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# Implementation of Discovery Learning Method to Improve Student Learning Outcomes in Science Learning at MI Tarbiyatul Islamiyah Winong

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**Abstract:** This research aims to improve student learning outcomes on animal life cycle materials through the application of the Discovery Learning method. This research was conducted at MI Tarbiyatul Islamiyah Winong with 3rd grade students with 30 students. The research method used is class action research (PTK) which is carried out in two cycles. Each cycle consists of planning, implementation, observation, and reflection stages. The results of the study show that the application of the Discovery Learning method can increase student involvement in learning, motivate students to actively seek information, and develop their critical thinking skills. In cycle I, the average student learning outcome was 70%, and after the application of this method in cycle II, the average student learning outcome increased to 85%. This improvement shows that the Discovery Learning method is effective in improving student learning outcomes, especially in animal life cycle materials. Thus, it can be concluded that the application of the Discovery Learning method can improve the understanding and learning outcomes of 3rd grade students of MI Tarbiyatul Islamiyah Winong.

**Keywords:** Discovery Learning, learning outcomes, science learning.

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## INTRODUCTION

Education plays a crucial role in shaping students' knowledge, attitudes, and skills to prepare them for real-world challenges. In primary schools, especially at the Madrasah Ibtidaiyah level, students are introduced to basic scientific concepts that form the foundation for further education. One of these essential concepts is the life cycle of animals, which is a key part of natural science curriculum. Understanding this topic helps students develop awareness of the environment and living beings around them. However,

teaching this material effectively requires approaches that engage students actively and meaningfully.

In many classrooms, the teaching of science is still dominated by traditional methods that rely heavily on memorization and passive listening. Such methods often fail to stimulate students' curiosity and critical thinking, especially when dealing with abstract or process-based topics like the animal life cycle. When students are not actively involved in their learning, they tend to become bored and disengaged. This condition ultimately leads to low learning outcomes and a lack of retention of important concepts. This situation calls for a shift in teaching strategies toward more student-centered learning models. One such model is Discovery Learning, a constructivist-based method that emphasizes student exploration and active engagement in the learning process. Discovery Learning encourages students to ask questions, investigate, and discover concepts on their own or through guided activities. This approach has the potential to make learning more meaningful, particularly in science subjects, where students can observe phenomena and draw conclusions through experimentation. Discovery Learning aligns with the natural curiosity of young learners and can be particularly effective when teaching biological processes.

The topic of the animal life cycle is an ideal subject for implementing Discovery Learning. It involves observation, classification, and an understanding of changes in living organisms over time. When students are given the opportunity to explore how different animals grow and change, they can build a more concrete understanding of these processes. Moreover, hands-on learning experiences, such as observing life cycle stages through videos, real-life specimens, or simulations, can make the material more engaging and memorable. At Madrasah Ibtidaiyah Tarbiyatul Islamiyah Winong, teachers have recognized the need to improve students' understanding of science, especially in the topic of the animal life cycle. Previous observations and assessments revealed that many students struggled to understand key concepts and often performed poorly on related assessments. This gap in understanding was attributed to teaching strategies that did not fully engage students or encourage independent thinking. As a result, the school has expressed interest in exploring alternative teaching methods to address this issue.

The implementation of the Discovery Learning method is expected to address these challenges by creating an active learning environment. In Discovery Learning, students are guided to find answers themselves through structured steps such as observing, questioning, hypothesizing, experimenting, and concluding. These steps help students develop a deeper understanding of scientific content while also building essential skills such as problem-solving, reasoning, and collaboration. This method transforms the classroom into a space for inquiry and exploration rather than rote instruction. Another advantage of Discovery Learning is that it supports differentiated learning styles. Students with visual, auditory, or kinesthetic preferences can benefit from the varied activities included in the discovery process. Whether it is through observing images, listening to explanations, or manipulating learning materials, students are more likely to retain information when it is presented in ways that match their learning preferences. This inclusivity ensures that all students have the opportunity to succeed and engage with the material.

