Deep Learning Approach in IPAS Instruction: Enhancing Elementary School Students' Skills and Competencies

Nila Rosa[1✉], Masita[2], Syahru Ramadhan[3]
Universitas Muhammadiyah Bima[123]
Email: niladompu2@gmail.com
DOI: 10.31958/jies.v6i1.16733

Article info	Abstract

This study aims to examine the implementation of IPAS learning through a deep learning approach in enhancing students' skills and competencies at the elementary school level. IPAS learning requires instructional strategies that promote active student engagement while fostering higher-order thinking skills. This research describes how the deep learning approach is applied in the learning process and how it influences the development of students' skills. The study employs a qualitative approach with a case study design. Data were collected through classroom observations, interviews with teachers and students, and analysis of instructional documents. Data analysis was conducted through data reduction, data display, and interpretative analysis to understand the dynamics of the learning process. The findings indicate that the implementation of a deep learning approach in IPAS learning creates a more active, reflective, and collaborative learning environment. Learning activities involving concept exploration, group discussions, and observation of real-life phenomena help students develop a deeper understanding of the subject matter. In addition, this approach contributes to the development of critical thinking skills, problem-solving abilities, and collaborative competencies among students. Instructional strategies that emphasize active participation and contextual learning experiences provide greater opportunities for students to construct meaningful conceptual understanding in IPAS learning.

Keywords: Deep Learning, IPAS Learning, Student Skills, Critical Thinking, Elementary School
.

Abstrak
Penelitian ini bertujuan untuk mengkaji implementasi pembelajaran IPAS melalui pendekatan deep learning dalam meningkatkan keterampilan dan kompetensi siswa pada jenjang sekolah dasar. Pembelajaran IPAS memerlukan strategi pembelajaran yang mampu mendorong keterlibatan aktif siswa sekaligus mengembangkan kemampuan berpikir tingkat tinggi. Penelitian ini mendeskripsikan bagaimana pendekatan deep learning diterapkan dalam proses pembelajaran serta bagaimana pengaruhnya terhadap perkembangan keterampilan siswa. Penelitian ini menggunakan pendekatan kualitatif dengan desain studi kasus. Data dikumpulkan melalui observasi kegiatan pembelajaran di kelas, wawancara dengan guru dan siswa, serta analisis dokumen pembelajaran. Analisis data dilakukan melalui proses reduksi data, penyajian data, dan analisis interpretatif untuk memahami dinamika proses pembelajaran yang berlangsung. Hasil penelitian menunjukkan bahwa penerapan pendekatan deep learning dalam pembelajaran IPAS mampu menciptakan lingkungan belajar yang lebih aktif, reflektif, dan kolaboratif. Aktivitas pembelajaran yang melibatkan eksplorasi

konsep, diskusi kelompok, serta pengamatan fenomena nyata membantu siswa mengembangkan pemahaman yang lebih mendalam terhadap materi pembelajaran. Selain itu, pendekatan ini juga berkontribusi terhadap pengembangan keterampilan berpikir kritis, kemampuan pemecahan masalah, serta kompetensi kolaboratif siswa. Strategi pembelajaran yang menekankan partisipasi aktif dan pengalaman belajar yang kontekstual memberikan peluang yang lebih besar bagi siswa untuk membangun pemahaman konseptual yang bermakna dalam pembelajaran IPAS.

Kata kunci: Deep Learning, Pembelajaran IPAS, Keterampilan Siswa, Berpikir Kritis, Sekolah Dasar

INTRODUCTION

Primary education plays a crucial role in establishing the fundamental foundations of students' knowledge, skills, and character development. At the elementary level, students begin to develop basic competencies such as literacy, numeracy, and problem-solving abilities that are essential for their future learning experiences (Firmansyah et al., 2024). Educational transformation in recent years has encouraged learning processes that emphasize not only the acquisition of knowledge but also the development of higher-order thinking skills, creativity, collaboration, and communication. Educational policies promoted by Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia highlight the importance of student-centered learning that provides opportunities for learners to actively construct knowledge through meaningful learning experiences (Safirah et al., 2024).

One subject that has significant potential to develop such competencies in primary education is Integrated Natural and Social Sciences (IPAS). This subject integrates scientific and social knowledge to help students understand natural phenomena and social interactions in a comprehensive manner (Amjad et al., 2023). The integration of these disciplines is intended to enable students to observe, analyze, and interpret the relationship between humans, the environment, and society. Learning activities in IPAS are designed not merely to deliver scientific facts or concepts but to encourage students to explore, investigate, and reflect on real-life phenomena surrounding them (Triandayani et al., 2024).

