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The Role of Learning Strategies and Their Implications for the Effectiveness of Deep Learning

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Abstract

This study aims to examine the role of learning strategies in supporting the implementation of the deep learning approach to enhance learning effectiveness in Indonesia. This research employs a literature review method by analyzing various articles related to learning strategies and the application of the deep learning approach in education. The findings indicate that learning strategies significantly contribute to fostering learning motivation, material comprehension, and the achievement of learning objectives. The appropriate selection of learning strategies can also help students develop critical thinking, creativity, and independence. Furthermore, the implementation of the deep learning approach has proven effective in improving conceptual understanding, critical thinking skills, problem-solving abilities, active student engagement in learning, and the personalization of learning materials. However, the successful implementation of this approach requires teacher readiness, adaptation to local contexts, and adequate support from the educational system and digital literacy. Therefore, integrating appropriate learning strategies with the deep learning approach is a strategic step toward realizing quality education and sustainably improving student learning outcomes.

Keywords: *Deep Learning, Learning Effectiveness, Learning Strategies.*

PRELIMINARY

In recent years, Indonesia's education system has undergone many changes, particularly regarding the approaches used in the learning process. This shift in approach is an adjustment by the education system in response to the advancement of the times and technological progress. This transformation can be seen in the shift from teacher-centered learning paradigms to student-centered learning that utilizes digital technology to support the effectiveness of the teaching and learning process. Approaches in learning play an important role in achieving educational goals as they influence how material is presented, received, and understood by students (Maelasari, et.al., 2025). Moreover, selecting the appropriate learning approach also helps students not only to understand the material theoretically but also to develop critical thinking, creativity, collaboration, and communication skills (Syaharani, et.al., 2024).

Entering the 2025/2026 academic year, the Minister of Primary and Secondary Education, Abdul Mu'ti, has established a policy to implement the deep learning approach as part of Indonesia's educational transformation, which will initially be applied in pilot schools (Suryarandika, 2025). The deep learning approach itself is not only focused on content mastery but also emphasizes the development of 21st-century skills such as critical thinking, creativity, collaboration, and communication (Otto, et.al., 2020).

To ensure that the implementation of the deep learning approach in the 2025/2026 academic year runs optimally, selecting and applying appropriate learning strategies becomes a crucial aspect to consider. Learning strategies include planning, selecting, and organizing learning activities within a learning unit, covering the sequence of activities, learning materials, methods, and media to achieve the established competencies (Warsita, Bambang, 2009). In other words, learning strategies are structured plans prepared

by educators to achieve learning objectives by considering the characteristics of the material, the conditions of the students, and the available supporting facilities. Learning strategies aligned with the deep learning approach will help students actively engage in the learning process, analyze problems in depth, and optimally develop critical thinking and creativity.

Research conducted by Rosmayati, S., & Maulana, A. (2021) shows that student-centered learning strategies can increase student engagement and understanding of the material taught. Meanwhile, research by Rimahdani, et.al. (2023) reveals that interactive and varied learning strategies can create an enjoyable and dynamic learning atmosphere in the classroom. From these findings, it can be concluded that learning strategies have a significant impact on the effectiveness of the teaching and learning process.

However, the implementation of learning strategies within the deep learning curriculum still faces several challenges, such as teacher readiness in designing deep learning-based instruction, the availability of supporting infrastructure, and the diversity of students' abilities to follow learning patterns that require deep understanding. Therefore, systematic steps are needed to develop appropriate, measurable, and contextually relevant learning strategies to ensure the effective implementation of deep learning, both in pilot schools and in broader applications in the future.

Thus, a study on the role of learning strategies and their impact on the effectiveness of deep learning is essential. This study is expected to provide educators and policymakers with insights into effective learning strategies to support the implementation of deep learning in schools and serve as a reference in optimizing learning according to the needs and development of students in today's era of educational transformation.

METHOD

This study employs a qualitative method using a literature review approach. A literature review is conducted systematically, explicitly, and replicably to identify, evaluate, and synthesize various scholarly works and ideas produced by researchers and practitioners (Agusdianita, Neza, 2023). Through this method, data are collected and analyzed from various relevant sources such as books, journal articles, research reports, and other references. The data sources used in this study include scientific articles and journals related to learning strategies and the deep learning approach. The analysis technique used is content analysis, which is a technique for categorizing data based on the ideas or concepts of educational experts, followed by explanation, analysis, and critique (Indriawati, dkk., 2021).

The data obtained from the literature review will serve as a foundation to be compared with other relevant studies and subsequently synthesized. The synthesis process involves summarizing, critiquing, and drawing conclusions from the collected information to produce factual ideas, information, and key concepts structured by the researcher (Adiningrat, et.al., 2024).