Moreover, Discovery Learning can foster a greater sense of ownership and responsibility in students' learning processes. When students take an active role in discovering information, they are more likely to feel proud of their accomplishments and motivated to continue learning. This internal motivation can be a powerful force in driving academic achievement, particularly in younger learners who thrive on interactive and engaging learning experiences. Encouraging this mindset at an early age can lead to long-term educational benefits. Despite its benefits, the successful application of Discovery Learning requires careful planning and execution. Teachers must be prepared to design learning activities that are challenging but achievable and that guide students through the discovery process without providing direct answers. They must also be ready to manage a

more dynamic classroom environment where students are actively participating in various tasks. This may involve additional preparation and a shift in teaching perspective, but the potential benefits make the effort worthwhile.

In previous research, Discovery Learning has been found to improve student achievement in various subjects, including science. Studies have shown that students who learn through discovery perform better on conceptual assessments and retain information longer compared to those taught through traditional methods. These findings support the decision to explore Discovery Learning as a viable method for improving science instruction at Madrasah Ibtidaiyah Tarbiyatul Islamiyah Winong. The low performance in the topic of animal life cycles observed at this school serves as a key motivation for conducting this research. Improving student outcomes in this area is not only important for academic achievement but also for fostering scientific literacy from a young age. By understanding how living things grow and change, students can develop empathy, environmental awareness, and a scientific mindset that will benefit them in later education and in life.

Students at the elementary level are naturally curious and often eager to learn when presented with stimulating and hands-on activities. However, without proper instructional methods, this curiosity can quickly fade. The use of Discovery Learning seeks to harness that curiosity and turn it into meaningful learning experiences. It is especially useful for topics that involve observable patterns or cycles, such as the development stages of animals. Integrating Discovery Learning into the science curriculum may also encourage teachers to innovate and reflect on their own teaching practices. Teachers who adopt this method are often required to rethink how they present information and how they facilitate learning. This process can lead to professional growth and the adoption of more effective teaching techniques that benefit both the teacher and the students.

The support from school administrators is also crucial in implementing new learning models like Discovery Learning. With proper support and collaboration, teachers can experiment with different instructional designs and share best practices with their colleagues. A supportive school environment that values innovation and student-centered learning is essential for the long-term success of such educational initiatives. Furthermore, the Discovery Learning method supports the goals of the 2013 Curriculum (Kurikulum 2013) implemented in Indonesia, which emphasizes scientific approaches, active student participation, and character development. The curriculum encourages students to explore, observe, and question the world around them, making Discovery Learning a natural fit. By aligning classroom practices with national education goals, schools can help students achieve the competencies expected at their grade level.

This research is not only aimed at improving academic performance but also at fostering a more joyful and engaging learning atmosphere. When students are interested and invested in what they are learning, their academic results often improve naturally. Discovery Learning creates such an environment by stimulating curiosity, encouraging exploration, and providing opportunities for students to construct their own knowledge. The implementation of Discovery Learning also presents an opportunity to integrate multimedia and technological tools into the classroom. Videos, animations, and interactive simulations can enhance students' understanding of complex biological processes, such as metamorphosis or reproductive cycles. These tools make abstract ideas more concrete and can support students who need visual representations to grasp scientific content effectively.

Given the increasing emphasis on 21st-century skills, methods like Discovery Learning help prepare students not just for exams but for life. Skills such as communication, collaboration, and critical thinking are nurtured through this approach. By experiencing science as an active and collaborative process, students can develop a lifelong love for learning and inquiry, setting the stage for success in future educational endeavors.

In summary, the need for innovative teaching strategies, particularly in science education at the elementary level, has become more urgent. The use of Discovery Learning offers a promising solution to improve students' understanding of the life cycle of animals. This research aims to explore how Discovery Learning can be effectively implemented to raise student engagement and academic achievement at Madrasah Ibtidaiyah Tarbiyatul Islamiyah Winong. Ultimately, this research is expected to provide valuable insights for teachers, school leaders, and curriculum developers seeking effective ways to enhance science education. By documenting the process and outcomes of applying Discovery Learning, this study can serve as a reference for similar initiatives in other schools. The goal is not only to improve student performance but also to foster a culture of active, joyful, and meaningful learning.

