



DEEP LEARNING IN SELECTED ELEMENTARY SCHOOLS IN JAVA, INDONESIA: EVIDENCE FROM STUDENTS' PERCEPTIONS AND TEACHERS' PERSPECTIVES

Nur Luthfi Rizqa Herianingtyas¹⁾, Salamah Agung²⁾, Reza Ruhbani Amarulloh³⁾

^{1,2,3} Universitas Islam Negeri (UIN) Syarif Hidayatullah Jakarta, Indonesia

Email: rizqaluthfi@uinjkt.ac.id

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Abstract

Indonesia introduced Deep Learning (Pembelajaran Mendalam, PM) as a pedagogical approach emphasizing mindful, meaningful, and joyful learning experiences. This study aimed to examine elementary school students' learning experiences and explore teachers' and students' perspectives on the relevance and early implementation of PM. A sequential mixed-methods design with a complementary purpose was employed. Quantitative data were first collected through a questionnaire administered to 548 elementary school students from five provinces on Java, Indonesia: Banten, DKI Jakarta, West Java, Central Java, and East Java. Subsequently, qualitative data were obtained through semi-structured interviews with five teachers purposively selected based on their participation in PM training and subsequent classroom implementation, along with five students from their respective classes. Both strands were integrated during interpretation by relating survey patterns to qualitative themes. Participating teachers and students perceived PM as relevant to strengthening student agency, conceptual understanding, contextual learning, character development, digital resource utilization, and learning partnerships. These findings highlight uneven classroom learning experiences and suggest the perceived potential of PM to address identified limitations.

Keywords: Deep Learning (Pembelajaran Mendalam), Student Agency, Learning Experiences, Teacher Perspectives, Elementary Education

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INTRODUCTION

Improving the quality of learning remains a major challenge in Indonesian elementary education, despite substantial progress in expanding access to schooling. According to Statistics Indonesia (Statistik, 2024), the national gross enrollment ratios reached 104.82% for primary education and 92.21% for lower secondary education in 2024. However, high enrollment does not necessarily indicate that students acquire the competencies expected from their educational experiences. The Indonesian Education Report, based on the 2024 National Assessment, reported that 71.81% of students in general elementary schools achieved minimum literacy competency, while 69.58% achieved minimum numeracy competency. Although these figures indicate progress, a considerable proportion of students have yet to attain the expected competency levels. These findings highlight the continuing need to improve the quality of learning experiences in Indonesian elementary classrooms.

Addressing these challenges requires greater attention to classroom learning processes, particularly how students actively construct understanding, engage in meaningful activities, exercise agency, and reflect on their learning. In response to these priorities, Indonesia introduced Deep Learning (Pembelajaran Mendalam, PM) as a pedagogical framework emphasizing mindful, meaningful, and joyful learning experiences (Menengah, 2025b). Through its emphasis on understanding, applying, and reflecting, PM provides a conceptual framework for promoting deeper cognitive engagement, contextual learning, and student participation. However, its relevance to existing classroom conditions requires empirical examination of students' actual learning experiences and teachers' perspectives, rather than relying solely on the intended benefits described in policy documents.

Understanding these challenges requires attention to how classroom conditions shape students' learning experiences. Biggs' Presage–Process–Product (3P) model conceptualizes learning as an interaction among students' characteristics and instructional contexts (presage), approaches to learning and engagement in learning activities (process), and learning outcomes (product) (Biggs, 1993). The present study draws selectively on the process-oriented perspective of this model by examining students' reported participation and learning choices, cognitive engagement, instructional practices, learning orientations, learning resources and partnerships, teacher feedback, and self-regulation. These dimensions represent perceived learning experiences and aspects of the instructional context rather than a complete operationalization of the 3P model. Furthermore, deep and surface approaches to learning refer to differences in how learners approach tasks and engage with meaning, rather than a fixed hierarchy in which deeper processing automatically guarantees better learning outcomes (Marton & Säljö, 1976). At the global level, the World Bank (Bank, 2018) highlighted the phenomenon of “schooling without learning,” emphasizing that school attendance does not necessarily ensure the acquisition of essential knowledge and skills. In the Indonesian context, the 2024 National

Assessment findings presented in the 2025 Education Report Card, as discussed above, reveal continuing gaps in elementary students' foundational literacy and numeracy competencies (Menengah, 2025c). Although these national achievement indicators do not directly explain classroom practices, they underscore the importance of examining students' learning experiences to better understand the instructional conditions that may require improvement.

Indonesia's PM framework shares an emphasis on meaningful understanding, learner engagement, and authentic application but is distinguished by its nationally defined principles of mindful, meaningful, and joyful learning, three learning experiences of understanding, applying, and reflecting, and holistic learner development. These frameworks therefore share certain pedagogical priorities but should not be considered conceptually or operationally identical. Accordingly, this study adopts Indonesia's PM framework as its primary reference for examining students' learning experiences and teachers' perspectives during the early implementation of the approach.

