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The Effect of Deep Learning on Critical Thinking Skills of Grade VIII Students at UPT SMPN 2 Mangarabombang Takala

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Abstract: In today's era of digital transformation and global uncertainty, education is no longer simply about transferring knowledge, but rather about equipping students with 21st-century competencies. One of the most crucial competencies is critical thinking skills. This ability enables students to objectively analyze information, evaluate arguments, and formulate creative solutions to complex problems. This study aims to determine the effect of deep learning on the critical thinking skills of eighth-grade students at UPT SMPN 2 Mangarabombang Takalar. This study used a quantitative quasi-experimental method using a non-equivalent control group design. The study population included all eighth-grade students at UPT SMPN 2 Mangarabombang. A simple sampling technique was used, selecting 23 students from class VIII B as the experimental class with deep learning and 23 students from class VIII C as the control class with conventional learning. The instruments used included a learning activity observation sheet and a critical thinking skills test based on Robert Ennis's indicators. Data were analyzed using descriptive and inferential statistics. The t-test results for critical thinking skills showed a significance value of 0.01, which is less than α = 0.05. The results of this study concluded that there was an influence of in-depth learning on the critical thinking skills of class VIII students at UPT SMPN 2 Mangarabombang Takalar.

Keywords: Critical thinking; Deep learning; Learning activities

Introduction

The results of the PISA survey on Indonesian students in 2022 showed data that more than 99% of Indonesian students could only answer Lower Order Thinking Skill (LOTS) questions which, if using Bloom's taxonomy level as a parameter, would be in the range of level 1 to level 3, and less than 1% of Indonesian students could answer Higher Order Thinking Skill (HOTS) questions which in Bloom's Taxonomy are shown at level 4 to level 6. Reading skills level 1 74.50%, level 2 19.30%, level 3 5.40%, level 4-6 0.80%. Mathematics skills level 1 81.70%, level 2 14.10%, level 3 3.8%, level 4-6 0.40%. Science skills level 1 65.8%, level 2 26.30%, level 3 7%, levels 4-6 0.90% (Wardani & Siregar, 2023). The changing times that demand individuals to master 21st-century skills have impacted the implementation of education. The impact is changes in learning activities. To meet these demands, the required human resources are those who possess the ability to think critically, logically, systematically, and creatively. Therefore, an educational program is needed that can develop these abilities (Fatmawaty, 2023).

The low literacy and numeracy skills among Indonesian students indicate that there is still a gap in the effectiveness of learning in schools, which do not provide opportunities for teachers to develop creativity and critical thinking skills in students (Prayitno & Mahmudi, 2025; Hazin et al., 2025). This is due to the use of ineffective learning approaches for developing literacy and numeracy skills. Various approaches have been presented previously, such as the Active Student Learning Method (CBSA), Active, Creative, Effective, and Enjoyable Learning (PAKEM), Active, Innovative,

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Creative, Effective, and Enjoyable Learning (PAIKEM), and Contextual Teaching and Learning (CTL). However, all of these approaches still face many obstacles, both conceptually and in implementation (Hennen et al., 2023; Filho et al., 2017). Therefore, in-depth learning serves as the primary foundation for improving the learning process and quality (Mushtaq et al., 2025; Cristache et al., 2025). Critical thinking is the ability to analyze, evaluate, and synthesize information with the goal of understanding a situation or problem in depth (Barta et al., 2022; Andariana et al., 2025). According to experts, critical thinking involves the ability to: Formulate critical questions that encourage deeper and more comprehensive thinking (Gómez et al., 2025); Identify the assumptions underlying information or arguments; Using sound logic to evaluate arguments (Salmon & Barrera, 2021).

The gap in the intensity of interaction between teachers and students during learning is one factor contributing to low critical thinking skills (Lin et al., 2023; Witarsa & Muhammad, 2023). Other contributing factors include a lack of provocative questions, problem-solving, and a lack of instruction from teachers, which results in students not being optimally trained in conveying ideas, practicing, and concluding material (Bhardwaj et al., 2025; Kutluk et al., 2025). Looking at current education, teachers in schools tend to focus on transferring information with limited emphasis on critical and creative thinking. This is evidenced by the results of the 2018 Program for International Student Assessment (PISA) Indonesia. PISA questions are often cited as measuring students' critical thinking levels (Hernández-Ramos & Araya, 2025), yet according to Seyaningsih & Sari (2021) critical thinking is an important skill that needs to be developed in elementary school students. This study aims to conduct a comprehensive literature review regarding the importance of developing critical thinking skills in elementary school students.