Despite its potential, the implementation of IPAS learning in elementary schools still faces several challenges. Classroom practices are often dominated by teacher-centered instruction, where teachers primarily deliver information while students passively receive it (Kurniawan & Hanief, 2022). Such learning conditions limit students' opportunities to actively engage in inquiry-based activities that stimulate critical thinking, analytical reasoning, and practical skills. Learning processes that rely heavily on memorization may hinder the development of meaningful understanding and the application of knowledge in real-world situations. As a result, students may experience difficulties in connecting theoretical concepts with practical experiences in their daily lives (Ainullah et al., 2023).

Educational innovation increasingly emphasizes the importance of active learning environments that allow students to participate meaningfully in the learning process. One approach that has gained attention in contemporary educational discourse is the deep learning approach. Deep learning refers to a learning process in which students actively construct understanding by connecting new information with prior knowledge and experiences. Through this approach, students are encouraged to explore concepts in greater depth, analyze problems critically, and apply their understanding in diverse contexts (Marpaung & Suyanti, 2023).

The deep learning approach promotes reflective and inquiry-based learning experiences that encourage students to engage actively in the process of knowledge construction. Students are guided to observe phenomena, formulate questions, discuss ideas, and draw conclusions based on evidence and reflection (Odera et al., 2023). These learning activities contribute to the development of important competencies such as critical thinking, creativity, collaboration, and communication. Such competencies are widely recognized as essential skills for individuals living in a rapidly evolving knowledge society (Kurniasih et al., 2024).

The integration of deep learning into IPAS learning has strong relevance because the nature of this subject closely relates to observation, investigation, and analysis of real-world phenomena. IPAS learning provides opportunities for students to engage directly with their environment, identify problems, and develop solutions through scientific reasoning (Siregar et al., 2022). Learning activities that incorporate deep learning principles enable students not only to understand scientific concepts but also to develop practical skills that are applicable to everyday situations.

Although the concept of deep learning has been widely discussed in educational research, its implementation in elementary-level science and social science learning remains relatively underexplored. Previous studies have generally focused on the application of specific instructional models or the use of learning media to improve students' academic achievement. Other studies have emphasized the improvement of cognitive learning outcomes through active learning strategies (Setyowati et al., 2022). Research that specifically examines the implementation of IPAS learning through a deep learning approach to stimulate students' skills and competencies in elementary schools is still limited.

This gap highlights the need for further investigation into how deep learning can be implemented in classroom practices, particularly in the context of integrated science and social science education at the elementary level (Erawan et al., 2025). Empirical studies that explore the practical implementation of this approach are necessary to provide a clearer understanding of how learning activities can foster deeper comprehension and skill development among students. Such research can also contribute to the development of innovative instructional strategies that align with the goals of modern education (Hanisah et al., 2024).

Risa State Elementary School represents one of the educational settings that demonstrates potential for implementing innovative learning practices. Preliminary

observations indicate that teachers have attempted to design learning activities that involve students actively through group discussions, environmental observations, and exploratory learning tasks related to lesson content. These classroom practices suggest opportunities for applying deeper learning strategies that encourage students to engage more meaningfully with the subject matter (Sugianto, 2023).

Investigating the implementation of IPAS learning through a deep learning approach in Risa State Elementary School is important for understanding how such strategies function in authentic classroom contexts. This study seeks to identify how learning activities stimulate various student competencies, including critical thinking, problem-solving abilities, and collaborative skills. The findings are expected to provide insights into how deep learning practices can enhance students' engagement and contribute to the improvement of learning quality in primary education (Pratama et al., 2022).

This study employs a qualitative research approach aimed at exploring in depth the implementation of IPAS learning through a deep learning approach and its role in stimulating students' skills and competencies. Data were collected through classroom observations, interviews with teachers and students, and documentation of learning activities conducted during the instructional process (Fiteriani et al., 2022). Data analysis was carried out systematically to identify patterns of learning practices, student participation, and the development of various skills during the learning process.

The objective of this study is to analyze the implementation of IPAS learning through a deep learning approach in stimulating students' skills and competencies at Risa State Elementary School. The study also seeks to identify instructional strategies used by teachers to create meaningful learning experiences that support the development of students' abilities. The findings are expected to contribute to the development of innovative IPAS learning practices and to enrich academic discussions regarding the application of deep learning approaches in elementary education.

METHODS
Research Design and Participants

This study employed a qualitative research design with a case study approach to examine the implementation of IPAS learning through a deep learning approach in stimulating students' skills and competencies. The qualitative case study design was selected because the research aims to explore learning processes, classroom interactions, and students' learning experiences in a real educational setting. This design enables an in-depth understanding of how deep learning practices are implemented in classroom activities and how they influence students' skill development.

