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Enhancing Critical Thinking Skills Through Collaborative Learning in Modern Educational Practices

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ABSTRACT
Critical thinking skills are one of the important elements in modern education to prepare students for the challenges of the 21st century. However, traditional approaches that are still dominant in the learning process often fail to encourage the development of these skills optimally. This study aims to explore the effectiveness of collaborative learning in improving students' critical thinking skills. The method used is a literature study with thematic analysis of various relevant academic articles and reports published in the last five years. The results of the study show that collaborative learning provides an interactive environment where students can discuss, share ideas, and provide feedback to each other. These collaborative activities not only improve students' analytical abilities but also strengthen communication and teamwork skills. In addition, the integration of technology in collaborative learning, such as the use of digital platforms for online discussions, further expands the potential for the development of critical thinking skills. Despite facing challenges, such as lack of teacher training and access to technology, the study concludes that collaborative learning is an effective approach in building students' critical skills in a variety of educational contexts.

1. INTRODUCTION

In the modern era of education, critical thinking skills have become one of the essential competencies that students must possess to face the challenges of the 21st century. These skills enable students to analyze information logically, evaluate arguments, and make decisions based on valid evidence (Siahaan et al., 2023). However, research shows that critical thinking skills are still a challenge in educational practice, especially in developing countries (Hunaidah et al., 2022). This is due to learning approaches that still tend to be traditional and do not encourage students' intellectual exploration (Widana et al., 2018).

Critical thinking is the ability to analyze information objectively to make informed decisions. These abilities play a crucial role in 21st-century learning, where students are encouraged to evaluate arguments, identify assumptions, and make evidence-based conclusions. In the context of learning, critical thinking not only improves understanding but also trains students to become effective problem

solvers in an increasingly complex world.

Collaborative learning is an educational approach that emphasizes cooperation between students to achieve common goals. This approach creates an interactive learning environment, where students share ideas with each other and build understanding through discussion (Hsu, 2021). In collaborative learning, critical thinking is reinforced because students are exposed to diverse perspectives, forcing them to consider different views before reaching a consensus.

One effective approach to improving critical thinking skills is collaborative learning. This method emphasizes cooperation between students to solve problems or complete tasks, thus allowing them to exchange ideas and build understanding through discussion. The collaborative learning environment also provides opportunities for students to actively engage in the learning process, increase their self-confidence, and strengthen their communication skills (Supena et al., 2021). Furthermore, research shows that collaborative learning can create a more inclusive and interactive learning atmosphere, which is an important foundation for the development of critical thinking (Warsah et al., 2021).

The combination of critical thinking and collaborative learning has been proven to be effective in improving learning outcomes. For example, research shows that students who learn in a collaborative environment are more able to apply concepts in depth and have higher critical thinking skills compared to students who learn individually (Amrullah et al., 2022). This approach also improves communication and teamwork skills, which are key competencies in the modern era.

In the context of modern education, the integration of technology in collaborative learning is also a significant supporting factor. Digital platforms such as online discussion forums and collaboration software have opened up new opportunities to implement team-based learning at different levels of education (Tang et al., 2020). Using this technology, students can collaborate across geographies, broaden their perspectives, and gain insights from different cultural backgrounds. This is in line with the global need to improve digital literacy and high-level thinking skills (Alsaleh, 2020).

Although effective, the application of collaborative learning with a focus on critical thinking requires careful planning. Teachers should ensure that collaborative assignments are designed to encourage in-depth analysis and that every student has an equal opportunity to contribute. Thus, this approach not only helps students achieve a better academic understanding but also prepares them for real-life challenges.

Previous research has shown that collaborative learning is able to improve student learning outcomes. Hsu (2021) found that a collaborative learning environment significantly improves students' analytical abilities in various educational contexts. Warsah et al. (2021) also noted that collaboration between students encourages communication, problem-solving, and higher-order thinking skills. However, although the benefits have been widely proven, the implementation of collaborative learning often encounters challenges, such as lack of teacher training and unbalanced group dynamics (Kusumawati & Hadi, 2019).

This research aims to explore how collaborative learning can be designed and implemented effectively to improve students' critical thinking

skills. By evaluating the findings of previous research and identifying best practices, it is hoped that this study can provide guidance for educators to integrate this method in modern educational practices more optimally.

