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Implementation of the Discovery Learning Model to Support Student Learning Engagement in Grade IV at Elementary School Islam Hasanka Palangka Raya

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Abstract: This study aims to describe the implementation of the Discovery Learning model and the forms of student engagement among fourth-grade students at SD Islam Hasanka in Palangka Raya City, as well as to identify the factors supporting and hindering student interaction during instruction. The study employs a qualitative approach with a case study design. Data were collected through observation, interviews, and documentation, and subsequently analyzed using the Miles and Huberman interactive model, involving data reduction, data display, and conclusion drawing/verification. The study's informants consisted of the fourth-grade teacher and two students selected via purposive sampling. The results indicate that Discovery Learning was implemented through six stages: stimulation, problem formulation, data collection, data processing, verification, and generalization. These stages facilitated student engagement through activities such as asking and answering questions, discussing, seeking and processing information, collaborating, and presenting results. However, student engagement was not uniform, as it was influenced by physical condition, learning readiness, self-confidence, peer interaction, family support, the teacher's role, and the classroom environment. Findings also revealed contrasting behavior, where a student chose to adopt the group's answer despite having a different one. Thus, Discovery Learning can foster student engagement when accompanied by teacher facilitation and effective management.

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Introduction

Active learning is a crucial indicator of the quality of the learning process in elementary schools. Quality learning is demonstrated not only by academic achievement but also by student engagement throughout the learning process (Wahyuningsih, 2020). Hariandi and Cahyani, (2018) state that such engagement is evident in activities such as observing, questioning, expressing opinions, discussing, problem-solving, and synthesizing information gathered during lessons. In line with the implementation of the *Kurikulum Merdeka* (Independent Curriculum), the learning process is geared toward developing 21st-century competencies, such as critical thinking, creativity, communication, and collaboration.

Oktober 2026 Vol. 11 No. 4
E-ISSN: 2656-1417
P-ISSN: 2503-0602
pp. 588-600

Therefore, teachers need to employ learning models that allow students to actively construct their knowledge through meaningful learning experiences (Naziaha et al., 2020).

Although contemporary learning emphasizes active student engagement, in reality, there are still students who do not demonstrate optimal participation during the learning process. Preliminary observations and interviews with Ustad MT, the Grade IV teacher at SD Islam Hasanka in Palangka Raya City, revealed that the learning process is still dominated by a few students, while others tend to be passive. Out of 15 students, seven (46.67%) have not shown active engagement, characterized by a lack of confidence in asking questions, expressing opinions, and participating in group discussions. This situation highlights the importance of learning strategies that provide opportunities for all students to engage in ways that suit their individual characteristics and readiness (Prasetyo & Abduh, 2021; Shrestha, Perlman, & Shaver, 2023). These issues indicate that low levels of learning engagement are linked not only to students' ability to comprehend the material but also to how the learning process is designed to provide experiences that enable all students to participate (Yuliasari, 2026). Teacher-centered instruction risks relegating some students to the role of passive information recipients rather than active individuals who discover and construct knowledge. Therefore, a learning model is needed to shift the students' role from passive recipients to active learners through exploration, discussion, and problem-solving activities. Discovery Learning is one such model that meets these needs. Developed based on Jerome Bruner's constructivist perspective, the Discovery Learning model emphasizes that students gain more meaningful understanding when they discover concepts through independent exploration (Bruner, 1961; Wardini, 2026). In this model, the teacher does not act as the sole source of information but rather as a facilitator who provides stimuli, guides the inquiry process, and assists students in constructing their own understanding.