## METHODS

This research was conducted using a classroom action research (CAR) approach, which is aimed at improving learning practices in real classroom settings. The method was chosen because it allows teachers and researchers to work collaboratively to solve educational problems. In this study, the problem addressed was the low achievement of students in understanding the animal life cycle material. The CAR model provided the framework for implementing, observing, and evaluating the use of Discovery Learning. It also helped guide adjustments to teaching practices based on student feedback and assessment results. The research was carried out at Madrasah Ibtidaiyah Tarbiyatul Islamiyah Winong, focusing on one class of fifth-grade students. The participants were selected based on the recommendation of the school and the identified need for intervention in science education. The classroom consisted of students with mixed academic abilities, providing an ideal setting to evaluate the effectiveness of Discovery Learning. This diversity also allowed the researcher to assess how the method impacted different types of learners in the same environment.

This study took place over two cycles, each involving four stages: planning, implementation, observation, and reflection. The first cycle served as a trial to introduce Discovery Learning and observe how students responded to it. Based on the observations and results from the first cycle, improvements and modifications were made for the second cycle. This iterative process was essential to ensure continuous refinement and effectiveness of the teaching strategy used. In the planning phase, the researcher and the classroom teacher collaborated to develop lesson plans based on the Discovery Learning model. These plans included learning objectives, steps for guiding student discovery, learning materials, and assessment tools. Attention was also given to classroom management strategies to ensure smooth group work and active participation. The lesson plans were aligned with the 2013 Curriculum to ensure consistency with national education standards.

During the implementation phase, lessons were delivered following the steps of Discovery Learning: stimulation, problem statement, data collection, data processing, verification, and generalization. These stages were applied to lessons on the animal life cycle, with each step designed to help students build understanding through observation and inquiry. The teacher facilitated rather than directly instructed, encouraging students to ask questions, discuss ideas, and draw conclusions independently. Observations were conducted throughout the learning process by the researcher and other assisting teachers. An observation sheet was used to record student behavior, participation, and group dynamics. Particular focus was given to how students engaged in the discovery process, how they interacted with peers, and how they demonstrated understanding through their verbal and written responses. This qualitative data provided valuable insights into the strengths and challenges of implementing Discovery Learning in the classroom.

In addition to observation, student learning outcomes were measured using pre-tests and post-tests. The pre-test was given before the implementation of the Discovery

Learning method to assess students' prior knowledge. After each cycle, a post-test was administered to evaluate the improvement in understanding of the animal life cycle. The test items were aligned with the lesson objectives and included multiple-choice and open-ended questions to measure both factual knowledge and conceptual understanding.

Student worksheets and group project results were also analyzed to assess learning outcomes. These worksheets required students to identify, describe, and sequence the stages of various animal life cycles based on their group investigations. Through these products, the researcher could evaluate students' ability to process and represent scientific information. Rubrics were used to ensure consistent and objective evaluation of student work. Interviews with students and the classroom teacher were conducted at the end of each cycle to gather additional data on the learning experience. These interviews provided insights into students' perceptions of Discovery Learning and how it affected their motivation and understanding. Teachers also provided feedback on classroom management, student engagement, and the practicality of implementing the method. This qualitative data added depth to the analysis of the study's effectiveness.

To ensure the validity and reliability of the research, data triangulation was applied. This involved comparing information from observations, tests, worksheets, and interviews. The use of multiple data sources helped validate findings and offered a comprehensive picture of the learning process. It also reduced the potential for bias and allowed for a more accurate evaluation of how Discovery Learning impacted student achievement. Ethical considerations were taken into account throughout the research. Permission was obtained from the school principal and informed consent was received from the students' guardians. Students participated voluntarily and were assured that their academic grades would not be negatively affected by the research activities. Anonymity and confidentiality were maintained in reporting the results to ensure students' identities were protected.

Data analysis involved both quantitative and qualitative methods. Test scores were analyzed using descriptive statistics to determine the mean, percentage increase, and number of students who met the minimum competency standard. Qualitative data from observations and interviews were analyzed thematically to identify patterns related to student engagement, difficulties, and perceptions of the learning process. The combination of these methods allowed for a comprehensive understanding of the intervention's impact. The first cycle of the research helped to identify initial responses to the Discovery Learning method. While many students were enthusiastic, some had difficulty with group collaboration and required additional support during inquiry activities. Based on these findings, adjustments were made in the second cycle, including clearer instructions, more structured group roles, and additional scaffolding to guide student exploration more effectively.