There are four stages in the literature review process: (1) selecting the topic to be reviewed, (2) tracking and selecting relevant articles, (3) analyzing and synthesizing the literature, and (4) compiling the review results [8]. Meanwhile, according to Creswell in Astutik Puji & Nunuk Hariyati, there are four steps used in literature review research: (1) data collection, (2) identifying data sources, (3) data analysis, and (4) drawing conclusions (Astutik, Puji & Nunuk Hariyati, 2021). This study follows the steps outlined by Creswell, with explanations for each research step as follows.

The first stage, data collection, involves gathering data from various relevant literature sources such as national journals, reference books, research reports, and scientific articles discussing learning strategies and the implementation of deep learning in education. Data collection is conducted systematically using databases such as Google Scholar, and ResearchGate,. The data collected include concepts, findings, and previous research results relevant to the focus of the study.

The second stage is the identification of data sources. At this stage, the researcher identifies and selects the collected data sources by considering their relevance, credibility, and currency. The researcher ensures that the sources used are credible and align with the current developments in the implementation of deep learning.

The third stage involves analyzing the identified data using content analysis techniques. The researcher carefully reads each article and piece of literature to identify key points related to the research variables, such as the role of learning strategies in enhancing learning effectiveness, learning models used, and the supporting and inhibiting factors in the implementation of deep learning. Similar information is

categorized, compared, and critiqued to find patterns of relationships between learning strategies and the achievement of deep learning in schools. The fourth stage involves synthesizing the analysis results to formulate the research conclusions.

FINDINGS AND DISCUSSION

Findings

The literature review conducted by the researcher is based on ten national articles focusing on learning strategies and deep learning. The articles used as the literature review for this study are presented as follows.

Table 1. Analysis of the Role of Learning Strategies and Their Implications for the Effectiveness of Deep Learning.

Clasification	Article Author	Relevance
Learning Strategies	Adiningrat, Nadia & Meyniar Albina	This article is relevant to the topic of the current study. The research findings indicate that the application of appropriate learning strategies can increase students' learning motivation. Additionally, students are able to understand the material delivered by the teacher more easily, allowing learning objectives to be achieved optimally. Thus, the creation of effective and quality learning greatly depends on the teacher's ability and skill in selecting and implementing appropriate learning strategies.
	Warsita, Bambang	This article aligns with the topic under discussion in this study. Based on the research findings, the selection of appropriate learning strategies can assist students in achieving the competencies and learning objectives that have been set.
	Astutik, Puji & Nunuk Hariyati	This article also employs a qualitative research method using a literature study approach. The research findings indicate that the implementation of student-centered learning strategies, such as project-based learning, problem-based learning, and inquiry-based learning that address real-world issues, aligns with the development of 21st-century skills.
	Barella, Y., Wahyudin N., & Yuspiani	This article is relevant to the research topic as it discusses innovative learning along with various learning models that are still within the scope of learning strategies. The article explains that the implementation of more dynamic and interactive learning strategies can enhance student empowerment, encourage participation and learning motivation, and assist in the development of their skills.
	Chairiyah, S. S., Khayati, N., & Hanifah, E	This article is relevant to the research topic under discussion, as it also uses a literature review method. The article concludes that the implementation and evaluation of educational control strategies in elementary schools can help address various educational challenges such as learning delays, low motivation, and bullying cases, thereby improving student learning outcomes.
	Indriawati, dkk	This article is relevant to the research topic as it also discusses learning strategies using a literature review method. The research findings show that the selection of appropriate learning models and strategies can help students develop creative thinking skills, become independent, and adopt an adaptive attitude.

Deep Learning	Putri, Rizka, dkk	This article is relevant to the research topic as it discusses the deep learning approach. The review findings indicate that deep learning has significant potential to improve the quality of learning; however, its implementation needs to be adjusted to local conditions, educator readiness, and the prevailing education system.
	Akmal, Aria N., Nur, M., & Lusiana	This article is relevant to the research topic as it discusses deep learning using a literature study method. The article explains that the implementation of deep learning in education includes deep understanding, knowledge integration, creative application, and the enhancement of social engagement. This approach also emphasizes the importance of active student interaction and the utilization of technology in the learning process.
	Maelasari, Nur, & Lusiana	This article is relevant to the research due to the similarity in method and focus, namely using a literature study method with a focus on the deep learning approach. The article also explains that the implementation of deep learning can significantly enhance students' conceptual understanding, sharpen critical thinking and problem-solving skills, and increase student engagement in classroom learning activities.
	Solahudin, Wahyu	This article is related to the topic and research method used in this study. The article explains that the implementation of deep learning can enhance the quality of learning, facilitate the personalization of learning materials, and make the learning evaluation process more efficient. To be successfully implemented in Indonesia, it requires collaboration between technology development, educational policies, and the improvement of digital literacy among educators and students.

