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Innovative Learning Design Based on Deep Learning and Independent Curriculum in Elementary Schools

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ABSTRACT

This study aims to analyze innovative deep learning-based learning designs and the implementation of the Independent Curriculum in elementary schools as an effort to improve the quality of the learning process, making it more active, creative, and student-centered. The changing educational paradigm in the digital era requires teachers to be able to create learning that is not only oriented towards delivering material but also focuses on strengthening critical thinking, problem-solving, creativity, collaboration, and character development in students. The deep learning approach emphasizes in-depth conceptual understanding through meaningful, reflective, and contextual learning experiences tailored to students' needs. The research method used was a literature review with a descriptive qualitative approach through a review of various scientific journals, books, and educational policy documents related to the Independent Curriculum and deep learning-based learning. The results show that innovative deep learning-based learning designs can support the implementation of the Independent Curriculum through the use of differentiated learning models, project-based learning, collaborative learning, and the use of digital technology in the learning process. Furthermore, the implementation of these learning designs can increase student engagement, higher-order thinking skills, learning independence, and student motivation in elementary schools. Thus, the integration of deep learning and the Independent Curriculum is a crucial strategy for creating adaptive, humanistic, and relevant learning to meet the challenges of 21st-century education.

Keywords: Deep Learning, Independent Curriculum, Innovative Learning Design, Elementary School

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INTRODUCTION

Education is a fundamental aspect in developing quality human resources. Through education, individuals acquire not only knowledge but also critical thinking skills, social skills, creativity, and character, which serve as valuable assets. in facing the changing times. In the era of globalization and the Industrial Revolution 4.0, the education system is required to adapt to technological changes, the demands of the workplace, and increasingly complex social dynamics. These changes require the education sector to provide innovative, adaptive learning processes oriented toward the comprehensive development of student competencies. Therefore, schools, as formal educational institutions, have a significant responsibility to create learning that can meet the challenges of the 21st century. Developments in information and communication technology have had a significant impact on learning patterns in elementary schools. Today's students are a digital generation, intimately connected with technology and rapid access to information. This situation makes conventional teacher-centered learning methods less effective in fostering student interest and understanding. Monotonous, one-way learning that emphasizes memorization no longer meets the needs of today's students. Teachers are required to create an interactive, collaborative learning environment and build meaningful learning experiences for students. In this context, innovative learning design is a crucial requirement in the educational process in elementary schools(Sari, 2021).

Innovative learning design is a creatively designed learning plan utilizing various approaches, methods, media, and technologies to create effective and engaging learning for students. Innovative learning emphasizes not only academic outcomes but also a learning process that fosters critical

thinking, communication, creativity, and collaboration skills. Teachers, as learning facilitators, must be able to integrate various learning strategies tailored to student characteristics to optimally achieve educational goals. One approach that is gaining ground in education is the deep learning approach. Deep learning, in the educational context, is not simply defined as artificial intelligence technology, but rather a learning approach that emphasizes in-depth understanding of concepts, active student involvement, and the ability to connect knowledge to real-life situations. This approach focuses on meaningful learning, enabling students to not only memorize material but also understand, analyze, and apply it in various situations. Deep learning also encourages students to develop higher-order thinking skills (HOTS), which are essential for modern life(Nafisah et al., 2024).

The implementation of deep learning in elementary school is crucial because this level is the initial stage in the development of character, thinking skills, and basic skills. If students are accustomed to active, reflective, and contextual learning from an early age, they will have better learning abilities at subsequent levels of education. However, the implementation of deep learning in elementary schools still faces various challenges, such as limited teacher competency, inadequate use of educational technology, and low innovation in learning design. Many teachers still use lecture-based and teacher-centered learning methods, resulting in less student engagement in the learning process. In Indonesia, the government continues to improve the quality of education through various educational policies, one of which is the implementation of the Independent Curriculum. The Independent Curriculum is a form of educational transformation aimed at creating more flexible, student-centered learning that aligns with the needs of today's development. This curriculum emphasizes the importance of developing competencies and character through contextual, differentiated, and project-based learning. The Independent Curriculum provides teachers with greater room to foster creativity and innovation in the learning process(Zulkhaidir et al., 2024).