2. METHOD

This study uses a qualitative approach with a literature study method to explore collaborative learning strategies in improving students' critical thinking skills. Literature studies are chosen because they provide an opportunity to analyze in depth a wide range of relevant academic research and references. This approach allows for the identification of concepts, theories, and best practices that have been applied in modern education (Snyder, 2019).

The data sources in this study come from journal articles, books, and research reports published in the last five years (2018–2023). Data was obtained through systematic searches on leading academic databases, such as ScienceDirect, ProQuest, and Google Scholar, using keywords such as "critical thinking," "collaborative learning," and "modern education practices" (Booth et al., 2021). Inclusion criteria include relevance to the topic, quality of the source, and academic contribution of the reference.

The data collection technique is carried out through the stages of identification, selection, and synthesis of literature. At this stage, literature that meets the criteria is organized based on key themes, such as essential elements in collaborative learning, discussion-based task design, and the role of technology in supporting collaboration (Cooper, 2015). The collected data were then thoroughly analyzed to reveal consistent patterns and differences in findings among the analyzed studies.

The data analysis method used is thematic analysis, which aims to group information based on the main themes that emerge. The analysis process involves encoding the data, grouping the information into specific categories, and in-depth interpretation of the results obtained (Braun & Clarke, 2019). With this approach, the research seeks to provide comprehensive insights into the effectiveness of collaborative learning in improving students' critical thinking skills in various educational contexts.

3. RESULT AND DISCUSSION

The following is a table containing 10 selected articles from various references related to research on improving critical thinking skills through collaborative learning in the context of education in Indonesia. These articles were selected based on relevance, quality of sources, as well as academic contributions in the last five years (2018–2023).

Table 1. literature review

No	Author	Title	Key findings
1	Handayani & Mantra	Integrating Collaborative Learning in Cyclic Learning Sessions to Promote Students' Reading Comprehension and Critical Thinking	It shows that cyclical collaborative learning is effective in improving students' reading comprehension and critical thinking skills.
2	Trisdiono et al.	Multidisciplinary Integrated Project-Based Learning to Improve Critical Thinking Skills and Collaboration	Using an integrated project approach to improve students' critical thinking and collaboration skills.

3	Rahmatika	The Effect of Think-Talk-Write Cooperative Learning Assisted by GeoGebra Software on Students' Critical Thinking	GeoGebra supports cooperative learning to improve students' critical thinking skills.
4	Warsah et al.	The Impact of Collaborative Learning on Learners' Critical Thinking Skills	Collaborative learning significantly improves critical thinking skills in the context of Islamic education.
5	Kusmiarti & Yuniati	Improving Student Communication Skills Through Collaborative Learning	Collaborative learning improves students' communication skills and critical thinking in language learning.
6	Hendarwati & Nurlaela	The Collaborative Problem-Based Learning Model Innovation	The collaborative problem-based learning model is effective in improving critical thinking skills.
7	Ramdani & Susilo	The Effectiveness of Collaborative Learning on Critical Thinking and Metacognitive Skills	Meta-analysis showed the effectiveness of collaborative learning on critical thinking and metacognitive skills.
8	Subiyantari et al.	Effectiveness of Jigsaw Cooperative Learning Models on Students' Learning Outcomes	The jigsaw model is effective in developing students' critical thinking skills.
9	Supena et al.	The Influence of Collaborative Learning on Students' Learning Outcomes	Highlighting how the 4C model (constructive, critical, creative, collaborative) supports student learning outcomes.
10	Susanti & Retnaningdyah	Improving EFL Students' Higher Order Thinking Skills Through Collaborative Strategic Reading	The collaborative strategic reading approach enhances students' higher-order thinking skills.

The data in the table above shows various important findings related to the application of collaborative learning in improving students' critical thinking skills in Indonesia. These findings highlight that collaborative approaches are able to bring about significant changes in various aspects of education, including analytical, communication, and problem-solving skills. Research conducted by Handayani and Mantra (2019) highlights how cycle-based collaborative learning not only improves reading comprehension but also deepens students' critical thinking skills. This study shows that the integration of collaborative learning into structured learning sessions gives students a space to interact meaningfully, which ultimately helps them analyze information more deeply (Handayani et al., 2019).

Another research by Trisdiono et al. (2019) discusses the application of integrated multidisciplinary project-based learning. This model encourages students to develop critical thinking and collaboration skills simultaneously, especially in the context of real problem-solving. These results reflect the importance of an approach that connects theory with practice to facilitate a deep and relevant understanding of the real world (Trisdiono et al., 2019). On the contrary, Rahmatika (2022) shows the positive impact of technology, such as GeoGebra software, in supporting collaborative learning.