The research was conducted at Risa State Elementary School, an elementary school operating under the educational system administered by the Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia. The participants consisted of 24 fifth-grade students aged 10–11 years and one IPAS teacher who was directly involved in the teaching process. Participants were selected using

purposive sampling, considering their direct involvement in the implementation of the learning activities being studied. Since the study involved children, ethical procedures were implemented, including institutional approval from the school, parental notification, and confidentiality protocols to protect the identity and privacy of all participants.

Instruments and Data Collection Procedures

Data were collected using several qualitative research instruments, including classroom observations, semi-structured interviews, and documentation analysis. Classroom observations were conducted using an observation checklist designed to capture learning activities related to the implementation of the deep learning approach, such as student engagement, collaborative learning, inquiry activities, and problem-solving processes.

Semi-structured interviews were conducted with the teacher and several students to obtain deeper insights into their learning experiences and perceptions regarding the implementation of IPAS learning. Documentation was also analyzed to support the findings, including lesson plans, student worksheets, and learning activity records.

The data collection procedures were conducted chronologically. The research began with preliminary observations to understand the classroom learning environment. This stage was followed by intensive classroom observations during IPAS learning sessions, interviews with selected participants, and the collection of relevant instructional documents.

Data Analysis Techniques and Ethical Considerations

The collected data were analyzed using qualitative data analysis procedures consisting of data reduction, data display, and conclusion drawing, following the analytical framework proposed by Matthew B. Miles and A. Michael Huberman. The analysis focused on identifying patterns related to the implementation of deep learning practices and the development of students' skills during the learning process.

To ensure the trustworthiness of the research findings, several strategies were applied, including data triangulation, member checking, and peer review. Ethical considerations were also maintained throughout the study. All participants were informed about the purpose of the research and participated voluntarily through informed consent procedures. Confidentiality and anonymity were ensured by using coded identifiers in the reporting of data, and the study was conducted with official permission from the school to meet academic and publication ethics standards.

RESULTS AND DISCUSSIN
Results

The results of this study present the main findings regarding the implementation of IPAS learning through a *deep learning* approach in stimulating students' skills and competencies at Risa State Elementary School. The research data were obtained through

observations of learning activities, interviews with teachers and students, and analysis of instructional documentation. The findings indicate that the implementation of the *deep learning* approach in IPAS learning has a positive impact on student engagement, the development of thinking skills, and collaborative abilities during the learning process. The learning process designed by the teacher was not solely oriented toward delivering content but also provided opportunities for students to explore concepts through various learning activities that required active participation.

The implementation of the *deep learning* approach in IPAS learning can be seen from the stages of learning activities that emphasize active student involvement from the beginning of the lesson. The teacher initiated the learning activities by presenting stimulating questions related to phenomena frequently encountered by students in their daily lives. These questions were intended to explore students' prior knowledge while also building connections between their experiences and the concepts to be studied. This process encouraged students to express their opinions and share experiences relevant to the learning material. These activities demonstrate that students did not merely receive information passively but began to engage in deeper thinking processes to understand the learning concepts.

During the learning process, the teacher also facilitated group discussion activities that provided students with opportunities to collaborate in solving problems related to the IPAS material. Group discussions became one of the effective learning strategies to encourage students to exchange ideas, express opinions, and respond to the perspectives of their group members. The interactions that occurred during the discussion activities reflected dynamic and active learning processes, in which students were involved in analyzing the problems presented by the teacher. These activities provided more meaningful learning experiences because students were directly involved in constructing knowledge through social interaction with their classmates.

Figure 1. Presentation activity of student group discussion results in science learning using the deep learning approach at Risa State Elementary School

Figure 1 shows a group discussion presentation activity conducted by students in front of the class. In this activity, students convey their analysis and understanding of the learning material discussed in their groups. This presentation activity provides an opportunity for students to develop communication skills, critical thinking skills, and the ability to systematically convey ideas to their classmates.

In addition to discussion activities, the learning process also involved observing the surrounding environment as part of a scientific inquiry process. Students were asked to observe certain phenomena related to the IPAS material and record the results of their observations in worksheets provided by the teacher. This activity allowed students to gain more concrete and contextual learning experiences. Through these observation activities, students were able to connect the concepts they learned with real conditions they encountered in their surrounding environment. Such learning experiences helped students understand the learning material more deeply because they not only studied concepts theoretically but also observed their application in everyday life.

The results of the observations showed that the *deep learning* approach was able to increase student engagement in learning activities. Most students demonstrated high enthusiasm during the learning process. They actively asked questions, participated in discussions with their group members, and presented their ideas when they were asked to present the results of their discussions in front of the class. The high level of student involvement in learning activities indicates that the learning strategies implemented by the teacher were able to create a more interactive and participatory learning environment. This condition provided greater opportunities for students to develop various skills needed in the learning process.