Based on the literature review conducted, it was found that learning strategies play a crucial role in improving the effectiveness of the teaching and learning process. Research by Adiningrat, Nadia, & Meyniar Albina (2024) shows that the appropriate selection of learning strategies by teachers influences students' motivation to learn, helps students understand the material more easily, and supports the optimal achievement of learning objectives. This is also emphasized by Warsita, Bambang (2009) who states that appropriate learning strategies will facilitate students in achieving the expected competencies. Thus, the quality of learning greatly depends on the teacher's skills in selecting and implementing learning strategies that are relevant to the characteristics of the material and the students' conditions.

Additionally, research by Chairiyah, S. S., Khayati, N., & Hanifah, E. (2023) states that the implementation and evaluation of learning strategies in schools can be a solution to addressing various educational issues, such as academic delays, low learning motivation, and bullying, thereby positively impacting the improvement of student learning outcomes. In line with this, Indriawati et al. (2021) demonstrate that the appropriate selection of learning strategies and models can shape students into creative, independent, and adaptive individuals. This view is reinforced by the findings of Barella, Y., Wahyudin N., & Yuspiani, (2024) who emphasize that interactive and dynamic learning strategies can enhance students' motivation, participation, and empowerment in developing their skills.

In the context of developing 21st-century skills, research by Astutik & Nunuk (2021) shows that the use of student-centered learning strategies, such as project-based learning, problem-based learning, and inquiry-based learning, can help students master essential 21st-century skills, including critical thinking, creativity, collaboration, communication, and problem-solving.

In the realm of the deep learning approach, the literature review indicates the significant potential of this approach in improving the quality of learning. Putri, Rizka, et al. (2022) emphasize that the implementation of deep learning needs to be adjusted to local conditions, teacher readiness, and the existing education system to run optimally. Akmal, Aria N., Nur, M., & Lusiana (2025) explain that this approach integrates deep understanding, creative application, and enhances students' social engagement and active interaction through the use of technology. This is further supported by research from Maelasari, Nur, & Lusiana (2025), which states that the implementation of deep learning can improve conceptual understanding, critical thinking skills, problem-solving abilities, and student engagement in learning. Additionally, Solahudin Wahyu (2024) reveals that the application of deep learning can help personalize learning materials, increase the efficiency of evaluation, and enhance the overall quality of learning.

Discussion

From the literature reviewed above, it can be understood that there is a close relationship between the implementation of learning strategies and the effectiveness of the deep learning approach in classroom learning. The appropriate selection of strategies by teachers not only increases students' motivation to learn and their understanding of the material but also helps students achieve learning objectives optimally. This emphasizes the crucial role of teachers in designing appropriate learning strategies to ensure a more effective and high-quality teaching and learning process.

Furthermore, the implementation of learning strategies also supports the development of students' character, including critical thinking skills, creativity, independence, and adaptability in facing learning challenges. Interactive and varied learning strategies have been proven to enhance students' active participation, as emphasized in the studies by Indriawati et al. (2021) and Barella et al. (2024). Additionally, project-based, problem-based, and inquiry-based strategies are also considered effective in equipping students with 21st-century skills, as explained by Astutik & Nunuk (2021).

In the context of implementing the deep learning approach, the literature review shows that this approach contributes significantly to improving the quality of learning, particularly in terms of deep conceptual understanding, strengthening critical thinking skills, and increasing students' active engagement in the learning process. However, the implementation of deep learning requires teacher readiness and support from the education system and must be adapted to local conditions to ensure its optimal implementation, as stated by Putri et al. (2022) and Akmal et al. (2025).

CONCLUSION

Based on the literature review and discussion, it can be concluded that learning strategies play a strategic role in supporting the success of learning, both in conventional methods and in the implementation of the deep learning approach. The appropriate selection of learning strategies has been proven to increase students' motivation to learn, improve their understanding of the material, and support the achievement of learning objectives. Interactive and varied learning strategies can also help shape students to become critical, creative, independent, and adaptive thinkers equipped with 21st-century skills.

In the implementation of deep learning, learning strategies are a key component in creating deep, meaningful, and student-centered learning. This approach has also been shown to enhance the personalization of learning materials, the effectiveness of evaluation, and the overall quality of learning. However, the success of implementing deep learning greatly depends on teacher readiness, a supportive education system, and alignment with local conditions. Therefore, the integration of effective learning strategies with the deep learning approach becomes an essential step in realizing learning that is relevant to 21st-century demands and capable of sustainably improving student learning outcomes.

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