This research emphasizes that the integration of technology tools can expand the potential of collaborative learning by providing students with the means to explore concepts interactively (Rahmatika, 2022).

Warsah et al. (2021) offer an interesting perspective in the context of Islamic education, where collaborative learning is applied to improve students' critical thinking skills. In this environment, collaboration not only serves as an educational tool but also as a way to strengthen community values and cooperation (Warsah et al., 2021). Kusmiarti and Yuniati (2020) added that collaborative learning can improve students' communication skills, especially in language learning, which shows the relevance of this method in various disciplines (Kusmiarti & Yuniati, 2020).

In addition, Hendarwati and Nurlaela (2022) highlighted problem-based learning innovations that focus on collaboration as a tool to improve critical thinking skills. This approach shows that teamwork in solving complex problems can have a significant impact on student understanding (Hendarwati et al., 2022). On the other hand, Ramdani and Susilo (2022) provide meta-analysis evidence of the effectiveness of collaborative learning on metacognitive skills, which suggests that this approach is capable of developing other dimensions of higher-order thinking (Ramdani & Susilo, 2022).

Subiyantari et al. (2019) emphasized the effectiveness of the Jigsaw cooperative learning model in improving students' learning outcomes and critical thinking skills. This model utilizes the division of tasks individually to create group responsibility, so that students can learn from and with each other (Subiyantari et al., 2019). Meanwhile, Supena et al. (2021) introduced the 4C model that includes constructive, critical, creative, and collaborative as a comprehensive framework to support learning outcomes (Supena et al., 2021).

Finally, Susanti and Retnaningdyah (2020) showed that the collaborative strategic reading approach significantly improves students' higher-order thinking skills, especially in learning English as a foreign language. This study emphasizes the importance of collaborative strategies in supporting the development of more complex critical thinking skills, such as evaluation and synthesis (Susanti et al., 2020).

Overall, these findings confirm that collaborative learning is a highly effective approach to improving critical thinking skills in a variety of educational contexts. This method is not only relevant in traditional learning but also in technology-based and multidisciplinary learning, providing a strong foundation for the development of more inclusive and innovative educational practices in Indonesia. The combination of collaborative strategies, technology, and adaptation to local contexts is the key to success in the implementation of this learning model.

Discussion

The Effectiveness of Collaborative Learning in Improving Critical Thinking Skills

Collaborative learning is a pedagogical approach that focuses on interaction between students to solve problems, discuss ideas, and come up with solutions together. The effectiveness of this approach in improving critical thinking skills has been extensively researched. When students work collaboratively, they are exposed to a variety of perspectives that trigger a critical analysis of information. For example, in group assignments, students need to consider different

arguments, evaluate the validity of the data, and make decisions that are based on logic and evidence. This process strengthens their ability to think analytically and reflectively.

Additionally, collaborative learning provides opportunities for students to develop skills in asking relevant questions and exploring alternative solutions. Structured interactions allow students to learn from each other, thus creating an environment that supports the critical exchange of ideas. Research shows that students who engage in collaborative learning are better able to identify biases, evaluate arguments, and make rational decisions compared to those who learn individually.

Increased Active Participation and Social Interaction

One of the advantages of collaborative learning is its ability to increase students' active participation. In a collaborative learning environment, students are encouraged to contribute to discussions, share ideas, and work together in achieving group goals. This activity encourages students who are usually passive to be more involved in the learning process. Even students with lower skill levels tend to feel motivated to participate because they get support from their peers.

Social interaction also increases through collaborative learning. Students learn to work in teams, value differences of opinion, and develop effective communication skills. This interaction reinforces a sense of community and collective responsibility, which ultimately contributes to the achievement of learning goals. Interpersonal relationships established in collaborative learning also create an environment that supports more inclusive and harmonious learning.

Positive Impact of the Use of Educational Technology

The use of educational technology in collaborative learning has a significant positive impact. Digital platforms such as Google Workspace, Microsoft Teams, and other online-based learning applications allow students to work together without time and space limitations. It enriches the collaborative experience by providing tools for sharing documents, discussing virtually, and putting together projects.