The Independent Curriculum aligns with the concept of deep learning. In the Independent Curriculum, students are encouraged to actively seek knowledge, solve problems, and develop their potential according to their interests and talents. Learning is no longer focused solely on mastering material, but rather on a deep understanding of concepts and strengthening essential competencies. Furthermore, the Independent Curriculum also emphasizes strengthening the Pancasila Student Profile, which encompasses religious, independent, collaborative, creative, critical, and globally diverse character traits. Thus, implementing innovative learning designs based on deep learning can be an effective strategy to support the successful implementation of the Independent Curriculum in elementary schools(Nofiyanti M et al., 2025).

However, the implementation of the Independent Curriculum in various elementary schools still faces several obstacles. Many teachers struggle to develop learning designs that align with the principles of the Independent Curriculum. Some teachers still lack a grasp of the concepts of differentiated learning, project-based learning, and deep learning approaches. Furthermore, limited technological facilities and infrastructure also hinder the implementation of innovative learning. Many elementary schools still have limited internet access, digital devices, and adequate learning media. This situation prevents the implementation of innovative learning from being optimal. Another frequently encountered problem is the low level of active student participation in the learning process. Learning, which is still dominated by lecture methods, tends to make students passive and provides them with fewer opportunities to explore their thinking skills. As a result, students' critical thinking, creativity, and problem-solving skills are not fully developed. These competencies are crucial for facing the challenges of life in the modern era, which is full of change and global competition. Therefore, learning designs are needed that can increase student active engagement in the learning process. Innovative learning designs based on deep learning can be a solution to address various learning challenges in elementary schools. This approach enables teachers to create more engaging, contextual, and meaningful learning for students. Teachers can utilize various learning models, such as project-based learning, problem-based learning, collaborative learning, and inquiry learning, to increase student engagement. Furthermore, the use of digital technology can support interactive learning that aligns with the characteristics of today's digital generation(Siahaan & Meilani, 2019).

The use of technology in innovative learning designs is a crucial factor in supporting the implementation of deep learning and the Independent Curriculum. Technology is used not only as a

medium for delivering material but also as a means to Enhance student creativity, collaboration, and exploration. Teachers can utilize various digital learning platforms, interactive videos, educational apps, and visual media to create more engaging learning experiences. This makes learning more flexible and able to meet students' diverse learning needs. In addition to utilizing technology, teacher competence is also a key factor in the successful implementation of innovative learning designs. Teachers need pedagogical, professional, social, and digital skills to be able to design learning that meets students' needs. Teachers no longer act merely as conveyors of information, but also as facilitators, motivators, and guides in the learning process. Therefore, improving teacher competence through training, workshops, and ongoing professional development is crucial(Sionalia, 2021).

From a constructivist perspective, effective learning is one that provides opportunities for students to construct knowledge through experience and interaction with the environment. The deep learning approach is highly relevant to constructivist theory because it positions students as active participants in the learning process. Students are encouraged to explore, discuss, analyze, and reflect on their learning experiences, thereby making the knowledge gained more meaningful. Thus, innovative learning designs based on deep learning can help create a more effective learning process oriented toward student competency development. Research on innovative learning designs based on deep learning and the Independent Curriculum in elementary schools is crucial because it can provide insights into learning strategies relevant to current educational needs. This research is expected to contribute to teachers, schools, and education policymakers in developing higher-quality learning. Furthermore, this research can also serve as a reference for improving understanding of the implementation of the Independent Curriculum through a deep learning approach(Yazidiy et al., 2022).

Based on this description, it is clear that innovative learning designs based on deep learning play a strategic role in supporting the implementation of the Independent Curriculum in elementary schools. Innovatively designed learning can improve the quality of the learning process, student engagement, and the development of 21st-century competencies. Therefore, synergy is needed between teachers, schools, the government, and the community to create a learning system that is adaptive, creative, and oriented toward student needs. With the appropriate implementation of learning designs, it is hoped that education in elementary schools will produce a generation that is intelligent, creative, and has character, ready to face future challenges(Iswanto et al., 2022).