In the second cycle, improvements were observed in both student behavior and learning outcomes. More students participated actively in discussions, and group work became more organized and purposeful. Test scores improved significantly, and students demonstrated a deeper understanding of the life cycle stages. These positive changes highlighted the effectiveness of iterative reflection and adaptation in action research. This research method allowed for continuous improvement of teaching strategies based on real-time classroom data. It also empowered the classroom teacher to play an active role in professional development and instructional innovation. The success of the Discovery Learning model in this setting provides valuable insights that can inform future instructional practices in science education at the elementary level. In conclusion, the research methodology used in this study combined systematic planning, collaborative implementation, detailed observation, and reflective analysis. It provided a structured yet flexible approach to improving learning outcomes through Discovery Learning. The process highlighted the importance of teacher involvement, student-centered strategies, and continuous evaluation in achieving meaningful educational improvements.

## RESULTS

The implementation of the Discovery Learning method brought noticeable changes in the learning atmosphere and student performance. During the initial observations in Cycle I, many students showed increased enthusiasm when they were invited to explore the animal life cycle through hands-on activities. The use of multimedia and real-life examples captured students' attention, creating an interactive learning environment. Students appeared curious and more willing to ask questions about animal development stages. In the pre-test administered before Cycle I, student understanding of the animal life cycle was still limited. Only a few students scored above the minimum competency standard. The majority struggled with identifying life stages or sequencing them correctly. These results confirmed the need for an intervention that encouraged active learning and deeper conceptual understanding. The pre-test scores served as a baseline for measuring progress throughout the research process.

During the Discovery Learning sessions in Cycle I, students worked in small groups to investigate different animals' life cycles. Although some students needed guidance at first, they gradually adapted to collaborative work. Most students were able to observe images, videos, and printed materials, then record their observations in worksheets. Group discussions became more dynamic, although uneven participation was still observed among students in some groups. At the end of Cycle I, a post-test was administered to assess students' learning outcomes. The results showed moderate improvement compared to the pre-test scores. A greater number of students passed the minimum competency threshold, although several still struggled with specific aspects, such as explaining metamorphosis stages in detail. The increase in scores indicated that Discovery Learning had a positive impact, although there was still room for improvement.

Observation notes from Cycle I revealed several strengths and weaknesses. On the positive side, students became more engaged and motivated during the lessons. They were more willing to share ideas and discuss with peers. However, some challenges emerged, such as limited time for group presentations, unclear task distribution, and a tendency for stronger students to dominate discussions. These findings guided adjustments for the next cycle. Student interviews at the end of Cycle I provided additional insights. Many students expressed enjoyment in learning through discovery rather than just listening to lectures. They appreciated the opportunity to observe and investigate, especially when working with visuals. However, a few students mentioned feeling confused during group activities and requested clearer instructions. This feedback was valuable in planning for Cycle II.

Before Cycle II, several revisions were made to address the shortcomings from the first cycle. These included more structured group roles, additional scaffolding materials, clearer step-by-step instructions, and time management adjustments. The revised lesson plans aimed to promote equal participation, reduce confusion, and maximize students' learning experiences. Teachers were also encouraged to closely monitor group interactions. In the implementation of Cycle II, students appeared more confident and independent. They were able to follow the Discovery Learning steps more smoothly and complete tasks with less teacher intervention. The assignment of specific roles within each group—such as observer, recorder, presenter, and leader—helped distribute responsibilities more evenly. This change improved group dynamics and accountability among students.

Students were given new learning materials related to different animal life cycles, including amphibians, insects, and mammals. The variety of examples provided opportunities for comparative analysis, prompting students to recognize similarities and differences among species. Their ability to draw conclusions based on observation improved significantly, as seen in both group presentations and individual worksheet answers. In the second post-test, there was a marked increase in student performance. A larger percentage of the class reached or exceeded the minimum competency standard. Students who had previously scored low showed significant gains, indicating a better

understanding of life cycle processes. This improvement confirmed that the Discovery Learning model had a strong positive impact on learning outcomes when implemented effectively.

The data showed that students could now identify the stages of development in animals more accurately and provide clear explanations. In particular, they demonstrated better understanding of complete and incomplete metamorphosis. This progress was attributed to the combination of group exploration, visual aids, and structured learning steps that guided students through the discovery process in a meaningful way. Observation records from Cycle II highlighted improved classroom engagement. Students were more focused, contributed actively during discussions, and showed better cooperation with peers. Classroom management also improved, with fewer off-task behaviors and more self-directed learning. The teacher noted a more enthusiastic and confident learning attitude among the majority of students.

