The Effectiveness of the Small Group Disuccion Learning Model in Improving Critical Thinking Skills

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Abstract

The Small Group Discussion learning model has a high urgency in improving students' critical thinking skills. This study aims to analyze the effectiveness of the model in improving students' critical thinking skills based on empirical evidence. The method used is Systematic Literature Review (SLR) with article selection through PRISMA Flow. Data were obtained from indexed articles in the publisher Elsevier (ScienceDirect) with a randomly selected Q1-Q4 range. Conduct keyword searches ("small group" OR "team-based" OR "collaborative" OR "cooperative") AND "discussion" DAN ("learning model" OR "pedagogy" OR "educational approach") DAN ("critical thinking" OR "analytical thinking" OR "problem-solving" OR "logical reasoning"). The results showed that the review of articles on the Small Group Discussion model was effective in improving critical thinking skills through its main components such as argumentative dialogue, peer interaction, and collaborative problem-solving. Compared to other methods, this model provides the highest satisfaction for students and the highest score in critical thinking assessments. However, its effectiveness may vary depending on the topic of learning. The cognitive processes involved include reasoning, problem-solving, and the ability to give arguments. The implication is that educators need to consider the use of the Small Group Discussion model to optimize the development of students' critical thinking skills, by paying attention to the characteristics of the material and the needs of students.

Keywords: *Small Group Disuccion, Critical Thinking Skills, Systematic Literature Review*

Abstract

Model pembelajaran Diskusi Kelompok Kecil memiliki urgensi yang tinggi dalam meningkatkan kemampuan berpikir kritis siswa. Penelitian ini bertujuan untuk menganalisis efektivitas model dalam meningkatkan kemampuan berpikir kritis siswa berdasarkan bukti empiris. Metode yang digunakan adalah *Systematic Literature Review* (SLR) dengan seleksi artikel melalui PRISMA Flow. Data diperoleh dari artikel terindeks di penerbit Elsevier (ScienceDirect) dengan rentang Q1-Q4 yang dipilih secara acak. Melakukan pencarian kata kunci ("kelompok kecil" ATAU "berbasis tim" ATAU "kolaboratif" ATAU "kooperatif") DAN "diskusi" DAN ("model pembelajaran" ATAU "pedagogi" ATAU "pendekatan pendidikan") DAN ("berpikir kritis" ATAU "berpikir analitis" ATAU "pemecahan masalah" ATAU "penalaran logis"). Hasil penelitian menunjukkan bahwa tinjauan artikel tentang model Diskusi Kelompok Kecil efektif dalam meningkatkan keterampilan berpikir kritis melalui komponen utamanya seperti dialog argumentatif, interaksi teman sebaya, dan pemecahan masalah kolaboratif. Dibandingkan dengan metode lain, model ini memberikan kepuasan tertinggi bagi siswa dan skor tertinggi dalam penilaian berpikir kritis. Namun, efektivitasnya dapat bervariasi tergantung pada topik pembelajaran. Proses kognitif yang terlibat meliputi penalaran, pemecahan masalah, dan kemampuan untuk memberikan argumen. Implikasinya, pendidik perlu mempertimbangkan penggunaan model Diskusi Kelompok Kecil untuk mengoptimalkan pengembangan kemampuan berpikir kritis siswa, dengan memperhatikan karakteristik materi dan kebutuhan siswa

Keywords: *Kelompok Kecil, Keterampilan Berpikir Kritis, Tinjauan Literatur Sistematis*

INTRODUCTION

Critical thinking skills are one of the important competencies that need to be developed in elementary school students in this 21st century era. However, several studies show that the critical thinking skills of elementary school students in Indonesia are still low. PISA data in 2012 ranked Indonesia 64th out of 65 countries in terms of science literacy with a score of 382, which indicates the weak analysis and evaluation skills of students (Nikmatin Mabsutsah et al., 2021). Even until 2024, the critical thinking skills of Indonesian students are still below the average of other countries (Ministry of Religion, 2024). The low critical thinking skills of elementary school students in Indonesia are caused by several factors. One of them is that conventional learning methods such as lectures and memorization are still dominant, which does not provide opportunities for students to develop critical thinking skills (Nikmatin Mabsutsah et al., 2021). In fact, the latest curriculum such as the Independent Curriculum emphasizes the importance of developing critical thinking skills as one of the main competencies of the 21st century (Bustanul Arifin & Abdul Mu'id, 2024)