Within Indonesia's PM framework, student agency is emphasized through opportunities for learners to express their ideas, participate in learning decisions, exercise meaningful choices, and take increasing responsibility for their learning processes. Learner agency represents an important dimension of student-centered learning, emphasizing students' active participation in shaping their learning experiences. Within the New Pedagogies for Deep Learning framework, (Fullan et al., 2017) conceptualize students as co-designers and active partners who contribute to learning decisions and assume increasing responsibility for their learning. Although conceptually related, this perspective is situated within Indonesia's Pembelajaran Mendalam (PM) framework through its emphasis on active learner engagement and mindful learning, particularly students' awareness of learning goals and ability to regulate their learning strategies (Menengah, 2025a). In the present study, learner agency is examined through three related aspects: student voice, reflected in opportunities to express opinions; student choice, reflected in opportunities to select learning methods and products; and self-regulation, reflected in students' reported adjustment and management of learning strategies. These aspects inform the interpretation of selected questionnaire responses concerning participation, learning choices, and self-regulation. However, the survey captures students' perceived opportunities and practices rather than providing a comprehensive measure of learner agency, particularly its broader dimensions of co-design and ownership.

The Indonesian Deep Learning (Pembelajaran Mendalam, PM) framework is formally articulated in the Ministry of Primary and Secondary Education's academic framework, which identifies three interrelated learning principles: mindful, meaningful, and joyful learning (Menengah, 2025b). Mindful learning emphasizes students' awareness of learning goals, intentional engagement, intrinsic motivation, and self-regulation. Meaningful learning focuses on connecting new knowledge with prior understanding and applying it to relevant personal,

social, and real-life contexts. Joyful learning emphasizes a positive, supportive, and intellectually challenging environment in which students feel valued and motivated to participate. Within Indonesia's PM framework, these principles are enacted through three learning experiences: understanding (*memahami*), applying (*mengaplikasi*), and reflecting (*merefleksi*). Understanding involves constructing conceptual knowledge, applying involves using knowledge in contextual situations, and reflecting involves evaluating learning processes and outcomes to inform subsequent learning. These three experiences represent an explicit formulation within Indonesia's PM framework rather than stages derived from international deep-learning models. The broader PM framework also incorporates eight graduate-profile dimensions and four learning-design elements: pedagogical practices, learning environments, learning partnerships, and digital technology utilization. Although these four elements draw on the New Pedagogies for Deep Learning framework, their organization and implementation in this study follow the official Indonesian PM framework (Menengah, 2025b).

The conceptual foundations of PM can be further examined through broader theories of learning, although these should not be treated as equivalent frameworks. Marton and Säljö (Marton & Säljö, 1976) distinguish deep and surface approaches to learning in terms of learners' orientations toward meaning and their engagement with learning tasks, rather than a simple distinction between understanding and memorization. Similarly, the Structure of the Observed Learning Outcome (SOLO) taxonomy developed by Biggs and Collis (Biggs & Collis, 1982) describes the structural complexity of demonstrated learning outcomes, ranging from fragmented responses to integrated understanding and conceptual generalization. In contrast, the revised Bloom's Taxonomy developed by Anderson and Krathwohl (Anderson & Krathwohl, 2001) classifies educational objectives according to knowledge and cognitive-process dimensions. These taxonomies provide complementary perspectives for understanding cognitive complexity and learning quality, but they do not correspond directly to the three learning experiences specified in Indonesia's PM framework. For example, the experience of understanding is not necessarily restricted to lower levels of cognitive complexity, while reflection does not automatically demonstrate relational or extended abstract reasoning. Accordingly, this study adopts Indonesia's PM framework as its primary conceptual reference, while using these broader theories to contextualize its pedagogical orientation. The empirical analysis focuses on students' reported learning experiences and teachers' and students' perspectives, rather than directly measuring SOLO levels, Bloom's cognitive categories, or changes in cognitive performance.

Recent empirical studies have begun examining the implementation of Deep Learning (Pembelajaran Mendalam, PM) in Indonesian elementary education, although their methodological approaches and research emphases differ. Yakin et al. (Yakin et al., 2025), through a qualitative case study involving six elementary school teachers in East Lombok, investigated teachers' perceptions, pedagogical practices, and implementation challenges. Their

findings highlighted variations in teachers' understanding of PM and difficulties in translating its principles into classroom practices. Similarly, Alfianingtias and Hadi (Alfianingtias & Hadi, 2025) surveyed 80 teachers and school principals in Tangerang City and examined the relationships between learning communities, pedagogical competence, school readiness, and PM implementation. These studies provide empirical insights into teacher practices and institutional conditions. However, they do not directly address how students' reported learning experiences across multiple dimensions can be examined alongside teachers' and students' perspectives during the early implementation of PM. This distinction identifies a specific need for research that connects student-reported classroom learning conditions with qualitative accounts of how the PM framework is perceived and initially implemented.

To address this gap, the present study combines a descriptive survey of 548 elementary school students from five provinces on Java, Indonesia, with semi-structured interviews involving five teachers who had received PM training and implemented the approach, along with five students from their respective classes. The study contributes in three ways. First, it provides a descriptive account of students' reported learning experiences before PM implementation, covering participation and learning choices, cognitive engagement, instructional methods, learning orientation, learning resources and partnerships, teacher feedback, and self-regulation and reflection. Second, it documents teachers' and students' perspectives on the relevance and early implementation of PM in selected elementary classrooms. Third, it integrates quantitative patterns and qualitative themes at the interpretation stage to examine how early implementation perspectives relate to the previously identified learning conditions. The study provides context-specific descriptive evidence rather than nationally representative findings or causal evidence of PM effectiveness.

