

ANALYSIS OF THE IMPLEMENTATION OF THE INQUIRY-BASED LEARNING MODEL IN IMPROVING EXPLORATION SKILLS IN PRIMARY SCHOOLS

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ABSTRACT

This study was motivated by the fact that learning in primary schools still tends to be teacher-centred, so that students' exploration skills have not developed optimally. Previous studies have focused more on cognitive learning outcomes, while in-depth studies on the implementation of inquiry-based learning in improving students' exploration skills are still limited. This study aims to (1) analyse the implementation of the inquiry learning model in improving the exploration skills of fifth-grade students at SDN 03 Gedong, (2) analyse the obstacles encountered in implementing the inquiry learning model, and (3) analyse the solutions provided to overcome the obstacles in implementing the inquiry learning model. This study used a qualitative approach with a case study design. The research subjects included fifth-grade teachers and fifth-grade students. Data were collected through observation, in-depth interviews, and documentation studies. Data analysis was carried out through data collection, data reduction, data presentation, and conclusion drawing. The results of the study indicate that (1) the implementation of the inquiry learning model can improve students' exploration skills, as indicated by an increase in curiosity, initiative in investigation, observation and experimentation skills, learning reflection, and independent learning, (2) Implementation constraints include time limitations, varying levels of student readiness, and teachers' experience in applying inquiry learning, (3) Solutions include structured learning planning, gradual guidance, and continuous learning reflection. These findings provide practical significance for primary school teachers in optimising student-centred learning and theoretical contributions to the development of inquiry learning studies that focus on students' exploration skills.

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INTRODUCTION

Inquiry based learning is viewed as an approach that places students as active subjects in the learning process (Aji13, 2019). Knowledge is constructed through activities such as questioning, investigating, observing, and discovering concepts independently. The learning process focuses on the search for meaning based on direct learning experiences. The role of the teacher is positioned as a learning facilitator who provides stimuli, learning resources, and an environment that encourages higher-level thinking activities. Inquiry-based learning is believed to be able to develop students' cognitive, affective, and psychomotor skills through deep intellectual engagement (Maryam et al., 2020).

Exploration skills are understood as students' capacity to gather information, observe phenomena, and develop curiosity about learning objects. Exploratory activities are demonstrated through the courage to try, ask questions, and conduct simple investigations into the problems encountered (Agus et al., 2022). The exploration process allows for a more meaningful understanding of concepts through authentic learning experiences. Exploration skills are considered important in current learning because they support the development of critical thinking, creativity, and student independence in learning.

The reality in the field shows that the learning process in class V of SDN 3 Gedong is still dominated by teacher-centred learning activities. Material delivery is mostly done through lectures and written assignments. Student involvement in investigation, observation, and information gathering activities is not yet optimal. Students tend to wait for the teacher's instructions in every learning activity. Opportunities to ask questions, try things out, and discover concepts independently are still limited. This situation has an impact on the low level of students' ability to explore and understand the learning material in depth. Low exploration skills will have an impact on the students' learning outcomes (Agus & Purnama, 2022).

Various research results show that learning in primary schools still faces the problem of low active student involvement in the learning process. Teacher-centred learning causes students to be less involved in investigative activities, observation, and independent information gathering (Ramdani et al., 2020). This condition has an impact on the low exploration ability of students in understanding learning concepts. Previous research findings reveal that students tend to be passive, wait for teacher instructions, and are not accustomed to asking questions or conducting simple experiments in learning.

A number of studies also reveal that the application of the inquiry learning model can overcome these problems. The inquiry model is said to provide space for students to be actively involved in the learning process through activities such as observing, asking questions, collecting data, and drawing conclusions based on the results of their investigations (Budiasa et al., 2020). The application of guided inquiry in primary school learning has been reported to improve students' process skills, curiosity, and critical thinking abilities. Learning activities that require exploration encourage students to construct knowledge in a more meaningful way through direct experience.

Other studies show that inquiry-based learning has a positive impact on improving students' exploration skills. Exploration skills, demonstrated through activities such as trying, investigating, and communicating findings, improved after the inquiry model was implemented (Damayanti et al., 2022). The learning process, which emphasises the search for and discovery of concepts, allows students to be more active in understanding the learning material. These findings reinforce the view that the inquiry learning model is relevant for application in primary school learning to improve the quality of the learning process and outcomes.