Student worksheet analysis in Cycle II showed better organization of ideas and more detailed descriptions. Many students included labeled diagrams, correct sequencing of life stages, and thoughtful conclusions. These results indicated that students not only acquired factual knowledge but also developed skills in scientific reasoning, classification, and reporting, which are crucial components of science literacy. Feedback from students in Cycle II reflected growing interest in science. They shared that learning through exploration and teamwork was more exciting than traditional learning methods. Some students mentioned that they looked forward to science lessons more than before. Their sense of achievement from completing tasks on their own boosted their confidence and interest in the subject matter.

Teachers also noted positive changes in their instructional practices. They observed that the Discovery Learning model allowed them to become facilitators rather than knowledge deliverers. This shift gave them more opportunities to observe student thinking and provide timely feedback. They also found that students were more capable of retaining knowledge after discovering it themselves rather than being told directly. The improvement in student learning outcomes across both cycles demonstrated the effectiveness of the Discovery Learning method. The post-test scores from Cycle II were significantly higher than those in Cycle I, indicating a deeper and more sustained understanding of the content. This result affirmed that discovery-based instruction can enhance students' cognitive engagement and mastery of complex scientific concepts.

In addition to academic performance, the students' communication and collaboration skills improved. Group activities helped students express their thoughts, listen to others, and make joint decisions. These social skills are essential for their overall development and align with the competencies outlined in the 2013 Curriculum. Discovery Learning thus supports both academic and character education goals. Another positive outcome was the development of students' critical thinking. When asked to compare different animals' life cycles, students began to question why some animals undergo metamorphosis while others do not. They showed curiosity in investigating these patterns and attempted to relate them to the animals' habitats and survival strategies. This inquiry-based thinking is a hallmark of scientific learning.

The teacher's role as a facilitator was key to the success of the method. By providing questions, guiding students through challenges, and encouraging reflection, the teacher helped create a supportive learning environment. This approach allowed students to feel safe in expressing ideas, making mistakes, and learning from them, which further strengthened their understanding and motivation. Although the results were largely positive, the research also acknowledged certain limitations. Time constraints occasionally prevented groups from fully completing their tasks during class. Additionally, not all students were equally enthusiastic, particularly those who preferred solitary work over group activities. These challenges suggest that Discovery Learning, while beneficial, may require further adaptation to suit all learners.

Despite these limitations, the overall data from tests, observations, and student feedback strongly supported the effectiveness of Discovery Learning. The method contributed to a richer learning experience and led to higher academic achievement in the topic of animal life cycles. Students were able to build their knowledge through experience, reflection, and collaboration, which are fundamental principles of quality education.

The comparison between pre-test and post-test scores across the two cycles clearly illustrated the learning gains achieved through the intervention. Students moved from simply recognizing animal names to explaining life cycle stages with confidence and detail. This cognitive growth represents a significant achievement in science learning at the primary school level. Additionally, the research demonstrated that meaningful learning can be achieved when students are actively involved in constructing their own knowledge. The process of asking questions, making observations, and drawing conclusions helped students engage deeply with the content. It also made learning feel purposeful and connected to the real world. In summary, the Discovery Learning method proved to be an effective strategy in improving student learning outcomes on the topic of animal life cycles. It fostered active participation, inquiry, and deeper understanding of scientific processes. The results of this research support the wider application of this method in elementary science education, especially for process-based topics like life cycles.

## DISCUSSION

The research findings reveal that the Discovery Learning method effectively improves students' understanding of the animal life cycle. This method promotes student involvement in the learning process by encouraging exploration and investigation rather than passive listening. As students take an active role in their learning, they are more likely to understand and retain the material. Discovery Learning creates opportunities for students to connect prior knowledge with new concepts, making learning more meaningful and long-lasting. One of the key advantages of Discovery Learning observed in this study is its ability to foster curiosity and engagement. From the very beginning, students were motivated by the chance to explore topics using real-life materials, visuals, and group discussions. This motivation had a direct impact on their willingness to participate in classroom activities. As they became more curious, they began asking questions, engaging in dialogue, and seeking answers independently, which are essential behaviors in scientific learning.