Accordingly, this study aims to describe elementary school students' learning experiences before PM implementation and explore teachers' and students' perceptions of its relevance and early implementation. Specifically, it addresses two research questions: (1) What learning experiences do elementary school students report across seven dimensions: student participation and learning choices, cognitive engagement, instructional methods, learning orientation, learning resources and partnerships, teacher feedback, and self-regulation and reflection? (2) How do teachers who have received PM training and implemented the approach, together with students in their classes, perceive the relevance and early implementation of PM in relation to the learning conditions identified in the survey? The qualitative findings are interpreted with consideration of the purposive selection of trained PM implementers, whose experiences and perspectives may differ from those of teachers without such training.

METHODS

Research Design and Participants

This study employed a quantitatively driven sequential mixed-methods design, in which the quantitative phase was prioritized and the qualitative phase provided complementary contextual insight (Schoonenboom & Johnson, 2017). The first phase surveyed 548 elementary school students from Banten, DKI Jakarta, West Java, Central Java, and East Java to describe learning experiences prior to the early implementation of Deep Learning (Pembelajaran Mendalam, PM). The second phase involved semi-structured interviews conducted from 2 to 27 September 2025 with five teachers and five students. Teachers were purposively selected because they had participated in PM training organized by BBGTK and had subsequently implemented PM in their classrooms. Quantitative and qualitative participants were recruited separately, and the two strands were integrated during interpretation and reporting rather than used to evaluate the causal effectiveness of PM.

Questionnaire and Quantitative Analysis

The student questionnaire was developed by the researchers with reference to relevant learning theories and the Indonesian PM framework (Mubarak et al., 2025). It comprised 30 statements organized around seven predefined dimensions: student participation and learning choices, cognitive engagement, instructional methods, learning orientation, learning resources and partnerships, teacher feedback, and self-regulation and reflection. The instrument underwent expert review for content relevance and language clarity; however, the seven dimensions were treated as theory-informed descriptive categories rather than psychometrically validated scales. Quantitative data were analyzed descriptively using frequencies, percentages, and dimension-level scores to summarize patterns in students' reported learning experiences.

Qualitative Data Collection and Analysis

Teacher interviews explored perceptions of the PM framework and experiences of its early implementation, while student interviews focused on classroom learning experiences following implementation by their teachers. Interviews were audio-recorded and supplemented by field notes. Qualitative data were analyzed using a deductive, framework-guided descriptive approach based on seven predefined PM categories: PM as a comprehensive framework; honoring students and teachers in learning; student engagement and agency; deep conceptual understanding; lifelong learning; competence and character development; and optimization of the learning framework. Recorded responses and field notes were organized within these categories and reported through descriptive interpretation and illustrative quotations. Full verbatim transcripts were not prepared, and the reliance on predefined categories was recognized as a methodological limitation because it reduced transparency and the possibility of identifying perspectives outside the initial framework.

Ethical Considerations

The study was conducted with permission from the participating schools, which provided the administrative basis for student surveys and interviews. The source document states that separate parental or guardian informed consent and child assent were not obtained. This condition should be explicitly acknowledged as an ethical limitation and reviewed against the requirements of the relevant institutional ethics body and the target journal before submission.

Table 1. Characteristics of Teacher and Student Participants

Teacher	Student	Interview Date
Teacher A , a fifth-grade teacher at a public elementary school in Banten Province. Participated in Deep Learning training and has implemented it since August 2025.	Student A , a fifth-grade student at the same public elementary school taught by Teacher A.	2 September 2025
Teacher B , a fourth-grade teacher at a public elementary school in DKI Jakarta Province. Participated in Deep Learning training and has implemented it since August 2025.	Student B , a fourth-grade student at the same public elementary school taught by Teacher B.	10 September 2025
Teacher C , a fifth-grade teacher at a public elementary school in West Java Province. Participated in Deep Learning training and has implemented it since August 2025.	Student C , a fifth-grade student at the same public elementary school taught by Teacher C.	15 September 2025
Teacher D , a sixth-grade teacher at a public elementary school in Central Java Province. Participated in Deep Learning training and has implemented it since August 2025.	Student D , a sixth-grade student at the same public elementary school taught by Teacher D.	20 September 2025
Teacher E , a fourth-grade teacher at a public elementary school in East Java Province. Participated in Deep Learning training and has implemented it since August 2025.	Student E , a fourth-grade student at the same public elementary school taught by Teacher E.	27 September 2025

RESULT AND DISCUSSION

Overall, the results of this study affirm that the urgency of implementing Deep Learning in Indonesia lies in its potential to address learning that remains shallow and grade-oriented, to develop students' higher-order thinking skills and intrinsic motivation to learn, to foster a reflective, collaborative, and life-relevant learning culture, and ultimately to enhance the overall quality of education. In general, the study findings indicate that the learning conditions prior to the implementation of Deep Learning (DL) in elementary schools still reflected a traditional, teacher-centered educational paradigm. The learning process tended to be top-

down, where teachers held full control as the primary source of knowledge and the main decision-makers in the classroom. Students played a passive role, following instructions with limited opportunities to express opinions, determine their own ways of learning, or engage in learning-related decision-making.