METHOD

This study employed a qualitative method with a library research approach. This approach was chosen because the research focused on examining the concepts, theories, and implementation of innovative learning designs based on deep learning and the Independent Curriculum in elementary schools. Data were obtained from various sources, including books, scientific journals, research articles, education policy documents, and other relevant academic sources. relevant to the research topic. Data collection techniques were carried out through identification, classification, and analysis of various references related to innovative learning, deep learning, and the implementation of the Independent Curriculum in elementary education. Data analysis was conducted descriptively and qualitatively through the stages of data reduction, data presentation, and conclusion drawing. Researchers reviewed various findings from literature sources to understand the relationship between innovative learning design and the implementation of deep learning in supporting the Independent Curriculum in elementary schools. Next, the data was systematically analyzed to obtain an overview of learning strategies, the role of teachers, the use of technology, and the challenges of implementing innovative learning. The results of the analysis were then compiled into a scientific narrative to provide a comprehensive understanding of the importance of innovative learning design based on deep learning in improving the quality of education in elementary schools(Felix Lafe Labaona, 2023).

FINDING AND DISCUSSION

Innovative deep learning-based learning designs in the implementation of the Independent Curriculum in elementary schools demonstrate a crucial role in improving the quality of the learning process. Based on a literature review from various scientific sources, deep learning-based learning can

create a more meaningful, active learning experience, and be oriented towards developing student competencies. This approach emphasizes not only mastery of subject matter but also students' abilities to deeply understand concepts, think critically, solve problems, and connect learning to everyday life. In the context of the Independent Curriculum, this learning design is relevant because it supports student-centered learning and provides space for the development of student creativity and character. The implementation of innovative learning designs in elementary schools is carried out through the use of various active learning models such as project-based learning, problem-based learning, inquiry learning, and collaborative learning. These learning models provide opportunities for students to be directly involved in the learning process through discussion, observation, experimentation, and solving real-life problems. Learning no longer focuses solely on the teacher's delivery of material but rather emphasizes the active involvement of students in constructing their own knowledge. Thus, students become more independent, creative, and develop a sense of responsibility for the learning process(Lubis et al., 2025).

The implementation of project-based learning in the Independent Curriculum is an innovative and effective form of learning design that supports deep learning. Through project-based learning, students are given tasks to complete related projects, enabling them to learn contextually. For example, elementary school students can create a simple waste management project within the school environment as a form of thematic learning implementation. In this process, students learn to collaborate, think critically, seek information, and develop communication skills. This type of learning provides a more meaningful learning experience than conventional learning, which focuses solely on memorizing material(Christy, 2025).

Discussion

Furthermore, the problem-based learning approach has also shown positive results in improving students' higher-order thinking skills. Through this model, students are encouraged to analyze a problem, find solutions, and systematically communicate their thoughts. The teacher acts as a facilitator, guiding students through the problem-solving process. Through problem-based learning, students become more active in seeking information and developing a deeper understanding of learning materials. This aligns with the concept of deep learning, which emphasizes conceptual understanding and reflective skills(Subandi Subandi et al., 2024)(Agustriani, 2023).

Studies also show that the use of digital technology in innovative learning designs has a positive impact on student motivation and engagement in learning. The use of digital learning media such as interactive videos, educational applications, multimedia presentations, and online learning platforms can create a more engaging and interactive learning environment. Technology helps teachers deliver material creatively, making it easier for students to grasp learning concepts. Furthermore, the use of technology also supports the implementation of differentiated learning in the Independent Curriculum, as teachers can adapt learning materials and media to suit the needs and characteristics of students(Sari, 2021).

Differentiated learning is a key principle in the implementation of the Independent Curriculum, which is closely related to deep learning. In differentiated learning, teachers provide different learning approaches according to students' abilities, interests, and learning styles. With flexible learning designs, each student has the opportunity to develop according to their individual potential. This approach helps create more inclusive and humane learning because students are not forced to learn in the same way. Teachers can use various strategies such as student grouping, varying learning media, and adjusting assignments to make the learning process more effective.