Although various studies have shown the effectiveness of the inquiry learning model in improving process skills, critical thinking, and learning outcomes of primary school students, studies that specifically examine students' exploration skills are still limited (Anggrella et al., 2021). Most studies focus more on measuring quantitative learning outcomes or improving specific cognitive skills. In-depth studies on the implementation process of inquiry-based learning and students' exploration abilities in real classroom learning have not been widely reported. Qualitative research using a case study approach at the primary school level is still rare. This condition indicates a research gap that needs to be further explored, particularly regarding the analysis of the implementation of the inquiry-based learning model in improving the exploration abilities of fifth-grade students at SDN 3 Gedong.

The novelty of this study lies in its in-depth analysis of the implementation of the inquiry learning model in the context of real learning in Grade V of elementary school. The focus of the study is on students' exploration skills as a learning process, not merely on the final learning outcomes. Exploration skills are examined through activities such as observing, questioning, trying, gathering information, and communicating findings during the learning process (Andayani, 2024). A qualitative approach with a case study design was used to comprehensively describe the dynamics of inquiry learning and students' responses in improving their exploration skills. This study is expected to provide empirical contributions in the form of a contextual description of the application of inquiry learning at SDN 3 Gedong, which has not been widely discussed in previous studies.

This study aims to analyse the implementation of the inquiry learning model in learning in class V at SDN 3 Gedong. The focus of the study is directed at revealing the process of implementing inquiry learning and the learning activities that occur during the learning process. This study also aims to describe the improvement in students' exploration skills as demonstrated through activities such as observing, asking questions, trying, gathering information, and communicating findings. The results of this study are expected to provide a deeper understanding of the role of inquiry-based learning in improving the exploration skills of primary school students.

METHOD

This study utilised a qualitative approach with a case study design. The research focused on an in-depth exploration of the implementation of the inquiry learning model in improving the exploration skills of fifth-grade students at SDN 03 Gedong. The study was conducted in a natural learning situation without experimental treatment. The research subjects included fifth-grade teachers and fifth-grade students. Research data were collected through learning observation techniques, in-depth interviews, and documentation studies. Data analysis was conducted qualitatively through the stages of data collection, data reduction, data presentation, and conclusion drawing. Data validity was maintained through source triangulation techniques and techniques for obtaining credible data.

RESULT AND DISCUSSION

The results of the study indicate that the implementation of the inquiry learning model in class V of SDN 03 Gedong had a positive impact on improving students' exploration skills. Exploration skills were observed through several key indicators, including curiosity, initiative in investigation, observation and experimentation skills, reflection, and independent learning. During the inquiry-based learning process, students showed more active involvement compared to previous learning conditions.

Students' curiosity increased, as seen in the frequency of questions asked about learning issues. Students showed interest in learning more about the material through observation and discussion activities. Initiative in investigation was also evident in students' courage to try to solve problems without waiting for direct instructions from the teacher. Students began to develop simple strategies for gathering information and presenting their findings. Their ability to observe and experiment has improved significantly. Students appear to be more careful in observing learning objects and more active in conducting simple experiments relevant to the material. Learning reflection is carried out through the presentation of opinions and assessments of the results of activities that have been carried out. Students' independence in learning is demonstrated through their ability to complete exploratory tasks independently or in groups with decreasing dependence on teacher guidance.

The results of the study can be seen in the table below

No	Exploration Ability Indicator	Description	Findings After
		Initial Condition	Inquiry Learning

1	Curiosity	Questions rarely asked	Questions asked actively and relevantly
2	Initiative in investigatio	Waiting for teacher's instructions	Begin to investigate independently
3	Ability to observe and experiment	Observations lack precision	Observations are more systematic and focused
4	Reflection on learning and independent learning	Reflection is not yet optimal	Able to convey results and evaluation of activities

The results of the study indicate that the implementation of the inquiry learning model can improve the exploration skills of fifth-grade students at SDN 03 Gedong. This finding is in line with the inquiry learning theory, which emphasises the active involvement of students in the process of searching for and discovering knowledge (Lantowa et al., 2022). In inquiry-based learning, students are guided to build understanding through observing, questioning, investigating, and reflecting on learning outcomes. This process allows knowledge to be constructed meaningfully based on students' direct learning experiences.