The findings also indicate the development of students' critical thinking skills during the learning activities. This can be seen from the students' ability to identify problems, express opinions based on their observations, and provide explanations for the phenomena being studied. Learning activities that provide opportunities for students to explore and analyze information encourage them to think more systematically in understanding the concepts being learned. Students' ability to present arguments and provide reasons for the opinions they express indicates the development of higher-order thinking skills.

In addition to critical thinking skills, the *deep learning* approach also contributes to the development of students' collaborative skills. Group discussion activities carried out during the learning process provided opportunities for students to work together in completing the tasks given by the teacher. Interactions among students during discussions reflected efforts to share information, listen to the opinions of their peers, and reach mutual agreements in solving the problems assigned. This process shows that learning activities not only develop students' academic abilities but also social skills that are important in everyday life.

The analysis of the research findings indicates that IPAS learning that applies the *deep learning* approach is able to create a more active and meaningful learning environment. Learning activities that emphasize exploration, discussion, and

observation of real phenomena provide opportunities for students to develop deeper understanding of the concepts being learned. The role of the teacher in this process is very important as a facilitator who guides students to explore knowledge through various learning activities that are challenging and relevant to their lives. The learning strategies implemented were able to stimulate the development of various student skills simultaneously, including critical thinking skills, problem-solving abilities, and collaborative skills.

Figure 2. The teacher guides students in the science learning process which emphasizes exploration activities and understanding concepts.

Figure 2 illustrates the teacher's role in guiding students throughout the learning process. The teacher not only delivers the material but also provides direction and guidance to students as they read, understand the material, and complete assigned tasks. This interaction demonstrates the teacher's role as a facilitator, helping students construct understanding independently through active learning activities.

Overall, the results of this study indicate that the implementation of IPAS learning through a *deep learning* approach at Risa State Elementary School contributes positively to improving the quality of the learning process. This approach helps students understand the learning material more deeply while simultaneously developing various skills that are important for their academic and social development. These findings provide an indication that the application of the *deep learning* approach can be one of the effective learning strategies for improving the quality of IPAS learning in elementary school.

Discussion

The Deep Learning Approach in Building Meaningful IPAS Learning

The deep learning approach in IPAS learning plays an important role in creating meaningful learning experiences for elementary school students. The development of modern educational paradigms positions learning not merely as an activity of receiving information, but as a process of understanding, interpreting, and connecting knowledge with real-life situations. Meaningful learning helps students develop stronger conceptual understanding because the material learned does not stand alone but is connected to the experiences and environments they encounter in their daily lives (Wardani & Fiorintina, 2023).

The deep learning approach is rooted in constructivist theory, which emphasizes that knowledge is built through active interaction between individuals and their environment. Students gain understanding when they are involved in exploration, discussion, and observation of various phenomena related to learning materials (Budiarti et al., 2022). These activities encourage students to gradually build their knowledge structures through processes of thinking and reflection. Teachers act as facilitators who provide learning experiences that enable students to discover the meaning of the concepts being studied (Mahartika et al., 2023).

IPAS learning designed through this approach provides opportunities for students to connect scientific concepts with phenomena found in their surrounding environment. The relationship between theory and real-life experience helps students understand the material more comprehensively. Contextual learning experiences also increase the relevance of learning so that students perceive the knowledge they acquire as closely related to their lives. Such conditions contribute to increased interest and motivation in learning (Rusni et al., 2023).

Several studies in science education indicate that exploration and inquiry-based learning can strengthen students' conceptual understanding. Learning activities that require direct involvement provide space for students to develop curiosity and the ability to interpret information. Students do not merely memorize concepts but also understand the scientific reasoning behind a phenomenon. This process helps them develop more systematic thinking skills (Istiningsih et al., 2022).

The deep learning approach also strengthens the reflective dimension in the learning process. Reflection allows students to evaluate the understanding they have obtained and reconsider how they learn a concept. Reflective activities encourage students to become aware of the thinking processes they use during learning. This awareness helps develop metacognitive abilities that are essential for lifelong learning (Muyassaroh et al., 2024).

Changes in the learning paradigm also influence the role of teachers in the classroom. Teachers are no longer positioned as the main source of knowledge but as mentors who guide students' learning processes. Teachers are responsible for designing challenging learning activities, facilitating discussions, and providing feedback that helps students develop deeper understanding. Interaction between teachers and students

becomes an important factor in creating a productive learning environment (Romdhon et al., 2024).

Learning approaches that emphasize exploration and active participation contribute to improving the quality of IPAS learning. Students gain opportunities to understand concepts through broader learning experiences (Amiqoh et al., 2024). Learning processes that involve observation, discussion, and analysis of phenomena help students develop a more comprehensive understanding of the material being studied. Such learning also strengthens the connection between academic knowledge and everyday life.