1. Students' Perceptions of Learning before Deep Learning Implementation

This section presents students' perceptions of their learning experiences prior to the implementation of Deep Learning (DL). The analysis focuses on students' opportunities to express opinions, make learning choices, engage in classroom activities, and develop learning products.

Table 2. Students' Perceptions of Learning before Deep Learning Implementation

No	Statement	Number of Students	Percentage (%)
1.1 Learning is Top-Down			
Students' Perceptions of Freedom of Expression and Learning Choices			
1	I feel that I always follow the directions and choices given by the teacher.	235	42,9%
2	I feel that I mostly listen to the teacher's explanations.	215	39,2%
3	I feel that I can express my opinions (speak up) and choose learning methods that suit me best.	98	17,9%
Freedom to Create According to Interests and Talents			
1	I can develop products, works, or performances as instructed by the teacher.	305	55,7%
2	I can choose to develop products, works, or performances based on my own interests.	178	32,5%
3	I mostly sit and listen to the teacher during class without developing any product or work.	65	11,9%
1.2 Limited Opportunities for Higher-Order and Problem-Oriented Learning			
1	I am involved in thinking about and finding solutions to problems related to everyday life.	190	34,7%
2	I work on exercises that usually already have answers in the material summary.	219	40,0%
3	I just sit quietly and listen attentively to the teacher's explanations.	139	25,4%
1.3 Dominance of the Lecture Method			
1	I feel that I spend the whole day listening to the teacher's explanations.	299	54,6%
2	I feel that I gain many new skills according to my interests and preferences.	213	38,9%
3	I feel bored and always wait for break time to chat with friends.	36	6,6%
1.4 Mixed Learning Orientations with Memorization Remaining Prominent			
1	I think learning means memorizing lessons so that I can succeed in exams.	258	47,1%

No	Statement	Number of Students	Percentage (%)
2	I think learning is an effort to improve myself and deepen my knowledge.	67	12,2%
3	I think learning happens when I have a strong curiosity about the subject matter.	223	40,7%
1.5 Uneven Access to Diverse Learning Resources and External Partnerships			
Interaction and Partnership in Learning			
1	I have interacted with external parties such as parents, communities, professionals, or workplaces related to learning activities.	153	27,9%
2	I interact with teachers and classmates, and occasionally with external parties.	151	27,6%
3	I only learn with teachers and classmates, and never interact with external parties related to the subject matter.	244	44,5%
Utilization of Digital Learning Resources			
4	I use textbooks and notebooks during lessons.	275	50,2%
5	I use textbooks and notebooks, plus additional books and digital sources for learning.	205	37,4%
6	I can access broader learning resources such as the internet and use digital materials to deepen my understanding.	68	12,4%
1.6 Teacher Feedback Practices Remain Uneven			
1	The teacher gives feedback that helps me understand my mistakes and how to fix them.	345	63%
2	The teacher rarely gives comments or responses to my work.	102	18,6%
3	After finishing an assignment, I only receive a score without further explanation from the teacher.	101	18,4%
1.7 Students' Self-Regulation and Reflection Practices Remain Uneven			
Self-Regulation in Learning			
1	I adjust my learning strategies if my learning outcomes do not meet expectations.	258	47,1%
2	I rarely evaluate or review my learning outcomes after receiving assessment from the teacher.	67	12,2%
3	I usually wait for the teacher's directions rather than managing my own learning methods.	223	40,7%
Feedback and Reflection in Learning			
4	At the end of the lesson, I am asked to assess how well I understand the material and identify what I still need to learn.	117	21,4%
5	At the end of the lesson, the teacher asks about my understanding and learning experience that day.	95	17,3%
6	At the end of the lesson, I am asked to summarize the lesson content based on my current understanding.	336	61,3%

The findings reveal that elementary school learning practices remained predominantly teacher-directed, although some elements of student-centered learning had begun to emerge. Students generally relied on teachers for instructional decisions, learning activities, and the selection of learning products, indicating limited opportunities for student agency, voice, and choice. While some students were able to express their preferences, select learning products based on their interests, and participate in more independent learning activities, these experiences were less common than teacher-directed practices. A similar tendency was evident in cognitive engagement, where learning activities frequently emphasized listening to explanations, completing exercises, and reproducing information rather than exploring and solving contextual problems. Nevertheless, the involvement of some students in everyday problem-solving activities suggests that opportunities for meaningful cognitive engagement were already present, although not consistently experienced across classrooms.

Students' learning experiences also reflected a combination of conventional instructional practices and emerging opportunities for more meaningful learning. Teacher explanations continued to occupy a substantial proportion of classroom activities, yet some students reported acquiring new skills aligned with their interests, and only a small proportion expressed boredom during lessons. Similarly, students demonstrated diverse orientations toward learning. Memorization and examination performance remained prominent motivations, but curiosity, personal development, and the desire to deepen understanding were also evident. These findings suggest that conventional learning orientations coexisted with more exploratory and developmental perspectives, rather than completely replacing them.