Conceptually, Discovery Learning comprises six key stages: stimulation, problem statement, data collection, data processing, verification, and generalization. These stages allow students to observe phenomena, formulate problems, seek information, process data, verify findings, and draw conclusions. This process is closely linked to the concept of student engagement, as students are required not only to understand the material cognitively but also to engage behaviorally and socially by asking questions, discussing, collaborating, and sharing ideas. The decision to use Discovery Learning in this study is based on its suitability for the specific issues identified at SD Islam Hasanka in Palangka Raya City. The reluctance of some students to ask questions, engage in discussions, or express opinions necessitates a learning approach that fosters interaction and offers broader opportunities for participation. Through discovery activities and group work, Discovery Learning is considered capable of creating a space for students to interact, exchange ideas, and build knowledge through direct learning experiences.

Various previous studies have shown that Discovery Learning is related to increasing student activity and involvement in learning. Yuliasari, (2026) shows that Discovery Learning can encourage active student participation through exploration and discussion activities. Hamid et al. (2023) menemukan bahwa model ini mendukung keterlibatan peserta didik dalam mencari dan ound that this model supports student involvement in searching and processing information so that it has an impact on the learning process. Meanwhile, Hariyantini et al., (2025) show that Discovery Learning is able to create a more interactive learning atmosphere. However, most of the previous research still focused on measuring the impact of implementing Discovery Learning on learning outcomes or student activity levels after the model was implemented. This study does not explain much about how the Discovery

Oktober 2026 Vol. 11 No. 4
E-ISSN: 2656-1417
P-ISSN: 2503-0602
pp. 588-600

Learning implementation process takes place in a real learning context, how forms of student participation emerge at each learning stage, how the dynamics of interaction in groups occur, and what factors support and hinder student involvement during the learning process.

Based on these gaps, this research has novelty not only in the research context at Hasanka Islamic Elementary School, Palangka Raya City, but in the effort to understand in depth the process of implementing Discovery Learning through a qualitative approach. This research focuses on how teachers implement each stage of Discovery Learning, how students show active learning during the learning process, how group work dynamics are formed, as well as supporting and inhibiting factors that influence student involvement. Thus, this research aims to describe the implementation of the Discovery Learning model in supporting the active learning of fourth grade students at Hasanka Islamic Elementary School, Palangka Raya City and identify the factors that influence the implementation of this model. It is hoped that the research results will provide a more comprehensive understanding of the practice of implementing Discovery Learning at the elementary school level, especially in creating active, participatory and learner-centered learning.

Research Method

This study employs a qualitative approach with a case study design. The case study design was selected because the research focuses on a single, contextually bound case: the implementation of Discovery Learning in the instruction of fourth-grade students at Hasanka Islamic Elementary School in Palangka Raya City. The study does not aim to quantitatively measure the magnitude of improvement; rather, it seeks to gain an in-depth understanding of how the six stages of Discovery Learning are executed, how student engagement manifests during the process, how the teacher facilitates this involvement, and the factors that either support or hinder the implementation. The research was conducted in July 2026; the interview with teacher MT, as recorded in the study, took place on July 27, 2026.

The subjects of this study were the Grade IV students at SD Islam Hasanka, Palangka Raya City, comprising 15 students. There were three informants: the Grade IV teacher (MT) and two students (D and A), selected purposively for their ability to provide direct information regarding the implementation of instruction and experiences of student engagement. The teacher was selected due to their direct involvement in applying Discovery Learning, while the two students were chosen to provide the learners' perspective on activities, interactions, and obstacles encountered during the lesson. The researcher served as the human instrument. Data were collected through observation, interviews, and documentation. Observations were conducted over one consecutive week. Semi-structured interviews—consisting of four to five questions—were conducted with the teacher and the two students on July 27, 2026. Documentation, including photographs of learning activities and existing instructional documents, was used to substantiate the description of the implementation. The observation guidelines covered the six stages of Discovery Learning and indicators of student engagement: (a) behavioral engagement—asking questions, answering, discussing, and completing tasks; (b) cognitive engagement—seeking, processing, and utilizing information; and (c) social engagement—collaborating, exchanging opinions, and interacting within groups. Data were analyzed interactively following the Miles & Huberman (1994) model: organizing data, coding based on the study's focus and indicators, grouping data into categories, developing themes, and verifying findings by comparing data across sources and methods. Triangulation was achieved by comparing observation, interview, and