The increase in students' curiosity found in this study is in line with the constructivist view that learning will be more meaningful if it is driven by students' curiosity and intrinsic motivation (Karim et al., 2021). Inquiry-based learning provides stimuli in the form of contextual problems that trigger students to ask questions and seek explanations independently. This finding is in line with previous research results which state that inquiry-based learning can increase students' curiosity and active involvement in learning in primary school (Vari, 2021).

Students' initiative in conducting investigations also developed after the implementation of inquiry-based learning. This condition is in accordance with the characteristics of the inquiry model, which provides space for students to take an active role in the learning process. Students not only receive information, but are also involved in simple decision-making during the investigation process. These findings support previous research results which state that inquiry-based learning encourages students' independence in thinking and courage in exploring learning problems (Khoiri, 2021).

Students' improved observation and experimentation skills are in line with inquiry theory, which emphasises the importance of direct experience in learning. Simple observation and experimentation activities enable students to develop process skills that form the basis of exploration skills. Previous studies have also stated that the application of inquiry-based learning in primary schools can improve science process skills, which include observing, trying, and analysing results (Septiani & Susanti, 2021).

Reflections on learning that began to emerge among students showed that inquiry-based learning did not only focus on physical activities but also on the thinking process. Reflection enabled students to assess their learning experiences and relate them to the concepts they had learned. These findings were in line with research (Warniasih et al., 2019) stating that inquiry-based learning encouraged students to evaluate their learning processes and outcomes. The increase in student learning independence reinforces the finding that inquiry-based learning plays a role in shifting learning from teacher-centred to student-centred. Students appear to be more capable of managing their own learning processes with decreasing dependence on teacher guidance. These findings support the results of research (Sari & Lutfi, 2023) which confirms that inquiry-based learning is effective in fostering independent attitudes and learning responsibility in primary school students.

The results of the study also revealed several obstacles in the implementation of the inquiry learning model. The obstacles found included limited learning time, varying levels of student readiness, and limited teacher experience in consistently applying inquiry learning. Some students still had difficulty formulating questions and conducting investigations independently. In addition, classroom management became more challenging due to the more dynamic activities of students during inquiry learning.

Solutions implemented to overcome the obstacles to inquiry-based learning include more structured lesson planning, providing step-by-step guidance to students, and using prompting questions to assist students in the investigation process. Teachers also grouped students heterogeneously to encourage cooperation and mutual assistance. In addition, learning reflections were conducted regularly to evaluate the process and improve the implementation of inquiry-based learning in subsequent meetings. These solutions help optimise the implementation of inquiry-based learning in improving students' exploration skills.

Overall, the results of this study reinforce previous theories and findings regarding the effectiveness of inquiry-based learning in improving the quality of the learning process. The improvement in students' exploration skills, which includes curiosity, initiative in investigation, observation and experimentation skills, reflection, and independent learning, shows that inquiry-based learning is relevant to be applied in primary school learning, especially in Grade V of SDN 03 Gedong.

CONCLUSION

Based on the results of the research and discussion, it can be concluded that the implementation of the inquiry learning model in class V of SDN 03 Gedong was able to improve students' exploration skills. Inquiry learning encourages active student involvement in the learning process through observing, investigating, and discovering concepts. Students' exploration skills developed, as demonstrated by an increase in curiosity, initiative in investigation, observation and experimentation skills, learning reflection, and independent learning. This study also shows that the implementation of the inquiry-based learning model still faces several obstacles. These obstacles include limited learning time, varying levels of student readiness, and teachers' limited experience in consistently implementing inquiry-based learning. These conditions affect the optimisation of inquiry-based learning in the classroom. Solutions to overcome the obstacles to implementing inquiry-based learning include more structured lesson planning, providing gradual guidance to students, using prompting questions, and conducting continuous learning reflection. With the application of these solutions, inquiry-based learning can be implemented more effectively, thereby improving the exploration skills of primary school students.

REFERENCES.