To overcome these problems, a more interactive and student-centered learning model is needed. One of the models that can be applied is small group discussion. This model allows students to be actively engaged in small group discussions to solve problems or discuss specific topics. Through small group discussions, students can develop critical, analytical, and collaborative thinking skills (Fajrin & Nirvana, 2023). Small group discussion is a learning strategy that emphasizes personal growth in small groups by supporting each other, working together and exchanging experiences (Susanto, 2020). This model has several advantages such as increasing student activity, motivating, encouraging critical thinking, and improving memory retention (Fan, 2024). Several previous studies have shown the effectiveness of small group discussion in improving students' learning outcomes and critical thinking skills. For example, research (Das et al., 2020) It was found that small group discussion was superior in improving students' attention and learning experience compared to lecture learning.

The effectiveness of the small group discussion model to improve critical thinking skills has been proven in several studies. For example, research conducted by (Hari et al., 2024) It shows that small group discussion can improve the critical thinking ability of medical students. This research uses the "Distribute, Discuss, and Develop" method which allows students to analyze medical cases collaboratively. The results show a significant improvement in students' analysis and evaluation skills. At the primary school level, research (Putri Maharani et al., 2024) found that the application of small group discussion in the subject of IPAS can improve the learning outcomes and critical thinking skills of grade V students. Moreover(Arja et al., 2020)In his research on the influence of small group discussion on students' social experience in the classroom, he found that this method not only improves critical thinking skills, but also develops students' social and collaborative skills. This is important given that critical thinking skills often develop through social interaction and the exchange of ideas with others.

However, research on the effectiveness of small group discussion in improving critical thinking skills of elementary school students is still limited. Most previous studies focused on secondary and higher education. In fact, the development of critical thinking skills needs to start from the elementary school level. Therefore, a more comprehensive study is needed on the effectiveness of small group discussion in improving the critical thinking skills of elementary school students. Systematic literature review (SLR) can be the right method to review various studies related to the effectiveness of small group discussion on the critical thinking skills of elementary school students. Through SLR, various research findings can be analyzed and synthesized systematically to provide a more complete picture. The results of this SLR are expected to provide strong scientific evidence regarding the effectiveness of small group discussions and become a reference

for teachers and researchers in developing critical thinking skills of elementary school students.

The Small Group Discussion learning model offers the potential to address this gap by providing a platform for students to actively engage in discussions, exchange ideas, and participate in collaborative problem-solving. Although several studies have shown the effectiveness of this model at the higher education level, there is still a knowledge gap about its application at the primary school level. Given the importance of building a foundation for critical thinking from an early age, comprehensive research on the effectiveness of Small Group Discussion at the primary school level is very urgent.

Based on the description above, this study aims to examine the effectiveness of the small group discussion learning model in improving the critical thinking skills of elementary school students through systematic literature review. Specifically, this study will answer the question:

1. How effective is the small group discussion learning model in improving the critical thinking skills of elementary school students?
2. What are the factors that affect the effectiveness of small group discussion in improving the critical thinking skills of elementary school students?
3. What are the challenges and solutions in the implementation of the small group management model?