Jurnal Teknologi Pendidikan:
Jurnal Penelitian dan Pengembangan Pembelajaran
https://e-journal.undikma.ac.id/index.php/jtp/index

Oktober 2026 Vol. 11 No. 4
E-ISSN: 2656-1417
P-ISSN: 2503-0602
pp. 588-600

documentation data. For instance, student engagement in discussions was verified by cross-referencing observation results of group activities, teacher and student accounts of the discussion experience, and photographs of the discussion sessions. Credibility was reinforced through triangulation; dependability was maintained by documenting data collection and analysis procedures; and confirmability was ensured by linking interpretations to observational evidence, interview excerpts, and documentation. Member checking was not reported in this manuscript. Data adequacy was determined based on the sufficiency of information to answer both research questions and data comparability through triangulation, rather than on a claim of formal saturation.

Result and Discussion

Result

Implementation of Discovery Learning through Six Learning Stages

Research results indicate that the implementation of the Discovery Learning model in the fourth-grade class at SD Islam Hasanka, Palangka Raya City, proceeded through six main stages: stimulation, problem statement, data collection, data processing, verification, and generalization. Each stage provided students with the opportunity to engage directly in the learning process through activities such as observing, discussing, seeking information, processing findings, and communicating their understanding.

a. Stimulation: Providing a Stimulus to Build Student Curiosity

In the stimulation stage, the teacher began the lesson by conducting an apperception activity and connecting previous material with the material to be studied. The teacher provided a stimulus using various instructional media such as images, videos, or introductory explanations related to the lesson topic. This stimulus aimed to spark student curiosity and encourage them to identify information relevant to the material.

Based on an interview conducted on July 27, 2026, the teacher (MT) explained that before introducing the main material, they first invited students to recall previous lessons so that students could establish conceptual links with the new material.

> *"After taking attendance, we move into the material. But before getting into the material, there is a step where we recall or review the previous lesson. Only then do we connect it to the material being studied now."*

These findings demonstrate that the stimulation stage serves as an introduction, helping students prepare their prior knowledge before engaging in the discovery process.



Figure 1. The teacher divides the students into groups and guides the discussion.

Jurnal Teknologi Pendidikan:
Jurnal Penelitian dan Pengembangan Pembelajaran
https://e-journal.undikma.ac.id/index.php/jtp/index

Oktober 2026 Vol. 11 No. 4
E-ISSN: 2656-1417
P-ISSN: 2503-0602
pp. 588-600

b. Problem Statement: Encouraging Students to Identify Problems

During the problem statement stage, the teacher provides students with the opportunity to understand the issue related to the learning material. Students are guided to ask questions, express initial opinions, and discuss aspects requiring further understanding. Observations indicate that students begin to engage by asking questions and responding to the problem presented by the teacher. Although not every student voices their opinion directly, group discussions help less confident students participate through peer interaction. This stage demonstrates that Discovery Learning creates space for students not only to receive information but also to play a role in shaping the direction of the learning process..

c. Data Collection: Seeking and Gathering Information

During the data collection stage, students sought information to address the identified problem. The teacher divided the students into small groups of four to five to discuss and complete the learning task. Interviews with students revealed that group-based learning offered a more engaging experience, as students could exchange views with their peers. Student D remarked:

"Group work is lively. It's enjoyable because we can discuss things."

In addition to group discussions, some students utilized supplementary learning resources—such as the internet—to gather information that aided in completing the task. This demonstrates that students were beginning to take the initiative in seeking information, rather than relying solely on the teacher's explanations.



Figur 2. The students present the results of their group discussion.

d. Data Processing: Processing Information through Group Discussion

The data processing stage is evident when students process the information they have gathered to formulate answers or solutions to the assigned tasks. During this process, students engage in discussions, compare viewpoints, and synthesize the group's collective ideas. The teacher acts as a facilitator, providing guidance when students encounter difficulties and ensuring that all group members are able to keep up with the learning process. These discussions demonstrate student engagement through collaboration, the sharing of ideas, and the consideration of fellow group members' opinions..