Some students experienced learning primarily within the classroom alongside teachers and peers, whereas others had opportunities to interact with parents, community members, professionals, or external institutions. Similarly, students' use of learning resources was divided between conventional textbooks and notebooks and broader materials, including supplementary books and digital resources. This variation suggests that opportunities for contextual, collaborative, and resource-rich learning were available to some students but had not been consistently integrated into their learning experiences. In contrast, teacher feedback emerged as a relatively positive aspect of classroom learning, with most students receiving explanations that helped them identify and correct mistakes. However, a substantial proportion still experienced limited explanatory feedback, either receiving scores without clarification or rarely obtaining comments on their work. Students also demonstrated varying levels of self-regulation. While nearly half reported adjusting their learning strategies when outcomes did not meet expectations, others continued to depend on teachers' guidance or rarely reflected on their assessment results. These patterns indicate that constructive feedback and independent learning practices had begun to develop, although their implementation remained uneven.

A transitional learning environment in which teacher-centered practices remain dominant while elements of student agency, problem-solving, meaningful engagement, collaboration, constructive feedback, and self-regulated learning are beginning to emerge. The coexistence of these practices highlights the need for a more systematic pedagogical transformation rather than suggesting a complete absence of student-centered learning. In this context, Deep Learning (DL) offers a relevant pedagogical framework for strengthening existing practices and addressing identified limitations. Its implementation could support a shift from memorization-oriented learning toward deeper conceptual understanding, critical thinking, reflection, collaboration, and meaningful application of knowledge. By expanding opportunities for student participation, contextual problem-solving, and independent learning, DL has the potential to promote more meaningful and relevant learning experiences that respond to the educational demands and real-life challenges of the 21st century.

2. Teachers' and Students' Perceptions of Deep Learning during Early Implementation

The interview findings are presented according to seven predefined analytical categories derived from the Indonesian PM framework. These categories organize teachers' and students' perspectives on early implementation and should not be interpreted as themes that emerged independently from the interview data.

2.1 Deep Learning as A Comprehensive Framework

Deep Learning is a noble approach that emphasizes creating a learning atmosphere and process that is mindful, meaningful, and joyful, through an integrated and holistic development of thinking, feeling, emotional, and physical dimensions (Menengah, 2025b). The Deep Learning framework consists of four elements, namely; (1) Graduate Profile Dimensions, (2) Learning Principles, (3) Learning Experiences, dan (4) Learning Framework.

The eight dimensions of the Graduate Profile to be achieved are (1) Faith and devotion to God Almighty, (2) Citizenship, (3) Critical reasoning, (4) Creativity, (5) Collaboration, (6) Independence, (7) Health, dan (8) Communication. The three learning principles of Deep Learning, which may occur separately or simultaneously, are mindful, meaningful, and joyful.

Through the mindful principle, teachers encourage students to develop intrinsic motivation to become active learners. The meaningful principle enables students to experience the benefits and relevance of what they learn in real life; students are able to construct new knowledge based on prior understanding and apply it in authentic contexts. The joyful principle allows teachers to create a positive, enjoyable, challenging, and motivating learning atmosphere, where students feel valued for their participation and contributions to the learning process. These three principles are realized through three progressive learning experiences: Understanding, Applying, and Reflecting. The implementation of the Deep Learning approach is supported by teachers' pedagogical practices, a learning environment that ensures students' safety and comfort, the use of digitalization, and the presence of optimal learning partnerships.

"I think the framework is excellent because it's so complete. I remember it with the 8-3-3-4 concept — 8 dimensions, 3 learning principles, 3 learning experiences, and 4 learning frameworks. It's not just about memorizing, because memorizing is easy, but applying it requires continuous learning and process." (Interview, Teacher A – September 2, 2025).

The teacher's recognition of the interconnected components of Deep Learning indicates an appreciation of its potential to guide holistic and student-centered learning. However, the acknowledgment that implementation requires continuous learning also reflects an awareness of the challenges involved in translating conceptual knowledge into pedagogical practice. This finding is consistent with Spillane et al. (Spillane et al., 2002), who emphasize that educational reform implementation depends substantially on how teachers interpret and make sense of new educational ideas. Similarly, Coburn (Coburn, 2001) argues that teachers actively construct their understanding of educational innovations through professional interactions, which subsequently influence how these innovations are implemented in classrooms.

2.2 Honoring Students and Teachers in Learning

To honor students also means that teachers are able to understand each learner's potential. Ki Hajar Dewantara emphasized that education should be oriented toward a balance of thought (*cipta*), feeling (*rasa*), and will (*karsa*) as the essential human capacities. Honoring students provides space to strengthen the relationship between teachers and learners, fostering respect for students' differences, appreciation toward teachers, and emphasizing the importance of character (*adab*) before knowledge. Students are regarded as whole individuals with diverse potentials. Some characteristics of a learning process that honors them include: (1) respecting differences in background, ability, and learning style; (2) providing opportunities for active participation and autonomy in learning; (3) building warm, trusting, and meaningful relationships between teachers and students; (4) encouraging learners to recognize and develop their best potential, not merely to pursue grades; (5) ensuring psychological safety and mutual trust in the classroom; and (6) using respectful, contextual, and educative verbal and nonverbal communication.