METHOD

This study uses the Systematic Literature Review (SLR) method to review and analyze literature related to the effectiveness of the Small Group Discussion learning model in improving students' critical thinking skills. The SLR protocol refers to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to ensure a systematic and comprehensive review (Page et al., 2021).
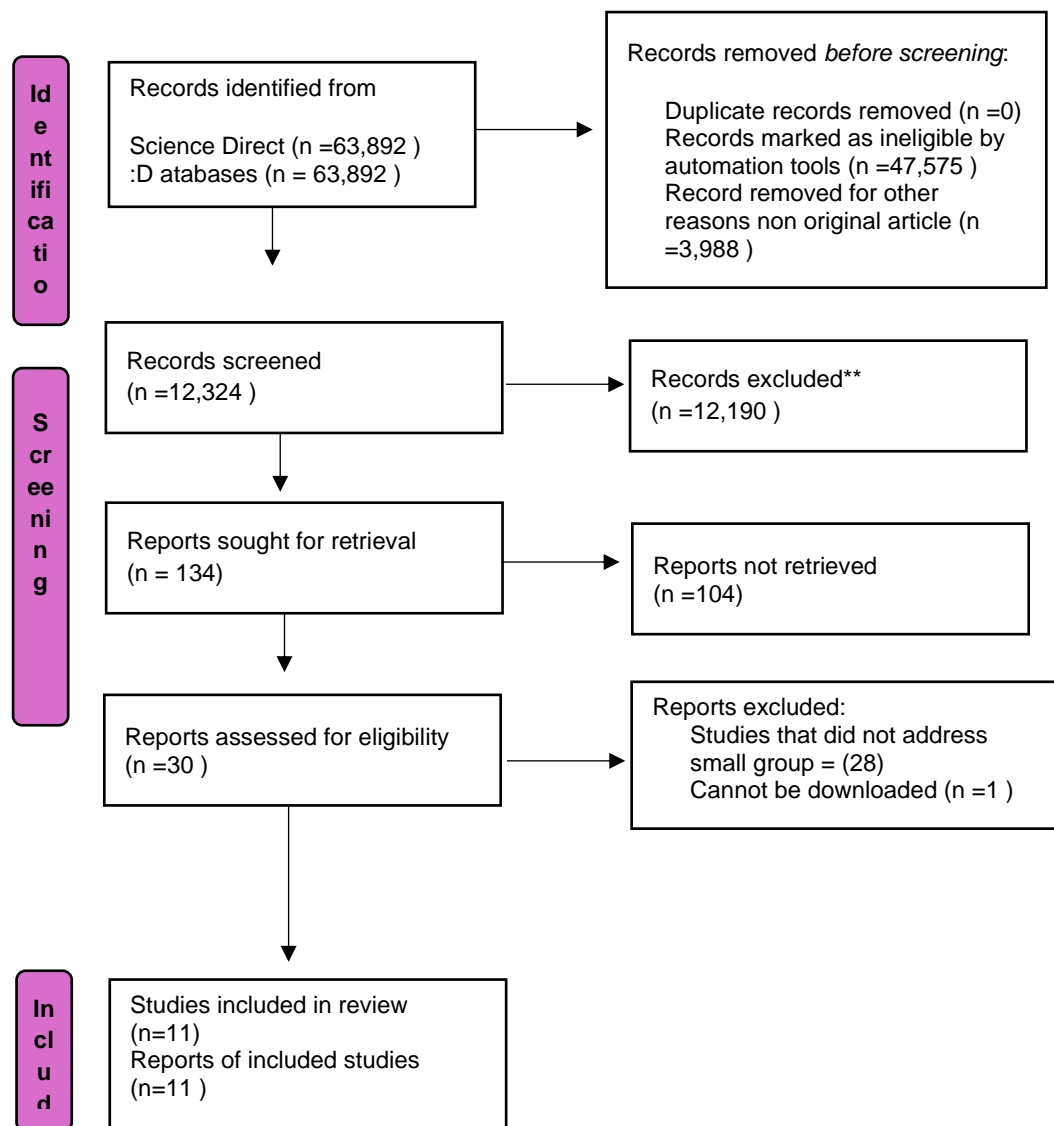
Article selection criteria include inclusion criteria: (1) Publication in Scopus Q1-Q4 indexed journals; (2) A study on the implementation of the Small Group Discussion learning model in the development of critical thinking skills; (3) Research that presents the results, evaluation methods, or impacts of using the Small Group Discussion learning model; (4) Articles in English; (5) Published in 2022-2024 (narrowing the recency due to the large number of sources) Exclusion criteria include: (1) Non-primary research review articles; (2) Conference proceedings; (3) Articles are not accessible/paid; (4) Articles outside the field of education and educational psychology.

Conduct keyword searches ("small group" OR "team-based" OR "collaborative" OR "cooperative") AND "discussion" DAN ("learning model" OR "pedagogy" OR "educational approach") DAN ("critical thinking" OR "analytical thinking" OR "problem-solving" OR "logical reasoning"). The data analysis technique in SLR adopts a thematic-based narrative synthesis approach. Every article that passes the final selection will be read thoroughly. The analysis process begins with an in-depth reading of each article to understand its context, methodology, and key findings. Furthermore, the relevant information from each article is coded according to the predetermined research questions, covering aspects such as the implementation of the Small Group Discussion learning model, the impact on critical thinking skills, the factors affecting effectiveness, and the implementation challenges.

The coding that emerges from the various articles is then grouped into broader themes that align with the research question. These themes are organized into a coherent and comprehensive narrative, answering each research question with the support of evidence from the analyzed articles. Finally, based on this narrative synthesis, a general conclusion was drawn about the effectiveness of the Small Group Discussion learning model in improving students' critical thinking skills.