The Role of the Deep Learning Approach in Developing Critical Thinking Skills

The development of critical thinking skills has become one of the main goals of twenty-first century education. This ability relates to skills in analyzing information, evaluating arguments, and making decisions based on rational considerations. Elementary education plays an important role in establishing the foundation of these abilities from an early stage so that students are able to face various intellectual challenges in the future (Kiswari et al., 2023).

The deep learning approach provides broad opportunities for the development of students' critical thinking abilities. Learning processes that emphasize concept exploration and analysis of phenomena encourage students to understand cause-and-effect relationships within an event. Learning activities that require reasoning help students develop the ability to examine information more deeply. Students learn to evaluate various possible explanations before drawing conclusions (Angendari et al., 2022).

Educational theories focusing on inquiry-based learning show that investigative activities are an effective means of developing critical thinking skills. Through inquiry activities, students identify problems, gather relevant information, and interpret the data obtained. This process requires analytical and evaluative abilities that form essential components of critical thinking (Huda & Kiptiyah, 2024). Such activities also help students understand that scientific knowledge develops through systematic investigation.

Learning environments that provide opportunities for students to express opinions and respond to the perspectives of their peers also enrich their thinking processes. Intellectual interaction among students creates a dialogical space where the exchange of ideas can occur. Each student has the opportunity to test their arguments through discussion and reflection. This process deepens understanding and strengthens analytical abilities (Pristianti & Prahanı, 2022).

Research in education shows that learning activities involving discussion, observation, and problem-solving can improve the quality of students' thinking processes. When students engage in these activities, they practice connecting various concepts and identifying patterns among phenomena (Subhan et al., 2022). This ability becomes an important element in the development of higher-order thinking skills.

In addition to analytical aspects, critical thinking is also related to reflective abilities. Reflection allows students to reconsider their thinking processes and improve their learning strategies. Reflective activities strengthen students' awareness of how they understand information. This awareness supports the development of metacognitive abilities that play an important role in long-term learning processes (Rapi et al., 2022).

The development of critical thinking skills through deep learning approaches provides broad benefits for students' academic growth. Students who are accustomed to critical thinking demonstrate better abilities in understanding concepts, evaluating information, and solving problems rationally (Aeiniq & Alfiansyah, 2023). These abilities become important assets for students in responding to the rapid development of science and technology.

Educational Implications, Research Limitations, and Recommendations for Learning Development

The implementation of the deep learning approach in IPAS learning offers several implications for the development of educational practices in elementary schools. One important implication relates to the shift in learning paradigms toward more participatory approaches. Learning processes involving exploration, dialogue, and reflection encourage students to actively participate in constructing their own understanding. Such transformation requires the design of learning activities that stimulate students' curiosity and creativity (Fatmawati & Raharjo, 2024).

Strengthening teachers' pedagogical competence becomes an important factor in supporting the implementation of deep learning approaches. Teachers need the ability to design varied learning activities that are relevant to students' needs. Effective lesson planning includes the selection of appropriate methods, media, and evaluation strategies capable of illustrating the development of students' understanding comprehensively. Efforts to enhance teacher competence may be carried out through professional training and continuous academic development programs (Novitha & Suhartini, 2023).

A supportive learning environment also plays an important role in the successful implementation of this learning approach. Learning facilities, availability of learning resources, and the academic culture of the school influence the quality of the learning process. A conducive environment helps students develop confidence and the courage to express their ideas. Such conditions support productive learning interactions between teachers and students (Handini & Mustofa, 2022).

This study also has several limitations that should be considered in interpreting the findings. The scope of the research is limited to a single school, which means the results reflect learning conditions in a particular setting. Differences in school characteristics, student backgrounds, and learning cultures may influence the implementation of instructional strategies in other educational contexts (Amnuel et al., 2023).

Another limitation relates to the research approach, which primarily emphasizes qualitative analysis of the learning process. While this approach provides in-depth insights into classroom dynamics, it does not fully represent the impact on students' academic achievement in quantitative terms. Future studies may adopt mixed-method approaches in order to obtain a more comprehensive understanding of the effectiveness of the learning approach (Novianti et al., 2025).

Future research development can involve a larger number of schools and participants. Studies with broader coverage provide opportunities to examine variations in the implementation of learning approaches across different educational settings. Comparative analyses between schools may also generate richer insights regarding factors that influence the success of innovative learning strategies (Utami et al., 2023).

The findings of this study contribute to the development of IPAS learning in elementary schools. Learning approaches that emphasize knowledge exploration, intellectual interaction, and reflection on learning experiences help create more meaningful learning processes (Handican et al., 2023). Innovative instructional strategies have the potential to improve the quality of basic education and prepare students to face the continuing advancement of scientific knowledge.