"I feel that Deep Learning has made me more sensitive to the needs of my students — whether they feel seen and cared for by me, whether they are comfortable during lessons, and whether they feel motivated. Because honestly, before this, I just taught as usual, but through this idea of honoring, I've become more aware of my students." (Interview with Teacher C – September 15, 2025)

"Our teacher teaches with a smile, she's kind, not monotonous, so we don't get bored. She often encourages us by saying things like, 'Come on, you can do it!' that really makes us feel motivated." (Interview with Student C – September 15, 2025)

Within the Deep Learning framework, these three capacities provide a philosophical foundation for promoting learning experiences that transcend cognitive achievement. *Cipta* represents students' intellectual capacity to construct knowledge, engage in critical thinking, and solve complex problems. *Rasa* encompasses emotional sensitivity, empathy, appreciation of

values, and the ability to establish meaningful relationships with others. Meanwhile, *karsa* refers to volition, determination, and the willingness to transform knowledge and values into purposeful actions. The interconnectedness of these capacities is reflected in the principles of mindful, meaningful, and joyful learning, which encourage students to become conscious, engaged, and intrinsically motivated learners. Rather than treating intellectual, emotional, and volitional development as separate educational objectives, Deep Learning seeks to integrate them throughout the learning process (Rahmawati & Herianingtyas, 2026).

2.3 Student Engagement Orientation (Voice, Choice, Ownership)

The principle of awareness in Deep Learning emphasizes student engagement (Voice, Choice, and Ownership) as a key feature that positions learners at the center of the entire learning process. In this approach, the success of learning is not measured merely by academic achievement but by the extent to which students are actively, consciously, and responsibly involved in their own learning process. First, Voice signifies the presence of space for students to express their opinions, ideas, and reflections throughout the learning process. Students are not merely recipients of instruction but participants in shaping learning goals and strategies. Second, Choice represents the opportunity for students to determine the best way to learn according to their interests, potential, and preferred learning strategies. They may choose learning resources, types of assignments, or formats for presenting their learning outcomes. Through these choices, students learn to make decisions and take responsibility for their outcomes. This aligns with the concept of student agency, the ability of learners to control and direct their own learning experiences. Third, Ownership refers to the stage in which students feel a strong sense of control over their learning process and outcomes. They no longer learn due to external pressures, such as grades or teacher demands, but rather from an intrinsic motivation to grow and understand. This sense of ownership fosters reflective awareness, students understand their strengths, recognize their challenges, and continuously strive for self-improvement.

“For me, Deep Learning is something new that encourages us to involve students more. Every student deserves to participate, even in lesson planning. I used to decide everything myself because I didn’t think involving students in planning lessons was important for their learning ownership. But now, I ask them first ‘What do you think? How should we learn this topic? How should we be assessed?’” (Interview with Teacher B – September 10, 2025)

“Our teacher asks us to choose activities, so we usually pick what we like or what suits our interests—for example, what we want to make, what materials to use, or where to do it. Each group does something different, so we can also see how other groups’ work looks different. If we fail, we can try again, and the teacher keeps encouraging us, so it’s really fun” (Interview with Student B – September 10, 2025)

The findings indicate that Deep Learning encourages a shift from teacher-centered instruction toward student agency and learning ownership. Deep Learning requires fundamental changes in teaching practices, positioning students as creators of knowledge rather than passive

recipients. Teacher's reflection demonstrates a transformation in pedagogical practices by involving students in planning learning activities and assessment. This aligns with Fullan et al. (Fullan et al., 2017), who emphasize that Deep Learning transforms teachers into activators of learning and students into active partners in the learning process. Similarly, Student's experience illustrates how opportunities to choose activities, materials, and learning environments foster autonomy, creativity, and engagement.

2.4 Orientation toward Deep Understanding

Deep Learning emphasizes the importance of progressive thinking processes in building deep understanding. Through this approach, students are not merely required to recall or repeat information but to understand concepts progressively, from simple comprehension to complex, reflective understanding. Learning experiences in Deep Learning begin with the understanding stage, corresponding to the unistructural and multistructural levels of the SOLO taxonomy and the remembering and understanding stages in Bloom's taxonomy. At this stage, students actively construct knowledge to deeply understand essential, applicable, and character-based knowledge. Using active and constructive approaches, students build a foundation for applying their knowledge in contextual situations or the next stage of learning. The application and reflection stages correspond to the relational and extended abstract levels of the SOLO taxonomy, where students can connect ideas in new, contextual settings; engage in analysis and evaluation; and develop creative and innovative solutions for real-world problems. Reflecting on knowledge means expanding and applying ideas or generating new ones. In the implementation, to achieve these three stages of learning understanding, applying, and reflecting, teachers must implement pedagogical practices that promote deep thinking within learning topics. These include Problem-Based Learning, Project-Based Learning, Design Thinking, Discovery Learning, Experiential Learning, Inquiry Learning, and STEM-based approaches.