Through this analysis process, the study aims to analyze the effectiveness of the Small Group Discussion learning model in improving students' critical thinking skills,

based on relevant research in the Scopus database. The process of filtering articles will be presented using the PRISMA flowchart in Figure 1 below:

Identificatio

Records identified from

Science Direct (n =63,892)
:D atabases (n = 63,892)

Records removed *before screening*:

Duplicate records removed (n =0)
Records marked as ineligible by automation tools (n =47,575)
Record removed for other reasons non original article (n =3,988)

Screening

Records screened
(n =12,324)

Records excluded**
(n =12,190)

Reports sought for retrieval
(n = 134)

Reports not retrieved
(n =104)

Reports assessed for eligibility
(n =30)

Reports excluded:
Studies that did not address small group = (28)
Cannot be downloaded (n =1)

Included

Studies included in review
(n=11)
Reports of included studies
(n=11)

Figure 1. PRISMA Small Group Research Flow Chart

Before entering the analysis based on the research question, the researcher wants to see the relativity and distribution of data from the final paper which is identified as follows;

Based on the 11 articles analyzed, the characteristics of the studies included in this systematic literature review show diversity in research methods, samples, and contexts. The majority of studies used quasi-experimental or experimental designs, with some studies adopting qualitative approaches or mixed methods (Arja et al., 2020; Calor et al., 2024; Chen et al., 2024; Qu et al., 2024; S. Zhang et al., 2023)

The research sample generally involves students from various levels of education, ranging from high school to college. For example, a study (Qu et al., 2024) involving 161 nursing students, while Zhang et al. (2023) research focused on 40 prospective teacher students. (Chen et al., 2024) took a sample of 17 second-year students majoring in

education, while (Calor et al., 2024) Researching 272 seventh graders along with their 8 teachers (Arja et al., 2020)focusing his research on fourth-semester students of the medical program.

The research context is also diverse, covering various disciplines such as nursing, education, and medicine. Some studies were conducted in the context of online learning or blended learning, as reported by (Z. Zhang et al., 2024) which uses the QQ and Xiaoya platforms for online discussions. (Chen et al., 2024) utilizing an online collaborative platform for debate activities, while Calor et al. (2022) applied SGS (Small Group Skills) tools in face-to-face learning.

Most of the research focuses on developing critical thinking skills through the application of a small group discussion-based learning model. Commonly used data collection methods include pre-test and post-test, observation, analysis of discussion content, and surveys or questionnaires to measure participant perception.

In conclusion, the selected articles are suitable although diverse but offer a comprehensive perspective on the application of the small group discussion learning model in various educational contexts. This diversity of methods, samples, and contexts provides a solid basis for analyzing the effectiveness of this learning model in improving students' critical thinking skills at different levels and fields of education.

RESULT AND DISCUSSION

Result

The effectiveness of the small group discussion learning model in improving students' critical thinking skills

Based on the 11 articles that have been identified, it shows that the effectiveness of the small group model in improving students' critical thinking skills is shown in a variety of research, for example, research from (Eskiyurt & Özkan, 2024) found that collaborative learning, including small group discussions, effectively improved the critical thinking skills of nursing students. They highlight that small collaborative study groups provide a platform for students to engage in discussions, exchange ideas, and participate in problem-solving activities, which encourages critical thinking.

In line with these findings, research from (Qu et al., 2024) explained that the Simulation with Problem-Based Learning (SPBL) model, which involves small group discussions, significantly improves the critical thinking skills of nursing students. Students in the SPBL group showed higher scores on the subscale of critical thinking, including open-mindedness, analysis, and maturity, compared to the conventional Problem-Based Learning (PBL) group. The experiential learning process in simulation allows students to actively engage with theoretical knowledge and apply it to clinical nursing ethics issues, improving their critical thinking skills. Research (Z. Zhang et al., 2024)emphasizing the effectiveness of group assessment in improving students' critical thinking skills, especially through peer assessment. Although they found that participants' critical thinking remained largely at the level of comprehension, the group with high scores showed more connections between understanding and evaluation. This suggests that active participation in small group discussions leads to increased critical thinking.