CONCLUSION

This study shows that the implementation of a *deep learning* approach in IPAS learning at Risa State Elementary School contributes to improving the quality of the learning process in a more meaningful way. Learning activities that emphasize exploration, discussion, and observation of real-life phenomena help students understand concepts more deeply and connect them with their daily experiences. A participatory learning process also encourages students' active engagement in classroom activities. In addition to strengthening conceptual understanding, the *deep learning* approach contributes to the development of students' critical thinking and collaborative skills. Learning activities that involve analysis, reflection, and teamwork provide opportunities for students to develop higher-order thinking skills as well as social competencies that are essential for twenty-first century learning. The findings of this study suggest that the implementation of a *deep learning* approach can be an effective strategy for improving the quality of IPAS learning in elementary schools. Future studies are expected to involve broader research settings in order to obtain a more comprehensive understanding of the implementation of this approach in various educational contexts.

REFERENCES

Aeiniq, N. D., & Alfiansyah, I. (2023). Analysis Of Influence The Pancasila Student Profile Strengthening Project On Literacy Ability In Elementary Schools. *Jurnal Cakrawala Pendas*, *9*(4), 686–697. https://doi.org /10.31949/JCP.V9I4.6635

Ainullah, A. N., Jampel, I. N., & Sudatha, I. G. W. (2023). Interactive Learning Multimedia WITH Problem-Based Learning FOR Fifth-Grade Elementary School Students. *Jurnal Ilmiah Sekolah Dasar*, *7*(2), 316–326. https://doi.org

/10.23887/JISD.V7I2.57377

Amiqoh, L., Osman, S., & Yilmaz, M. (2024). Comparison OF Motivation AND Geography Learning Outcomes OF Students Who Live IN Islamic Boarding Schools AND Outside Islamic Boarding Schools. *Indonesian Journal OF Education Research (Ijoer)*, *5*(1), 19–27. https://doi.org /10.37251/IJOER.V5I1.877

Amjad, A. I., Habib, M., Tabassum, U., Alvi, G. F., & Taseer, N. A. (2023). The Impact OF Brain-Based Learning ON Students Intrinsic Motivation TO Learn AND Perform IN Mathematics: A Neuroscientific Study IN School Psychology. *Lnternational Electronic Journal OF Elementary Education*. https://doi.org /10.26822/IEJEE.2023.318

Amnuel, P. R., Sinaga, F. P., & Winda, F. R. (2023). Description Of Students' Critical Thinking Ability Of Urban School In Physics Material. *Edufisika Jurnal Pendidikan Fisika*, *8*(2), 217–225. https://doi.org /10.59052/EDUFISIKA.V8I2.26531

Angendari, M. D., Candiasa, I Made, Warpala, I. W. S., & Agustini, K. (2022). Effect Of Using Animation Video Media Through Problem-Based Learning Settings On Learning Outcomes For Making Fashion Patterns. *International Journal OF Health Sciences*, *6*(3), 1607–1622. https://doi.org /10.53730/IJHS.V6N3.13605

Budiarti, I., Winarti, W., & Viyanti, V. (2022). Designing Physics Learning Based ON Local Potential During New Normal Era. *Journal OF Innovation IN Educational AND Cultural Research*, *3*(1), 30–40. https://doi.org /10.46843/JIECR.V3I1.53

Erawan, G. M., Mariana, N., & Suryanti, S. (2025). Development and Challenges OF Steam Learning Implementation IN Elementary Schools: A Comprehensive Literature Review. *International Journal OF Emerging Research and Review*, *3*(1). https://doi.org /10.56707/IJOERAR.V3I1.94

Fatmawati, N. M., & Raharjo, R. (2024). Utilization OF Artificial Intelligence-Based Learning Videos: Enhancing Learning Interest IN Early Childhood Moral Education. *Golden Age Jurnal Ilmiah Tumbuh Kembang Anak Usia Dini*, *9*(3), 475–486. https://doi.org /10.14421/JGA.2024.93-09

Firmansyah, A. G., Yudha, M., Suyato, S., Sukarti, S. E. E., Suyato, S., Yogyakarta, U. N., Sukarti, S. E. E., & Yogyakarta, U. N. (2024). The Importance Of Humanism Education For Primary School Children In The 21ST Century Globalization Era. *Waskita Jurnal Pendidikan Nilai Dan Pembangunan Karakter*, *8*(2), 222–244. https://doi.org 10.21776/UB.WASKITA.2024.008.02.7