"Deep Learning really requires us as teachers to study first and master the material because we want to activate students to achieve deep understanding. I try to design assessments gradually, from easy to complex and make learning experiences more layered. I let them collaborate, practice directly, and provide worksheets (LKPD) with critical thinking activities when they experiment or try new things." (Interview with Teacher D – September 20, 2025)

"Yeah, we start from simple things first, then move to more difficult ones. The teacher shows pictures or videos so we can understand better. If we don't get something, the teacher reviews it again and gives us a test with slightly different questions. We also usually do group discussions, experiments, or outdoor activities, it's very varied" (Interview with Student D – September 20, 2025)

Deep learning extends beyond understanding and application to reflection, where students critically evaluate their learning experiences, expand their understanding, and generate new ideas for future application. These findings align with Quinn et al. (Quinn et al., 2019), who emphasize that Deep Learning moves beyond content coverage toward knowledge construction, critical thinking, and meaningful learning experiences.

2.5 Developing Lifelong Learners

The principle of meaningfulness in Deep Learning aims to develop students as lifelong learners, individuals who possess both the ability and willingness to keep learning, adapt, and expand their knowledge and skills across various life contexts. In this context, students should be placed in authentic, contextual, and collaborative learning environments, where learning focuses not only on content mastery but also on real-life experiences that nurture reflective and applied thinking. Such environments enable students to connect theory with practice, interpret meaning from firsthand experiences, and understand the relationship between classroom learning and their social, cultural, and environmental realities (Jonassen et al., 1995). This approach transforms the notion of learning, from merely transferring knowledge from teacher to student into a process of seeking meaning and relevance. Learners are encouraged to explore how the knowledge they gain carries impact and practical value across local to global contexts (Fullan & Langworthy, 2014). Thus, learning becomes more meaningful as students realize that knowledge is not the end goal but a means to contribute and adapt to the ever-changing world.

“I think with Deep Learning, I’ve learned more about connecting lesson content to students’ real-life experiences. I try to make sure they can feel the usefulness and relevance of what they’re learning. I also realized that connecting one subject to another is actually very important, it helps students understand and apply concepts more effectively.” (Interview with Teacher E – September 27, 2025)

“When we learned science (IPAS), our teacher also explained that what we were doing involved other subjects like math and art. For example, when we made a simple windmill project, we had to measure shapes and sizes for the blades and height, and we decorated the windmill nicely too.” (Interview with Student E – September 27, 2025)

The findings indicate that teachers perceive Deep Learning as an approach that connects knowledge with students’ real-life experiences and integrates concepts across disciplines. Teacher E emphasizes the importance of making learning relevant and meaningful, enabling students to recognize the usefulness of knowledge beyond the classroom. This aligns with (Rahmawati et al., 2025), who argue that meaningful learning occurs when students connect new knowledge with prior experiences and apply it across disciplines and authentic contexts. Similarly, Student E’s experience of creating a windmill demonstrates how science, mathematics, and art can be integrated into authentic learning activities, allowing students to construct interconnected knowledge rather than acquire fragmented information. From a cognitive perspective, Atkinson and Shiffrin’s (Atkinson & Shiffrin, 1968) memory model explains how information is processed through sensory memory and short-term memory, with further processing supporting its retention in long-term memory. Furthermore, Craik and Lockhart (Craik & Lockhart, 1972), through their Levels of Processing Theory, emphasize that deeper semantic processing produces more durable memory traces than superficial processing. Rahmawati et al. (Rahmawati et al., 2025) further highlight that meaningful learning, involving elaboration, analysis, discussion, and practical application, can strengthen long-term knowledge

retention and foster lifelong learning skills. Thus, these findings suggest that teachers interpret Deep Learning as a means of developing lifelong learners by connecting knowledge with authentic experiences, promoting interdisciplinary understanding, and facilitating deeper cognitive processing that supports long-term retention and knowledge transfer.

2.6 Development of Student Competence and Character

According to Biggs and Tang (2011), Deep Learning encourages students to build meaning through active and reflective engagement with learning experiences rather than passively receiving information. When students can connect academic concepts to real-life contexts, they become more sensitive to social, environmental, and humanitarian issues. This aligns with Lickona's (1991) theory of character education, which emphasizes that true education must train students to know the good (moral knowing), love the good (moral feeling), and do the good (moral action).

"My understanding of Deep Learning is that we really need to pay more attention to students' overall development, including their character. Because through olah hati and olah rasa, the process naturally builds values and character within students as they learn" (Interview with Teacher C – September 15, 2025).

"The teacher really pays attention to us in class. She gives examples first and inspires us through videos and real-life examples." (Wawancara Siswa C – 15 September 2025)

The findings indicate that teachers perceive Deep Learning as a holistic approach that integrates students' competency development with character formation. Deep Learning serves as an effective approach to integrate competence and character, as reflected in the eight dimensions of graduate profiles, through the holistic development of heart (olah hati), mind (olah pikir), body (olah raga), and soul (olah rasa) (Mubarak et al., 2025).