In addition to improving academic abilities, innovative learning designs based on deep learning also contribute to strengthening students' character. In the Independent Curriculum, strengthening the Pancasila Student Profile is one of the main educational goals. Through project-based and collaborative learning, students can develop attitudes of mutual cooperation, responsibility, independence, creativity, and critical reasoning skills. For example, when students work in groups to complete a specific project, they learn to respect the opinions of their peers, cooperate, and resolve conflicts positively. Thus, learning is not only oriented towards cognitive aspects but also towards developing students' character and social skills(Sunardi & Fauza, 2021).

Despite its many advantages, implementing innovative learning designs based on deep learning in elementary schools still faces various challenges. One of the main obstacles is teachers' limited competence in designing and implementing innovative learning. Some teachers are still accustomed to conventional, teacher-centered learning methods, making it difficult to implement more active and flexible learning. Furthermore, teachers' understanding of the concepts of deep learning and the Independent Curriculum (Kurikulum Merdeka) also varies. These conditions have resulted in the implementation of innovative learning not being optimal in some elementary schools(Syahrani et al., 2024).

Limited educational facilities and infrastructure also pose a barrier to the implementation of innovative learning designs. Not all elementary schools have adequate access to technology, such as internet access, computer equipment, and digital learning media. This situation is particularly prevalent in remote areas and schools with limited educational budgets(R. Supyan Sauri et al., 2025). As a result, teachers struggle to utilize technology as part of innovative learning. Therefore, support from the government and relevant parties is needed to improve educational facilities so that the implementation of the Independent Curriculum can be implemented equitably. Another challenge is the low level of student readiness for active learning. Some students are still accustomed to passive learning, requiring an adaptation process to project-based or problem-solving learning. Teachers need to provide guidance and motivation to help students gain confidence in expressing opinions, discussing, and working collaboratively in groups. Furthermore, parental involvement is also a crucial factor in supporting the success of innovative learning, particularly in fostering a positive learning culture within the family environment(Eryanto & Prasetyono, 2025).

To address these challenges, appropriate strategies are needed to improve the quality of the implementation of innovative learning designs based on deep learning in elementary schools. One effort that can be taken is to improve teacher competency through training, workshops, and mentoring related to the Independent Curriculum and innovative learning. Teachers need to be educated on active learning strategies, the use of educational technology, and differentiated learning techniques to create effective, student-centered learning. Furthermore, schools need to create a learning environment that supports innovative learning. Principals play a crucial role in supporting the development of teacher creativity and providing learning resources. Collaboration between teachers, schools, parents, and the government is also crucial in creating quality learning. With strong collaboration, the implementation of innovative learning designs based on deep learning can be more optimal and have a positive impact on improving the quality of education in elementary schools. Based on the discussion, it is clear that innovative learning designs based on deep learning have a significant impact on the successful implementation of the Independent Curriculum in elementary schools. This approach can create more active, creative, contextual, and student-centered learning. In addition to improving students' conceptual understanding and critical thinking skills, innovative learning also supports the strengthening of character and 21st-century competencies. Therefore, the implementation of innovative learning designs based on deep learning needs to be continuously developed as part of the educational transformation towards more adaptive and quality learning(Parisu & Saputra, 2025).

CONCLUSIONS

Innovative deep learning-based instructional design in the implementation of the Independent Curriculum in elementary schools plays a crucial role in improving the quality of the learning process, making it more active, creative, and student-centered. This approach encourages students to understand the material in depth and enhances their thinking skills. critical thinking, creativity, collaboration, and problem-solving skills. The application of various learning models such as project-based learning, problem-based learning, and collaborative learning has been proven to create more meaningful and contextual learning experiences. Furthermore, the use of digital technology in learning also supports the creation of an interactive learning environment that aligns with the characteristics of modern students. Although the implementation of innovative learning designs based on deep learning still faces various challenges such as limited teacher competency, infrastructure, and student readiness, this approach remains a relevant strategy in supporting the success of the Independent

Curriculum. Therefore, improving teacher competency, supporting educational facilities, and collaboration between schools, the government, and parents are needed to create effective and quality learning. With the implementation of appropriate learning designs, elementary schools are expected to produce students who are intelligent, independent, creative, and have character, and are ready to face the challenges of the 21st century.

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