Fiteriani, I., Ningrum, A. R., & Nuryana, Z. (2022). Development OF Lkpd Natural Sciences Based ON Literacy AND Numeration Assisted BY Augmented Reality Media IN Islamic Elementary School. *Jip Jurnal Ilmiah Pgmi*, *8*(2), 79–94. https://doi.org /10.19109/JIP.V8I2.14512

Handican, R., Nasution, E. Y. P., Ananda, A., Gistituati, N., & Rusdinal, R. (2023). Understanding The Duality OF Mathematics Education Paradigms: A Comparative Review OF Learning Methods In Indonesia And Japan. *Mathline Jurnal Matematika Dan Pendidikan Matematika*, *8*(3), 921–936. https://doi.org /10.31943/MATHLINE.V8I3.473

Handini, O., & Mustofa, M. (2022). Application OF Tpack IN 21ST Century Learning. *International Journal OF Community Service Learning*, *6*(4), 530–537. https://doi.org /10.23887/IJCSL.V6I4.54620

Hanisah, H., Sutomo, M., & Saihan, S. (2024). Needs Analysis IN Developing Digital Flashcards FOR Indonesian Language Learning IN Elementary School. *Al-Adzka Jurnal Ilmiah Pendidikan Guru Madrsah Ibtidaiyah*, *14*(1), 31–42. https://doi.org /10.18592/ALADZKAPGMI.V14I1.12924

Huda, M., & Kiptiyah, S. M. (2024). Development OF Learning Media Digital Pop-Up Book Based Interactive Powerpoint Material Hearing Material Grade Five Elementary School. *Jurnal Penelitian Pendidikan Ipa*, *10*(12), 10618–10626. HTTPS://DOI.ORG/10.29303/JPPIPA.V10I12.7794

Istiningsih, I., Naimah, N., & Rokhimawan, M. A. (2022). Model OF Teacher – Student Interaction Based ON Students' Uniqueness IN Elementary School (Benchmarking TO Sto. Rosario Montessori School Philippine). *Elementary Islamic Teacher Journal*, *10*(1), 1. https://doi.org /10.21043/Elementary.V10I1.14059

Kiswari, L., Singgih, S., & Muhlisin, A. (2023). Stem-Based Lkpd Development and Contextual Problems to Improve Explanation, Concluding, AND Evaluating Skills. *Phenomenon Jurnal Pendidikan Mipa*, *12*(2), 140–158. https://doi.org /10.21580/PHEN.2022.12.2.12061

Kurniasih, E., Raharjo, T. J., & Yuwono, A. (2024). Effectiveness of Problem-Based Learning for Improved Learning Outcomes AND Critical Thinking. *Pasundan Journal OF Mathematics Education Jurnal Pendidikan Matematika*, *14*(1), 17–26. https://doi.org /10.23969/PJME.V14I1.13358

Kurniawan, A. W., & Hanief, Y. N. (2022). Development of Basic Movement Learning Models Of The Concept Of Play And Games Modification Elementary School Level. *Journal Sport Area*, *7*(2), 246–261. https://doi.org /10.25299/SPORTAREA.2022.VOL7(2).8589

Mahartika, I., Aisyah, S. N., Meisyalla, L. N., & Ilhami, A. (2023). What ARE THE Characteristics OF Learners AND THE Variations OF Non-Electronic Learning Media? *Jpi (Jurnal Pendidikan Indonesia)*, *12*(2), 305–316. https://doi.org /10.23887/JPIUNDIKSHA.V12I2.51325

Marpaung, C. P., & Suyanti, R. D. (2023). Improving Hots Literacy Using THE Pjbl Model WITH Crossword Puzzle Media ON Reaction Rate Materials. *Jurnal Inovasi Pembelajaran Kimia*, *5*(1), 62. https://doi.org /10.24114/JIPK.V5I1.43678

Muyassaroh, I., Saputri, A. E., Saefudin, A., Darmayanti, M., Mufliva, R., Ginting, L. C. B., Murron, F. S., & Magistra, A. A. (2024). Bridging Cultures in The Classroom: A Systematic Literature Review OF Ethnoscience Research IN Indonesian Elementary Science Education. *Data \& Metadata*, *4*, 434. https://doi.org/10.56294/DM2025434

Novianti, R., Latifah, N., & Kashefian, S. (2025). Digital Learning Innovation Through Application-Assisted Radec Model: Let's Read About Elementary School Students' Writing Skills. *Profesi Pendidikan Dasar*, 48–65. https://doi.org /10.23917/PPD.V12I1.9830

Novitha, & Suhartini, S. (2023). Development OF Problem-Based Learning Lkpd Based Local Potential OF Baros Mangroves IN Biology Subjects Environmental Pollution Material. *Jurnal Penelitian Pendidikan Ipa*, *9*(12), 10538–10545. https://doi.org /10.29303/JPPIPA.V9I12.5695