However, the research findings also reveal that group participation does not always translate into the confidence to voice individual arguments. One student disclosed having an answer that differed from the group's but choosing to defer to their peers' decision instead.

Oktober 2026 Vol. 11 No. 4
E-ISSN: 2656-1417
P-ISSN: 2503-0602
pp. 588-600

"Even though the answer was B, my friends said C, so I just went along with them."

These findings indicate that while group work can enhance student interaction, there is still a need to boost students' self-confidence so that each individual feels empowered to stand by their own opinions.

e. Verification: Testing and Confirming Findings

During the verification stage, students and the teacher review the outcomes of their discussions. The teacher gives groups the opportunity to present their ideas and clarify the answers they have provided. These presentations encourage students to practice expressing their opinions in front of their peers. Based on interview findings, the teacher noted that students became more active in answering questions during the learning process.

"They would answer immediately without waiting to be called upon. I even had to say, 'One at a time—only answer when I call on you.'

This statement demonstrates that the verification stage serves not only to confirm the accuracy of concepts but also as a means for students to build the confidence to communicate.

f. Generalization: Drawing Conclusions Together

The final stage is generalization, an activity in which students, together with the teacher, draw conclusions based on the learning process that has taken place. At this stage, students articulate the understanding they have gained from discussion and information-gathering activities. The teacher reinforces the concepts discovered by the students, ensuring that learning does not stop at the mere act of finding answers but also helps students build a more systematic understanding.

Forms of Student Engagement during Discovery Learning Implementation

In addition to the implementation of the Discovery Learning framework, the study identified several forms of student engagement during the learning process:

a. Behavioral engagement, evidenced by students participating in discussions, answering the teacher's questions, and completing group tasks.
b. Cognitive engagement, evidenced by students seeking information, processing answers, and finding solutions to problems.
c. Social engagement, evidenced by cooperation, the exchange of opinions, and interaction among group members.

Although the majority of students demonstrated engagement during the lesson, participation levels varied among them. Some students still required encouragement from the teacher to feel confident enough to express their opinions.

Teacher Role in Facilitating Student Engagement

Research findings indicate that the teacher plays a crucial role in facilitating student engagement during the implementation of Discovery Learning in the fourth-grade class at Hasanka Islamic Elementary School, Palangka Raya City. The teacher's role extends beyond merely delivering instructional material; it is also evident in efforts to create a learning environment that enables active student participation—whether through providing guidance and support or managing interactions throughout the learning process. Observations reveal that the teacher fosters engagement by ensuring every student has the opportunity to participate in learning activities. The teacher does not focus solely on students who are already active but also pays attention to those who tend to be passive, ensuring they too have the chance to engage. This is achieved by asking simple questions, providing direct guidance, and encouraging students to confidently express their opinions.

Jurnal Teknologi Pendidikan:
Jurnal Penelitian dan Pengembangan Pembelajaran
https://e-journal.undikma.ac.id/index.php/jtp/index

Oktober 2026 Vol. 11 No. 4
E-ISSN: 2656-1417
P-ISSN: 2503-0602
pp. 588-600

During the learning process, the teacher also acts as a facilitator when students encounter difficulties in understanding tasks or finding answers. The teacher provides guidance through prompting questions, allowing students to retain the opportunity to think and discover solutions independently. In this way, the teacher helps students not only to obtain answers but also to actively engage in the thinking process throughout the lesson.

Supporting and Inhibiting Factors in Discovery Learning Implementation

Research findings indicate that the implementation of Discovery Learning in fostering student engagement is influenced by various factors originating from both within and outside the learning process. These factors do not operate in isolation but are interconnected in determining the extent to which students are able to actively participate during learning activities. Based on observations and interviews, the identified factors can be categorized into student-related, teacher-related, peer-related, family-related, and environmental factors.