Researcher (Chen et al., 2024)also explored the effectiveness of argument maps (AM) in improving students' critical thinking skills during online group debate activities, which can be considered as a form of small group discussion. They found that the depth of students' critical thinking skills gradually increased during debate activities, with processing patterns including problem recognition, evaluation of opposing arguments,

and creation of new ideas. The online environment provides ample time for students to engage in discussions, which is beneficial for developing critical thinking skills compared to traditional face-to-face settings. Although research from (Calor et al., 2024) Instead of directly discussing the effectiveness of the small group discussion learning model in improving critical thinking skills, they show that guiding small groups during math tasks can lead to more and more quality discussions, which can indirectly support the development of critical thinking.

Thus, it can be synthesized that this study shows that the small group discussion learning model is effective in improving students' critical thinking skills. This approach encourages active engagement, enriches discourse, and allows students to think critically and apply knowledge effectively in a variety of learning contexts.

Factors that affect the effectiveness of small group discussion in improving critical thinking skills

Based on the 11 articles that have been identified, there are several key factors that affect the effectiveness of small group discussions in improving students' critical thinking skills.

Collaborative learning environment Those created in small group discussions play an important role. Research from (Eskiyurt & Özkan, 2024) emphasizing that collaborative learning creates a group-oriented lesson preparation environment, which improves students' learning process and social skills, thereby contributing to the improvement of critical thinking skills. The dynamics of group work in collaborative learning settings encourage knowledge sharing and the development of creative solutions, which is essential for enhancing critical thinking.

Active engagement and interaction between group members is also a determining factor. Researchers (S. Zhang et al., 2023) found that the high-scoring group showed more involvement and negotiation in their discussions compared to the low-scoring group. The presence of diverse perspectives in a group can contribute to deeper analysis and understanding, which is essential for developing critical thinking skills.

Use of assistive devices Learning and technology can also improve the effectiveness of small group discussions. Research from (Chen et al., 2024) highlight that the online environment and the use of argument maps (AM) positively affect the effectiveness of small group discussions in improving critical thinking skills. Anonymity in debates allows students to express doubts and criticisms more boldly, which can lead to more creative and reasoned statements.

Research from (Qu et al., 2024) emphasizing the importance of **teaching methods, especially Simulation** with Problem-Based Learning (SPBL), in improving critical thinking skills among nursing students compared to traditional Problem-Based Learning (PBL). The integration of scenario simulation in SPBL allows students to engage in interactive reflection and knowledge fusion, which contributes to the improvement of critical thinking.

Instructor role It is also very important in facilitating active participation and monitoring the quality of learning. Research from (Chen et al., 2024) emphasizes that instructor guidance is important, especially for students who are familiar with traditional teaching methods, as it helps them actively engage in analytical behavior during debates.

Other factors that affect the effectiveness of small group discussions include **Student Freedom** in choosing topics and sides of the debate, which can increase their engagement (Chen et al., 2024), as well as the complexity and difficulty of the material used for the discussion (Qu et al., 2024)). Thus, it can be concluded that the effectiveness of small group discussion in improving critical thinking skills is influenced by various interrelated factors, ranging from collaborative learning environment, active

student involvement, use of technology and learning aids, appropriate teaching methods, to the role of instructors in facilitating discussions.

Challenges and solutions in the implementation of the small group discussion model in improving critical thinking skills

Based on the 11 articles that have been identified, the implementation of the small group discussion model in improving critical thinking skills faces several challenges while opening up opportunities for innovative solutions. While not all articles explicitly address challenges and solutions, some studies provide valuable insights into this aspect.

Research from (Eskiyurt & Özkan, 2024) Identify several challenges in the implementation of collaborative learning, including limitations in evaluating the effectiveness of these methods compared to traditional methods due to the absence of control groups. They also highlighted the challenges that have emerged due to the pandemic, such as the shift to online education and limited opportunities for clinical practice, which can affect the effectiveness of group discussions. As a solution, they suggest enrichment of teaching techniques and the integration of information and communication technology to facilitate better collaboration.

Research from (Qu et al., 2024), although it does not directly discuss the challenges, emphasizes the importance of proper learning design in the Simulation with Problem-Based Learning (SPBL) model to improve critical thinking skills. This implies that one of the potential challenges is designing effective and relevant simulation scenarios to encourage critical thinking in small group discussions. Research from (S. Zhang et al., 2023) Revealing the challenges in ensuring the depth of students' critical thinking, as most participants in their studies remain at a basic level of understanding. The solutions they offer include designing more structured group assessment activities and encouraging active student involvement in discussions to develop more dynamic critical thinking patterns.