Systematic problem-solving is also a key focus in education that promotes creative thinking skills. Students are taught to face challenges in a structured and methodical manner, using analytical strategies to identify problems, gather necessary information, and develop innovative solutions (Wu & Molnár, 2022; Kim et al., 2018). The purpose of this study was to determine the effect of in-depth learning on the critical thinking skills of class VIII students at UPT SMPN 2 Mangarabombang Takalar.

Method

This study uses a quantitative approach with a Quasi-Experimental Design method of the Non-equivalent Control Group Design type. The study was conducted at the UPT SMPN 2 Mangarabombang Takalar in the even semester of the 2025-2026 academic year. The sample selection in class VIII used a simple sampling technique. The research sample in the experimental class and the control class each amounted to 23 people with class VIII b as the experimental class and class VIII c as the control class. The data obtained were then processed statistically and inferentially.

Result and Discussion

Based on the t-test data on the critical thinking skills test, a significance value of 0.01 was obtained, this value is greater than $\alpha < 0.05$. The results of this test conclude that there are differences in critical thinking skills in classes taught using in-depth learning and classes taught with conventional learning. The differences in the results of this critical thinking skills test are mainly influenced by the learning process using in-depth learning. In-depth learning is characterized by stages of learning experiences consisting of stages of understanding, applying and reflecting, this is in accordance with the statement of Sakti et al. (2024) and Walter (2024) that in-depth learning in education is characterized by a process that allows students to build a deep understanding of core concepts, connect knowledge across various subjects, and apply it effectively in real-world situations (Rehman et al., 2024; Zamiri & Esmaeili, 2024). This process involves critical skills such as evaluating information, generating new ideas, and engaging in thoughtful reflection.

This approach forms the fundamental basis for providing high-quality education—education that goes beyond academic performance to nurture students' intellectual growth and comprehensive character development (Mar et al., 2025). In addition, in-depth learning increases the significance of the learning experience (Sudarmono et al., 2025; González-Ceballos et al., 2021). Learning becomes truly meaningful when students are able to connect what they learn to real-life experiences, future aspirations, and essential life values (Lin et al., 2025; Lowell & Tagare, 2023). Based on the data obtained, the average critical thinking skills test score in the in-depth learning class was 25.65 points higher than in the conventional class, with a very high achievement rating of 60.86%. This increase in thinking skills test scores is influenced by the various in-depth activities that occur during the learning process. This aligns with Mystakidis (2021) and Adeniji et al. (2022) who stated that in-depth learning is achieved when students reach the relational and extended abstract levels. This means that students not only understand information separately but are able to link various concepts, analyze relationships between ideas, and form a complete and meaningful understanding.

Furthermore, at the extended abstract level, students are able to transfer this knowledge to new contexts, develop original ideas, and construct generalizations and critical reflection on what they have learned (Rigopouli et al., 2025; Ginting et al., 2024). Learning is not simply memorizing facts; it encourages students to think at a higher level, using scientific patterns, and to have metacognitive control over their learning process.

Critical thinking is the ability to analyze, evaluate, and synthesize information with the goal of understanding a situation or problem in depth (Yu & Zin, 2023). According to experts, critical thinking involves the ability to: Formulate critical questions that encourage deeper and more comprehensive thinking; Identifying the assumptions underlying information or arguments; Using sound logic to evaluate arguments (Altun & Yildirim, 2023; Thornhill-Miller et al., 2023). Improving students' critical thinking skills is influenced by the process of acquiring learning experiences that require the use of planned and effective learning approaches. According to Gerlich (2025), improving critical thinking skills can be done through the use of several strategies, including: Open-ended questions that encourage discussion; Case analysis and case studies; Collaborative projects; Simulations and educational games.

Assignments that support problem-solving skills; Use of interactive technology; Providing constructive feedback. This is also explained by Lowell & Tagare (2023) that the description of critical thinking ability is influenced by learning independence with the following relationship pattern (Achmad & Utami, 2023): Students with high learning independence tend to have high critical thinking ability, this is shown at the stage of understanding the problem, the subject can understand the problem well (Sinaga et al., 2023). It can be concluded that at a high level of learning independence, all indicators of critical thinking can be applied; Students with moderate learning independence tend to have moderate critical thinking ability (Suprijono et al., 2025).

Conclusion

Based on data analysis, this researcher concluded that there was a significant influence of the application of in-depth learning on the critical thinking skills of students at UPT SMPN 2 Mangarabombang Takalar. The application of In-depth Learning has a significant influence on improving students' critical thinking skills compared to conventional learning.

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Conceptualization, writing—preparation of original draft, obtaining funding, S.; methodology, writing—reviewing and editing, N.B.; formal analysis, visualization, M.P.; investigation, supervision, F.D.; resources, project administration, I. All authors have read and approved the published version of the manuscript.

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Conflicts of Interest
The authors declare no conflict of interest.

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