Student-related Factors

Factors originating from the students themselves constitute one aspect influencing their level of engagement in Discovery Learning. Interview results indicate that students' physical condition, learning readiness, motivation, and self-confidence affect their ability to participate in the learning process. Students noted that their health status could affect their concentration during lessons. When physically unwell, students struggled to focus on discussions or comprehend the material presented by the teacher. One student, D, stated:

"When I'm sick, I can't focus because I feel weak."

Meanwhile, student A explained that while they could still participate in the lesson when unwell, they found it difficult to concentrate optimally.

"I can still do it, but I keep thinking about the pain or discomfort."

In addition to physical condition, self-confidence levels also influence students' willingness to express their opinions. Research findings show that while some students are capable of answering the teacher's questions and actively participating in discussions, others still require encouragement to speak up confidently before their group or the class.

Teacher-related Factors

The teacher plays a crucial role in fostering student engagement during the implementation of Discovery Learning. Research findings indicate that teachers do more than just deliver content; they provide stimuli, guide discussions, pose prompting questions, and assist students who encounter difficulties in locating information. Teacher MT explained that the teaching strategy is tailored to the characteristics of the material being taught. Media such as images, videos, and direct explanations serve as stimuli to help students grasp the material more easily and maintain their interest in the learning process.

"It depends on the material. Some lessons use images, others use videos, and sometimes we simply use the whiteboard."

In addition to providing stimuli, the teacher manages varying levels of student engagement. Students who tend to be passive are given opportunities to answer questions directly to build their confidence in participating, while highly active students are encouraged to allow their peers the chance to express their opinions.

Peer-related Factors

Peer interaction serves as another supporting factor in the implementation of Discovery Learning, particularly when instruction takes place through group activities. Research findings indicate that small groups provide students with opportunities to exchange information, engage in discussions, and complete tasks collaboratively. Students D and A

Oktober 2026 Vol. 11 No. 4
E-ISSN: 2656-1417
P-ISSN: 2503-0602
pp. 588-600

expressed a preference for group learning because it allowed them to discuss matters with their peers. D stated:

"Group work is lively. It's enjoyable because we can have discussions."

Peer support also helps less confident students feel more comfortable answering questions and voicing their opinions. The presence of peers within the group creates a more comfortable learning atmosphere, making it easier for students to engage in learning activities.

However, the research also found that group interaction does not always result in the confidence to express one's opinion. One student revealed an instance where their answer differed from the group's, yet they chose to go along with their peers' decision.

"Even though the answer was B, my friends said C, so I just went along with them."

These findings demonstrate that while group work can foster student engagement, some students still face challenges in standing by their own opinions when faced with differing viewpoints.

Family-related Factors

Family support was also identified as a factor influencing students' readiness for learning. Interview results indicate that parents provide support by paying attention to school preparations—such as reminding students to bring their study materials and encouraging them to study at home. Student D stated:

"Usually, my parents tell me to get my books ready for tomorrow."

Meanwhile, Student A revealed:

"It has happened, though I'm rarely told to study."

These data show that the form of family support varies from student to student. Although the level of guidance differs, parental attention remains a factor that helps students prepare themselves before engaging in learning activities.

Environmental Factors

The learning environment is another factor influencing the successful implementation of Discovery Learning. Research findings indicate that a conducive classroom atmosphere helps students concentrate better during discussions and group assignments. Conversely, an overly noisy classroom can diminish students' focus during lessons. Students reported that they grasp the material more easily when the classroom is not too noisy.

"If it's not noisy, I can focus."

In addition to the classroom atmosphere, the availability of learning resources supports the process of information discovery. Some students utilize the internet as a supplementary resource when completing assignments given by the teacher. This demonstrates that diverse learning resources provide students with opportunities to acquire information more independently.