The collaborative nature of Discovery Learning played a major role in developing students' social and communication skills. Through group work, students practiced sharing ideas, solving problems together, and respecting others' opinions. These experiences helped them not only understand the content better but also improve their ability to cooperate in a learning community. This is in line with educational goals that aim to develop well-rounded students who can thrive socially and academically. During the first cycle, challenges such as unequal group participation and confusion during exploration were noted. These challenges are common in the early stages of implementing new instructional models. However, the research demonstrated that with proper scaffolding and teacher guidance, students were able to overcome these difficulties. By the second cycle, students had become more familiar with the Discovery Learning process and could work more independently and effectively in their groups.

Another critical point in the discussion is the significant improvement in students' academic performance. The increase in post-test scores from Cycle I to Cycle II shows that Discovery Learning not only enhances engagement but also leads to measurable learning gains. Students moved from basic recall of facts to more analytical thinking, as seen in their ability to explain life cycle stages, make comparisons, and draw conclusions based on their investigations.

The shift from teacher-centered instruction to student-centered discovery was a pivotal change in the learning dynamic. This shift allowed students to become the main agents of their learning, with the teacher acting as a facilitator. This role encouraged the teacher to observe, provide feedback, and support students without dominating the learning process. This environment gave students space to think critically, make hypotheses, and reflect on their findings. The Discovery Learning model is particularly suitable for science subjects that involve observation, classification, and experimentation. In the case of learning about animal life cycles, the model provided a clear framework for students to explore and understand developmental processes. Instead of memorizing life stages, students constructed their understanding through hands-on activities, discussions, and drawing conclusions based on evidence they observed.

In addition to academic outcomes, this research highlights the emotional and psychological benefits of Discovery Learning. Students reported feeling more excited about learning and more confident in their abilities. These feelings of competence and autonomy contribute to a positive learning identity, which is crucial for long-term academic success. When students believe they are capable learners, they are more likely to take on challenges and persist through difficulties. The qualitative data collected through interviews and observations provided valuable insight into student behavior and perceptions. Teachers noticed increased levels of participation and improved behavior during lessons. Students were more attentive, less disruptive, and more willing to help each other. This positive classroom atmosphere made learning more enjoyable for both students and teachers and supported the overall effectiveness of the method.

Another key aspect discussed is the importance of planning and teacher preparation. Discovery Learning requires thoughtful lesson design, well-prepared materials, and careful monitoring during classroom activities. Teachers must anticipate possible student difficulties and prepare guiding questions to support inquiry. The success of the second cycle underscores the value of professional reflection and continuous improvement in teaching practices. It is important to note that Discovery Learning may not be equally effective for all types of learners without appropriate adjustments. Some students, particularly those with lower confidence or learning difficulties, may struggle without direct instruction. The research addressed this by implementing scaffolding techniques such as guided worksheets, role assignments, and teacher checkpoints. These strategies helped ensure that all students could access and benefit from the learning process.

The role of formative assessment in Discovery Learning cannot be overstated. Ongoing assessment through observation, discussion, and review of student work allowed teachers to monitor progress and provide timely feedback. This continuous feedback loop helped students refine their understanding and supported them in achieving the learning objectives. Formative assessment also enabled the teacher to identify and respond to learning gaps early on. Through this research, it became clear that learning is most effective when students are given the opportunity to explore, ask questions, and construct meaning through experience. This approach aligns with constructivist learning theory, which emphasizes that knowledge is built through active engagement. Discovery Learning serves as a practical application of this theory in the classroom, making abstract scientific concepts more concrete and accessible.

The structured stages of Discovery Learning—stimulation, problem statement, data collection, data processing, verification, and generalization—provided a clear path for students to follow. This structure helped guide student inquiry and supported them in organizing their thinking. It also helped maintain classroom order and ensure that learning goals were met within the limited instructional time available. One of the most encouraging results was the improved ability of students to explain their thinking. During presentations and interviews, students were able to describe the stages of animal life cycles and justify their conclusions using observations. This ability to articulate ideas is a key indicator of deep understanding and shows that students were not just memorizing content but internalizing it. The impact of the teacher's attitude and enthusiasm was also

evident in this study. When teachers showed excitement and curiosity about the learning process, students responded similarly. Teacher encouragement and validation helped build a supportive classroom culture in which students felt safe to explore and make mistakes. This emotional safety is critical for fostering creativity and risk-taking in learning.