Research from (Chen et al., 2024) shows that while an online environment can provide more time for discussion, the challenge is to ensure the quality of interaction and the depth of critical thinking. They suggest the use of tools such as argument maps (AM) to support the structure of online debates and encourage freer expression of thought through anonymity. Research from (Calor et al., 2024), despite its focus on math learning, shows the challenge of guiding small group discussions to be more productive. The solution they offer is the use of special scaffolding tools to assist teachers in providing more varied and effective support during group discussions.

The synthesis of these findings shows that the main challenges in implementing the small group discussion model to improve critical thinking skills include: proper learning design, ensuring the depth of critical thinking, facilitating quality interaction (especially in an online environment), and providing effective guidance during discussions. The proposed solutions include the use of assistive technology, the design of more structured activities, encouraging active student participation, and the development of scaffolding tools to assist teachers. It is important to note that effective implementation requires a holistic and flexible approach, tailoring the strategy to the specific context of learning and the needs of students.

Discussion

This study aims to examine the effectiveness of the small group discussion learning model in improving the critical thinking skills of elementary school students through systematic literature review. Specifically, this study answers questions about the

effectiveness of the small group discussion learning model, the factors that affect its effectiveness, and the challenges and solutions in its implementation.

The results of the systematic literature review show that the small group discussion learning model is effective in improving students' critical thinking skills. These findings are in line with Vygotsky's theory of social constructivism, which emphasizes the importance of social interaction in cognitive development (Vygotsky, L. S., 1978). In the context of small group discussion, students build their knowledge through interaction with peers and a collaborative learning environment. Research (Eskiyurt & Özkan, 2024)found that collaborative learning, including small group discussions, effectively improved the critical thinking skills of nursing students. This supports Vygotsky's concept of a proximal developmental zone (ZPD), where students can achieve a higher level of understanding through collaboration with more capable peers.

Research from Qu et al. (2024) demonstrates the effectiveness of the Simulation with Problem-Based Learning (SPBL) model which involves small group discussions in improving the critical thinking skills of nursing students. These findings are consistent with Kolb's (1984) theory of learning experience, which emphasizes the importance of active reflection and experimentation in the learning process. (S. Zhang et al., 2023) emphasizing the effectiveness of group assessment in improving students' critical thinking skills, especially through peer assessment. This is in line with the concept of scaffolding in social constructivism theory, where peer support can help students achieve a higher level of understanding (Wood, 2015)

Several key factors that affect the effectiveness of small group discussion in improving students' critical thinking skills have been identified. Collaborative learning environment, as emphasized by (Eskiyurt & Özkan, 2024), creating favorable conditions for the development of critical thinking skills. This is in accordance with the situational learning theory of Lave and Wenger (1991), which emphasizes the importance of social context in learning. Active engagement and interaction between group members, as found by (S. Zhang et al., 2023), also a determining factor. This supports the theory of experiential learning which emphasizes the importance of concrete experience and active reflection in the learning process.

Challenges in implementing the small group discussion model include proper learning design, ensuring the depth of critical thinking, and facilitating quality interactions, especially in an online environment (Chen et al., 2024) The proposed solution includes the use of assistive technology, the design of more structured activities, and the development of scaffolding tools to help teachers (Calor et al., 2024). This approach is in line with instructional learning design theory (Merrill, 2002), which emphasizes the importance of structure and support in the learning process.

The limitations of this study lie in its greater focus on higher education, while research at the primary school level is still limited. In addition, variations in the methodology and context of the analyzed research may affect the generalization of findings. For future research, it is recommended to conduct longitudinal studies focusing on the implementation of small group discussions at the primary school level, as well as further explore how technology can be effectively integrated in this learning model to improve students' critical thinking skills.

CONCLUSION

Overall, this study has succeeded in proving that the small group discussion learning model is effective in improving students' critical thinking skills. Through systematic literature review, it was found that the implementation of small group discussion consistently showed improvements in various aspects of critical thinking skills, including analysis, evaluation, and information synthesis.

The effectiveness of this model is supported by several key factors, such as a collaborative learning environment, active student engagement, and the use of assistive

technologies. The study also identifies several challenges in the implementation of the small group discussion model, such as ensuring the depth of critical thinking and facilitating quality interaction in an online environment, as well as offering potential solutions to overcome these challenges. The implication of this study is that educators need to consider the use of the Small Group Discussion model to optimize the development of students' critical thinking skills, by paying attention to the characteristics of the material and the needs of students.

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