2.7 Optimization of the Learning Framework to Achieve Goals Effectively

The implementation of the Deep Learning approach is supported by a comprehensive learning framework designed to achieve learning goals effectively. The four elements of this framework include progressive pedagogical practices by teachers, a learning environment that ensures students' safety and comfort, the utilization of digital tools, and effective learning partnerships.

"Now, in Deep Learning, we also have to make optimal use of digital technology according to the times and the characteristics of today's students. In addition, partnerships are meant to help students experience authentic learning, they can learn outside the classroom, directly from sources or experts. I started thinking about collaborating with other teachers, parents, or even the community." (Interview with Teacher B – September 10, 2025).

"It's really fun because now we can access the internet for learning, use Padlet, and our teacher also shows videos. Last time, we even had a discussion session with the school canteen lady." (Interview with Student B – September 10, 2025).

The findings indicate that teachers perceive the Deep Learning framework as an integrated approach to achieving learning outcomes while fostering the eight graduate profile dimensions: faith and devotion to God, citizenship, critical reasoning, creativity, collaboration, independence, health, and communication. Rahmawati et al. (Rahmawati et al., 2025) emphasize that achieving these dimensions requires the optimization of four interconnected elements: pedagogical practices, learning environments, digital utilization, and learning partnerships. Teacher's reflection demonstrates an emerging understanding that digital technology and partnerships with teachers, parents, and communities can extend learning beyond traditional classroom boundaries. Similarly, Student's experiences of using Padlet, accessing digital resources, and interacting with school canteen staff illustrate how these elements begin to be integrated into classroom practices. The involvement of community members, such as canteen staff, offers opportunities for authentic learning by connecting curricular knowledge with real-life experiences.

Based on the survey results conducted among students before the implementation of Deep Learning, it was found that learning was still dominated by top-down patterns, lecture and memorization methods, and assessments focused on Lower Order Thinking Skills (LoTs). This condition resulted in a one-way learning process that provided little room for students to think critically, explore ideas, or develop self-regulation skills. Students tended to pursue grades alone without understanding the meaning and relevance of the knowledge they were learning. Educational transformation through the Deep Learning approach serves as a strategic solution to address these challenges. Deep Learning offers a comprehensive framework that not only emphasizes the learning atmosphere but also positions teachers as activators who create scaffolding and provide constructive feedback, enabling gradual improvement in students' understanding until they can form complete and meaningful connections (McGregor, 2020). Consequently, students are able to apply the knowledge and skills they have learned in both familiar and unfamiliar contexts (Bråten & Skeie, 2020). According to Marton and Säljö (Marton & Säljö, 1976), the Deep Learning approach provides a foundation for students to connect new ideas with prior experiences. Deep Learning is rooted in constructivist learning theory, which strengthens learning processes and interactions with real-life contexts (Abbott et al., 2009). asserts that Deep Learning represents a form of progressive education that emphasizes collaboration, exploration, and meaning-making. Through deeper learning experiences, students are encouraged to think more critically and creatively, explore multiple perspectives, construct deeper conceptual understanding, and generate innovative solutions to real-world problems. In this context, the teacher is no longer the center of learning but acts as an activator who enables students to engage their full potential throughout the learning process. The focus of the process lies in students' active engagement (voice, choice, ownership), encouraging them to become independent and reflective learners capable of managing their own learning processes.

CONCLUSION

This study identified several classroom learning conditions that support the relevance of Deep Learning in Indonesian elementary education. Students reported limited opportunities for voice and choice, continue reliance on teacher explanation, frequent use of textbooks as primary learning resources and a substantial orientation toward memorization. At the same time, the findings also revealed positive practices that should not be overlooked. Most Students reported receiving usefull correcting feedback, and nearly half reported adjusting their learning strategies when their learning outcomes did not meet the expectations. Therefore, the learning conditions identified in this study should be understood as uneven rather than uniformly teacher-centered or shallow.

The qualitative findings indicate that teachers generally perceived Deep Learning as a framework that could strengthen student agency, deeper understanding, contextual learning, character development, digital resource use and learning partnerships. These perceptions suggest that Deep Learning may provide a useful framework for addressing several areas of classroom practice identified through student surveys. However, this study does not provide causal evidence that Deep Learning improves learning outcomes. Its Contribution lies in identifying learning conditions that warrant attention and documenting teachers' and students' perspectives during the early stage of implementation.

Future research should examine Deep learning Implementation using longitudinal and comparative design, validated measures of learning process and outcomes, larger and more diverse teacher samples, and direct classroom observations to provide stronger evidence regarding how and under what circumstances Deep Learning contributes to improving elementary education.

AUTHOR CONTRIBUTION

In this research, all authors contributed to the development of the manuscript, critically reviewed its intellectual content, and approved the final version for publication. NLRH: Conceptualization, methodology, investigation, formal analysis, and writing original draft. SA: Conceptualization, supervision, validation, and writing review and editing. RRA: Methodology, data curation, formal analysis, and writing review and editing. All the writers, agreed to the final version of the paper and say there are no problems, with the way this study is being shared.

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