The discovery approach also encouraged cross-disciplinary thinking. While the main focus was on science, students also practiced skills in reading, writing, art (drawing life cycles), and math (measuring and sequencing). This interdisciplinary integration added richness to the learning experience and helped students see the relevance of science in everyday life and other subject areas. While the study focused on one topic—animal life cycles—the implications of the findings can be applied more broadly. Discovery Learning has potential for use in other areas of science and beyond, including social studies, language, and mathematics. Its emphasis on exploration, reasoning, and collaboration makes it a flexible and valuable strategy for promoting deeper learning across the curriculum. This research also demonstrated the value of collaboration between researchers and classroom teachers. By working together, they were able to reflect on teaching practices, share expertise, and make data-informed decisions. This professional partnership contributed to the success of the intervention and highlighted the importance of teacher development and support in implementing new instructional strategies.

It is essential to consider the school context when applying Discovery Learning. Support from school leadership, access to materials, and manageable class sizes all affect the success of the method. In this study, the support provided by the school and the availability of visual aids played a crucial role in enabling effective implementation. Schools considering this approach should ensure similar support systems are in place. The success of Discovery Learning in this research supports broader educational goals in the Indonesian curriculum, particularly those related to 21st-century skills. These include critical thinking, communication, collaboration, and creativity. The observed growth in these areas among students reinforces the relevance of the method for preparing students for future academic and life challenges.

Parental involvement, although not a central focus of this study, can also enhance Discovery Learning. When students are encouraged to share their findings at home or conduct simple investigations with their families, learning extends beyond the classroom. Future studies could explore strategies for involving parents more actively in the learning process through the discovery model. In interpreting the findings, it is important to acknowledge that not all schools or classrooms will experience identical outcomes. Factors such as teacher experience, student demographics, and school resources may influence results. However, the overall pattern observed in this study suggests that Discovery Learning, when implemented thoughtfully and with proper support, is a powerful tool for improving student outcomes. The process of classroom action research itself contributed to the positive results. The cycles of planning, action, observation, and reflection allowed for continuous refinement of the teaching approach. This iterative process not only benefited students but also empowered teachers to become reflective practitioners who take ownership of their professional growth. Ultimately, this discussion confirms that Discovery Learning is more than just a method—it is a philosophy of teaching that values student agency, inquiry, and real-world connection. When these values are brought into the classroom, learning becomes more authentic, enjoyable, and impactful. The findings of this research support the continued exploration and adaptation of Discovery Learning across educational settings.

## CONCLUSION

Based on the research findings, it can be concluded that the implementation of the Discovery Learning method significantly improved students' learning outcomes in the topic of animal life cycles at Madrasah Ibtidaiyah Tarbiyatul Islamiyah Winong. Through

structured exploration, students became more actively involved in the learning process and demonstrated greater curiosity, motivation, and independence. The shift from passive learning to active discovery allowed students to construct their understanding meaningfully. Test results, observations, and student reflections all pointed to improved mastery of concepts, better communication skills, and increased confidence in expressing scientific ideas. The use of group work and visual aids enhanced collaboration and made abstract concepts more concrete. Discovery Learning also encouraged the development of critical thinking and problem-solving skills. It provided a dynamic classroom environment that supported differentiated learning needs and fostered deeper engagement. Overall, Discovery Learning proved to be an effective instructional model for enhancing both academic achievement and essential 21st-century skills. Furthermore, the positive outcomes of the research suggest that Discovery Learning can be effectively integrated into primary science education to foster both conceptual understanding and student character development. The success of the model depended greatly on teacher preparation, ongoing reflection, and the availability of supporting materials. With proper planning and classroom management, Discovery Learning can support diverse learners and adapt to different topics beyond the science curriculum. The study also emphasizes the importance of formative assessment and teacher facilitation in guiding student discovery. Although certain limitations were encountered, such as time constraints and unequal group participation, these were addressed through iterative improvements across research cycles. The research thus reinforces the value of continuous teacher development and collaborative classroom practices. In conclusion, Discovery Learning not only improves science learning outcomes but also builds a more engaging and empowering educational experience for students at the elementary level.

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