Overall, the research results show that the implementation of Discovery Learning is influenced by a combination of factors involving students, teachers, peers, families, and the learning environment. Supporting factors—such as student motivation, the teacher's role as a facilitator, group interaction, family support, and a conducive learning environment—help foster student engagement in the learning process. However, obstacles such as varying levels of self-confidence, the dominance of certain group members, and a less-than-ideal classroom environment remain challenges that must be addressed in the implementation of Discovery Learning.

Oktober 2026 Vol. 11 No. 4
E-ISSN: 2656-1417
P-ISSN: 2503-0602
pp. 588-600

Discussion

Implementation of Discovery Learning in Supporting Student Engagement

Research results indicate that the implementation of Discovery Learning in the fourth-grade class at SD Islam Hasanka, Palangka Raya City, proceeded through six key stages: stimulation, problem statement, data collection, data processing, verification, and generalization. These findings demonstrate that Discovery Learning serves not merely as a method for delivering material but as a learning process that enables students to construct understanding through direct learning experiences.

According to Rajagukguk & Pardede (2026), there is a "stimulation" stage in which the teacher provides a stimulus through apperception and the use of instructional media such as images, videos, or introductory explanations. These activities serve to activate students' prior knowledge before they engage in the discovery process. From the perspective of Bruner (1961) constructivism which aligns with research by Fatmawaty (2024) and Andrews et al., (2023), meaningful learning occurs when learners have the opportunity to connect their prior experiences with newly acquired information. Thus, the stimulus provided by the teacher serves as a foundation for students to build curiosity and readiness for learning.

The problem statement stage marks a shift in the students' role from passive information recipients to individuals actively engaged in identifying problems. Although not all students immediately feel confident enough to voice their opinions, group discussion activities provide a space for them to develop the courage to express their ideas. This demonstrates that student engagement in learning does not always manifest as direct verbal participation; it also emerges through interaction and the exchange of ideas within the group.

In the data collection and data processing stages, students engage in activities such as seeking information, discussing, and processing findings collaboratively within their groups. These conditions show that Discovery Learning fosters behavioral engagement through activities like asking questions, discussing, collaborating, and completing tasks. Furthermore, the information-seeking process reflects cognitive engagement specifically, the students' involvement in comprehending, processing, and utilizing information to resolve learning-related problems.

These findings reinforce Bruner (2009), view that knowledge becomes more meaningful when learners discover concepts through exploration rather than simply receiving explanations from the teacher. Unlike teacher-centered instruction, Discovery Learning provides students with the opportunity to engage in the thinking process through inquiry and discussion. In the context of this study, group activities emerged as a crucial element, as they encouraged previously less active students to become involved through peer interaction and support.

The results align with studies by Yuliasari (2026), Hamid et al. (2023), and Hariyantini et al. (2025) which indicate a link between Discovery Learning and increased student activity through exploration and discussion. However, while previous research focused primarily on changes in activity levels or learning outcomes following the implementation of the model, this study offers a distinct contribution by illustrating how student engagement unfolds across the various stages of Discovery Learning—specifically regarding how students interact, seek information, and construct understanding throughout the learning process.

Teacher Role as Learning Facilitator

Research findings indicate that the successful implementation of Discovery Learning is determined not only by the learning model's procedural steps but also by the teacher's

Oktober 2026 Vol. 11 No. 4
E-ISSN: 2656-1417
P-ISSN: 2503-0602
pp. 588-600

ability to act as a facilitator. Teachers no longer serve as the primary source of information; instead, they play a role in providing stimuli, guiding discussions, posing probing questions, and ensuring that all students have the opportunity to participate (Laswari et al., 2026). This shift in the teacher's role demonstrates that active learning requires adaptive classroom management. In this study, teachers tailored their approach to the students' characteristics: less active students were encouraged through direct questioning to speak up, while overly active students were guided to make space for their peers to participate (Ashari et al., 2026; Suhirman et al., 2025).