Odera, D., Otieno, M., & Ounza, J. E. (2023). Security Risks In The Software Development Lifecycle: A Review. *World Journal OF Advanced Engineering Technology AND Sciences*, *8*(2), 230–253. HTTPS://DOI.ORG/10.30574/WJAETS.2023.8.2.0101

Pratama, H., Azman, M. N. A., Zakaria, N., & Khairudin, M. (2022). The Effectiveness of The Kit Portable Plc On Electrical Motors Course Among Vocational School Students in Aceh, Indonesia. *Kompleksnoe Ispolzovanie Mineralnogo Syra = Complex Use OF Mineral Resources*, *320*(1), 75–87. https://doi.org /10.31643/2022/6445.09

Pristianti, M. C., & Prahani, B. K. (2022). Profile OF Students' Physics Problem Solving Skills AND Problem Based Learning Implementation Supported BY Website on Gas Kinetic Theory. *Jurnal Pendidikan Progresif*, *12*(1), 375–393. https://doi.org /10.23960/JPP.V12.I1.202229

Rapi, N. K., Suastra, I. W., Widiarini, P., & Widiana, I. W. (2022). The Influence of Flipped Classroom-Based Project Assessment ON Concept Understanding and Critical Thinking Skills IN Physics Learning. *Jurnal Pendidikan Ipa Indonesia*, *11*(3), 351–362. https://doi.org /10.15294/JPII.V11I3.38275

Romdhon, J., Masrifah, M., Shiyama, N. M., & Suharyati, H. (2024). Applying Constructivist Learning Theory TO Enhance Student Learning Outcomes in Elementary Schools. *International Journal OF Sustainable Development \& Future Society*, *2*(2), 62–69. https://doi.org /10.62157/IJSDFS.V2I2.73

Rusni, I., Fitria, Y., Ahmad, S., & Zen, Z. (2023). Development of E-Modules Oriented BY A Science, Technology, Engineering, Art, and Mathematics (Steam) Approach TO Improve High Level Thinking Ability. *Jurnal Penelitian Pendidikan Ipa*, *9*(9), 7179–7188. https://doi.org /10.29303/JPPIPA.V9I9.5345

Safirah, A. D., Nasution, N., & Dewi, U. (2024). Analysis OF THE Development Needs OF Hots-Based Electronic Student Worksheets WITH Culturally Responsive Teaching Approach IN Elementary Schools. *Ijorer International Journal OF*

Recent Educational Research, *5*(1), 243–256. https://doi.org /10.46245/IJORER.V5I1.533

Setyowati, F. A., Kristiani, K., & Murwaningsih, T. (2022). The Effectiveness oo Visual Picture Economics Textbook Based on Problem Based Learning IN Improving Reading Literacy Skills. *Journal of Education Technology*, *6*(3), 380–389. https://doi.org /10.23887/JET.V6I3.46435

Siregar, E., Kusumawardani, D., & Bunyamin, E. M. (2022). Virtual Laboratory for Practical Learning IN Vocational Education Using Nine Events OF Instruction Approach. *Journal OF Education Research AND Evaluation*, *6*(3), 457–467. https://doi.org /10.23887/JERE.V6I3.47691

Subhan, M., Ahmad, A., Efendi, J., & Febriani, E. (2022). Study OF Servant Leadership IN Building Educational Organizational Commitment AT Sdit Abfa. *Tadris Jurnal Pendidikan Islam*, *17*(1), 32–42. https://doi.org /10.19105/TJPI.V17I1.5960

Sugianto, H. (2023). Game-Based Learning IN Enhancing Learning Motivation. *International Journal OF Instructional Technology*, *2*(1), 22–33. https://doi.org /10.33650/IJIT.V2I1.9324

Triandayani, A., Fadlozi, Y. M., Barzegar, S., & Quijano, G. N. (2024). Increasing Students' Digital Literacy Through THE Use OF Google Cardboard Media ON THE Theme OF My Dreams In Class Iv OF Elementary School. *Indonesian Journal OF Education Research (Ijoer)*, *5*(1), 35–42. https://doi.org /10.37251/IJOER.V5I1.872

Utami, R. E., Johari, A., & Anggereini, E. (2023). Learning Outcomes FOR Students Junior High School: Entrepreneurship-Based Learning Video. *Integrated Science Education Journal*, *4*(2), 69–76. https://doi.org /10.37251/ISEJ.V4I2.328

Wardani, I. S., & Fiorintina, E. (2023). Building Critical Thinking Skills OF 21ST Century Students THROUGH Problem Based Learning Model. *Jpi (Jurnal Pendidikan Indonesia)*, *12*(3), 461–470. https://doi.org /10.23887/JPIUNDIKSHA.V12I3.58789