivasi Belajar terhadap Hasil Belajar Siswa. *Jurnal Pendidikan Manajemen Perkantoran (JPManper)*, 2(2), 188–201.
- Santi, Undang, & Kasja. (2023). Peran Guru PAI dalam Membentuk Karakter Peserta Didik di Sekolah. *Jurnal Pendidikan Tambusai*, 7(2), 16078–16084. <https://doi.org/https://doi.org/10.31004/jptam.v7i2.8918>
- Sugiyono. (2018). *Metode Penelitian Kuantitatif Kualitatif dan R&D*. Bandung: Alfabeta.