- Agus, I., & Purnama, A. N. (2022). Eksplorasi kemampuan berpikir kritis matematika berdasarkan keyakinan (belief) siswa. *Jurnal Tadris Matematika*. <https://ejournal.uinsatu.ac.id/index.php/jtm/article/view/5479>
- Aji13, M. Q. W. (2019). *Mengembangkan kecakapan abad 21 mahasiswa melalui model pembelajaran inkuiri*. download.garuda.kemdikbud.go.id.
[http://download.garuda.kemdikbud.go.id/article.php?article=1686885&val=7137&title=Mengembangkan Kecakapan Abad 21 Mahasiswa Melalui Model Pembelajaran Inkuiri](http://download.garuda.kemdikbud.go.id/article.php?article=1686885&val=7137&title=Mengembangkan%20Kecakapan%20Abad%2021%20Mahasiswa%20Melalui%20Model%20Pembelajaran%20Inkuiri)
- Andayani, T. R. (2024). Eksplorasi Potensi Ajaran Tatag, Teteg, Tutug dalam Masyarakat Jawa dalam Meningkatkan Ketangguhan Remaja. *Scientia*.
<https://amcapress.amca2012.org/index.php/sssh/article/view/319>
- Budiasa, P., & Gading, I. K. (2020). Model pembelajaran Inkuiri terbimbing berbantuan media gambar terhadap keaktifan dan hasil belajar IPA. *Mimbar PGSD Undiksha*.
<https://ejournal.undiksha.ac.id/index.php/jjpgsd/article/view/26526>

- Damayanti, I., Ambarita, A., & Nurhanurawati, N. (2022). Pengembangan LKPD Matematika Berbasis Model Inkuiri Terbimbing untuk Meningkatkan Berpikir Kritis Peserta Didik di Sekolah Dasar. *Jurnal Basicedu*. <https://www.neliti.com/publications/452046/pengembangan-lkpd-matematika-berbasis-model-inkuiri-terbimbing-untuk-meningkatka>
- Karim, H., Aziz, A. A., & Nursyahida, A. (2021). Pengaruh Penerapan Metode Pembelajaran Inkuiri Dipadu Keterampilan Proses Sains Terhadap Hasil Belajar Biologi Materi Struktur dan Fungsi Jaringan Tumbuhan. *Biogenerasi*, 6(2), 124–138.
- Khoiri, N. (2021). Efektivitas Model Pembelajaran Inkuiri Terhadap Hasil Belajar: The Effectiveness of the Inquiry Learning Model on Learning Outcomes. *Jurnal Inovasi Pembelajaran Di Sekolah*. <https://ejournal.pgrikotasemarang.org/index.php/jips/article/view/21>
- Lantowa, H. D., Buhungo, T. J., Odja, A. H., & ... (2022). Pengembangan Perangkat Pembelajaran Model Inkuiri Terbimbing Berbantuan Aplikasi Zoom Pada Materi Fluida Statis Terhadap Hasil Belajar. *ORBITA: Jurnal Pendidikan Dan Ilmu Fisika*. Vol 8(1).21-27. <https://doi.org/10.31764/orbita.v8i1.8007>
- Maryam, M., Kusmiyati, K., Merta, I. W., & ... (2020). Pengaruh model pembelajaran inkuiri terhadap keterampilan berpikir kritis siswa. *Jurnal Pijar MIPA*. Vol 15(3). 206-213 [10.29303/jpm.v15i3.1355](https://doi.org/10.29303/jpm.v15i3.1355)
- Ramdani, A., & Artayasa, I. P. (2020). Keterampilan berpikir kreatif mahasiswa dalam pembelajaran ipa menggunakan model inkuiri terbuka. *Jurnal Pendidikan Sains Indonesia*. Vol 8(1).1-9 <https://jurnal.usk.ac.id/JPSI/article/view/15394>
- Sari, A. A. I., & Lutfi, A. (2023). Kemampuan Berpikir Kritis Siswa dalam Pembelajaran Matematika melalui Pendekatan Inkuiri. *Jurnal Simki Pedagogia*. <https://doi.org/10.29407/jsp.v6i1.225>
- Septiani, D., & Susanti, S. (2021). Urgensi Pembelajaran Inkuiri di Abad ke 21: Kajian Literatur. *SAP (Susunan Artikel Pendidikan)*. Vol 6(1). 126-133 <https://journal.lppmunindra.ac.id/index.php/SAP/article/view/7784>
- Vari, Y. (2021). Pemanfaatan Augmented Reality Untuk Melatih Keterampilan Berpikir Abad 21 Di Pembelajaran Ipa. *INKUIRI: Jurnal Pendidikan IPA*. Vol 11(2).70-75 <https://jurnal.uns.ac.id/inkuiri/article/view/55984>
- Warniasih, K., Kurniawati, R. M., & N.W (2019). Analisis kemampuan berpikir kritis matematis siswa smp melalui pembelajaran inkuiri. *Journal of Honai Math*. Vol 2(2).103-116 <https://doi.org/10.30862/jhm.v2i2.68>