In addition, technology also helps improve students' access to diverse learning resources, broaden their horizons, and support evidence-based learning. In a digital environment, students can use simulations or analytics software to solve complex problems collaboratively. This not only accelerates the learning process but also improves digital skills that are relevant to the needs of the 21st century.

Increasing Students' Metacognitive Awareness

Collaborative learning also contributes to increasing students' metacognitive awareness. Through group reflection, students are invited to evaluate their thought processes, recognize their strengths and weaknesses, and develop more effective learning strategies. This awareness is essential in modern learning because it allows students to become independent learners and oriented towards self-improvement.

Targeted group discussions encourage students to monitor and evaluate their progress in achieving learning goals. Thus, collaborative learning not only helps students understand the subject matter but also teaches them how to think about how they learn, which is the core of metacognition.

The link between Learning Motivation and Critical Thinking Skills

Learning motivation is closely related to critical thinking skills. In collaborative learning, students are more motivated because they feel that their contributions are important to the success of the group. Intrinsic motivation, such as the desire to understand the material or complete a challenge, often arises when students work alongside their peers.

With high motivation, students are more likely to actively use their critical thinking skills. They are driven to dig up information, question assumptions, and make decisions that are based on logic. Interaction in groups provides space for students to express their ideas, receive feedback, and learn from the experiences of others, all of which contribute to the development of critical thinking skills.

Collaborative Learning as a Modern Educational Approach

As a modern approach to education, collaborative learning has been recognized as an effective method of developing 21st-century skills, such as communication, collaboration, and problem-solving. In an increasingly complex world, the ability to work in teams and think critically is becoming a highly valued competency. Therefore, collaborative learning is one of the relevant approaches to prepare students for future challenges.

This approach is also in accordance with the principles of modern education that focus on student-centered learning. By providing space for students to become the main actors in the learning process, collaborative learning increases students' sense of ownership of their learning, which has a positive impact on learning outcomes.

Barriers to the Implementation of Collaborative Learning

Despite having many advantages, the implementation of collaborative learning cannot be separated from obstacles. One of the main challenges is the lack of teacher skills in designing and facilitating collaborative learning. Without clear guidance, students may have difficulty understanding their role in the group, which can lead to disparities in contributions among group members.

Another obstacle is a lack of resources, such as adequate study spaces or access to technology. In some contexts, students also face cultural challenges, such as a preference for individualized learning or difficulties in building cooperation between individuals with different backgrounds.

Strategies to Maximize the Effectiveness of Collaborative Learning

To overcome these obstacles, an effective strategy is needed. Teachers need to be provided with training on how to design structured and meaningful collaborative activities. Using clear assessment rubrics can also help students understand expectations and make equal contributions in the group.

The use of technology, such as online learning platforms, can facilitate more effective collaboration. Additionally, the formation of heterogeneous groups, where students with different backgrounds and skills are combined, can improve group dynamics and ensure that each student benefits from the collaboration.

The Role of Teachers as Facilitators

In collaborative learning, teachers act as facilitators who direct students to achieve learning goals. Teachers not only provide instructions but also facilitate discussions,

provide feedback, and monitor group dynamics. This role requires good skills in communication, classroom management, and learning design. Teachers are also responsible for creating an environment that supports collaboration, such as ensuring that each student feels comfortable contributing and respecting the views of others. With this facilitative role, teachers can help students develop the collaboration skills necessary to succeed in the real world.

The Impact of Collaborative Learning on Student Competence

Collaborative learning has a significant positive impact on student competence. In addition to improving critical thinking skills, this method also helps students develop communication skills, problem-solving abilities, and teamwork skills. These competencies are not only relevant in an academic context but also very important in the world of work. Furthermore, collaborative learning encourages students to become proactive and adaptive lifelong learners. With these skills, students are not only able to face academic challenges but also contribute positively in an increasingly complex society.

4. CONCLUSION

This study concludes that collaborative learning is an effective method in improving students' critical thinking skills. The collaborative process provides opportunities for students to interact, discuss, and evaluate different points of view, which supports the development of their analytical and reflective skills. The integration of technology further strengthens the effectiveness of this approach, allowing for more inclusive and flexible collaboration.

As a suggestion, intensive training is needed for teachers to design and facilitate effective collaborative learning. In addition, the provision of adequate technological infrastructure should be a priority to ensure the successful implementation of these methods, especially in regions with limited access. With these steps, collaborative learning can be optimized to equip students with critical thinking skills that are relevant in the modern era.

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