These findings show that implementing Discovery Learning does not automatically ensure all students are active; rather, it requires pedagogical strategies from the teacher to ensure learning opportunities are distributed equitably. In other words, the success of the learning model depends on the interaction between the instructional design and the teacher's ability to create a supportive learning environment.

Group Interaction and The Complexity of Student Participation

One significant finding of this study is that group work does not necessarily indicate that all students possess the courage to express their opinions. One student revealed having an answer that differed from the group's but chose to defer to their peers' decision. This finding highlights a distinction between social participation and argumentative participation; students may be physically and socially engaged within a group yet lack the confidence to defend their own ideas. Such a situation suggests that collaborative learning should focus not only on the collective completion of tasks but also on fostering argumentation skills and critical thinking (Nussbaum, 2008; Sopian & Fuadi, 2026).

In the context of Discovery Learning, group discussion is a crucial component of the knowledge construction process. However, teachers must ensure that every group member has the opportunity to share ideas and provide the rationale behind their opinions (Maisarah et al., 2025; Supuwiningsih, 2025). Consequently, the teacher's role as a mediator is vital in ensuring that group interactions lead not merely to consensus, but also to a process of deep thinking.

Supporting and Inhibiting Factors in Discovery Learning Implementation

Research findings indicate that the implementation of Discovery Learning is influenced by various interconnected factors. Internal student factors such as physical condition, learning readiness, motivation, and self-confidence affect students' ability to engage in the learning process. Students with good physical health and learning readiness tend to participate more easily in discussions and information-seeking activities. Beyond student-related factors, external factors also play a crucial role (Agnesia & Prima, 2026; Anjarweni et al., 2024). Teacher support through effective lesson management, peer support through group interaction, family support regarding learning readiness, and a conducive classroom environment all serve to reinforce student engagement.

However, the study also identified certain obstacles, particularly those stemming from differences in student characteristics. The presence of students with low self-confidence alongside more dominant group members demonstrates that discovery-based learning requires flexible classroom management strategies. Consequently, the implementation of Discovery Learning cannot be viewed merely as the execution of six instructional stages; rather, it is a process involving the interplay between the learning model, the teacher's role, student characteristics, social interactions, and the learning environment. These findings suggest that Discovery Learning can foster more active learning when implemented with due regard for the needs and circumstances of the learners.

Oktober 2026 Vol. 11 No. 4
E-ISSN: 2656-1417
P-ISSN: 2503-0602
pp. 588-600

Conclusion

Research findings indicate that the implementation of the Discovery Learning model among fourth-grade students at SD Islam Hasanka in Palangka Raya City fosters student engagement in the learning process through activities such as observing, discussing, seeking information, processing findings, and articulating ideas. This engagement is evident in activities such as asking and answering questions, collaborating, and expressing opinions during lessons. The successful implementation of Discovery Learning depends not only on the execution of the learning stages but also on the teacher's role in facilitating learning interactions and on supporting factors such as student motivation, peer support, parental attention, and the learning environment. Nevertheless, disparities in self-confidence and the willingness to express opinions remain challenges that require attention.

Implication

The research findings imply that teachers need to implement Discovery Learning while paying attention to group management and the equitable distribution of participation opportunities. Teachers can pose guiding questions to less active students, manage speaking turns, and ensure that every group member has the opportunity to express their reasoning or opinions. These implications are contextual, based on the findings from the Grade 4 class studied. This study has several limitations. First, the case study was conducted at a single school and in one class; therefore, the findings are not intended to be generalized to all primary schools. Second, the informants were selected purposively and were limited in number, meaning the perspectives obtained represent the specific contexts and experiences of the informants studied. Third, the research data are qualitative and lack quantitative measurements taken before and after implementation; consequently, the study cannot determine the magnitude of improvement or establish a causal relationship between Discovery Learning and student engagement. Fourth, certain technical details regarding data collection such as the number and duration of observations, as well as the number of questions and duration of interviews need to be supplemented from field notes or research recordings prior to manuscript submission.

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