

Implementation of Collaborative Learning Model to Develop Critical Thinking Character and Learning Initiative in Elementary School Students

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This study discusses the effectiveness of collaborative learning models in shaping elementary students' character, focusing on critical thinking and learning initiative. Employing a mixed methods design, the research involved 30 sixth-grade students at SDN 1 Patalagan, evaluated through classroom observation, teacher interviews, and questionnaires. The results indicate that collaborative learning significantly improves students' critical thinking, teamwork, questioning skills, and argumentation. Students were more active in discussions, providing feedback, and solving problems collaboratively; however, challenges remain regarding low independent learning initiative and information literacy limitations. This research provides empirical evidence for curriculum development and recommendations for strengthening character-based teaching in elementary schools. Project-based collaborative learning is effective in developing 21st-century student character but requires ongoing strategies to optimally foster student initiative.

Keywords: Collaborative Learning, Critical Thinking, Learning Initiative, Student Character, Elementary School

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1. Introduction

Character education is the implementation of moral and ethical values in learning, aimed at developing individuals with positive attitudes. The concept of character education encompasses the teaching of values such as honesty, discipline, and social awareness, which are essential for student development in elementary school (Kamaruddin, 2023). Integrating learning values is crucial for building character within a supportive environment. Research shows that integrating character education can significantly improve student motivation and learning outcomes (Agung Wibowo et al., 2022).

According to several studies, character education is not only about instilling moral values, but also about creating a positive and supportive school atmosphere. The success of character education is greatly influenced by the active role of teachers in instilling life values in every learning activity (Agung Wibowo et al., 2022). Teachers who consistently serve as role models through their attitudes, actions, and communication styles tend to be more successful in shaping students' character.

Various studies have shown that the use of collaborative learning models has a positive influence on improving critical thinking skills and building students' social character in elementary school. Active student participation in group discussions encourages critical thinking processes that hone analytical, evaluation, and synthesis skills. Furthermore, interactions between students in groups provide support and assistance in understanding learning materials, while fostering a sense of shared responsibility for learning outcomes.

Collaborative learning models stimulate students to think reflectively, develop problem-solving strategies, and express their thoughts more efficiently. Through this process, critical thinking skills develop not only cognitively but also in conjunction with social values such as openness and cooperation. Collaborative learning creates an inclusive and participatory learning environment, fostering mutual respect and empathy among individuals (Education et al., 2021). Students who participate in collaborative learning are more skilled at resolving conflicts positively and have stronger self-confidence than students who learn traditionally.

Although various studies have demonstrated the effectiveness of collaborative learning models, there is still limited data and findings regarding their implementation at the elementary school level. Most research focuses on secondary and higher education contexts (Finkenberg & Trefzger, 2023). Consequently, there is still limited contextual evidence explaining how collaborative learning can align with the characteristics of elementary school students. This leaves a gap regarding how collaborative learning models can influence students' sustainable character development. Previous research also suffers from limitations in terms of implementation duration and methodological design. Most studies utilize short-term experimental designs that focus solely on measuring cognitive learning outcomes after intervention, without evaluating the development of students' character and social values over a longer period. Furthermore, few studies utilize a mixed-methods approach to integrate quantitative and qualitative data to evaluate the effectiveness of collaborative learning.

Another gap lies in the lack of innovative collaborative learning models that align with the needs and local contexts of elementary schools. Most models used are still generic and adapted from secondary and higher education levels, neglecting the developmental characteristics of elementary school students, who require a more contextual, interactive, and experience-based approach (Awaluddin et al., 2024). This situation emphasizes the need for new research that not only assesses the effectiveness of collaborative learning models but also designs more adaptive models with learning strategies that align with the psychological needs of elementary school students.

This research aims to fill this gap by providing comprehensive empirical evidence regarding the implementation of collaborative learning at the elementary school level. Through a more robust research design, this study will assess the impact of collaborative learning models both qualitatively and quantitatively on student character development, critical thinking skills, and learning initiative.

This study will re-examine the effectiveness of collaborative learning models more specifically in the elementary education context to provide a more accurate picture of the factors influencing their success. This study not only compares student learning outcomes but also analyzes the collaboration process, group dynamics, and student readiness to work together.

This research provides significant innovation in implementing collaborative learning models at the elementary school level. By introducing specific techniques that have not been widely researched, this study aims to create a more effective and innovative environment. The use of project-based learning techniques has shown positive results in improving student skills and facilitating their character development (Arham et al., 2023), not only promoting material understanding but also deepening students' social skills.

With an emphasis on interactive learning, it is hoped that these new techniques will significantly contribute to student character development and improve their academic outcomes (Hidayah et al., 2023). Learning techniques that prioritize innovation using relevant media and technology can create a dynamic and inclusive learning environment. The primary focus of this study is to analyze the impact of collaborative learning models on student character development from both qualitative and quantitative perspectives. The novelty and focus of this research align with the evolving needs of education, particularly at the elementary

school level. Introducing innovative collaborative learning techniques not only demonstrates a response to these needs but also provides a strong foundation for improvements in future educational practices.

The specific objectives of this study are to examine the effectiveness of collaborative learning models in building student character, identify critical thinking skills that can be improved, and assess student learning initiatives that emerge as a result of the research (Haluti, 2024). This study focuses on evaluating the extent to which the implementation of collaborative learning models can create a learning environment that motivates students to think independently and take initiative in carrying out tasks. It is hoped that this research will provide a more comprehensive understanding of collaborative models in shaping student character, particularly critical thinking and learning initiatives.

2. Method

This research method uses a mixed methods design that combines quantitative and qualitative approaches to obtain in-depth understanding as well as measurable and valid data. The quantitative approach provides a broad and measurable overview, while the qualitative approach provides context and in-depth explanations. Quantitative data obtained from the questionnaire were first analyzed statistically, then reinforced with qualitative data through semi-structured interviews to gain a deeper understanding of the critical thinking and initiative characteristics of elementary school students. According to Creswell and Poth (2018, revised in the last five years by educational researchers), the combination of these two methods allows researchers to capture the phenomenon comprehensively and reduce interpretation bias.

Participants were selected using total sampling because the population of sixth-grade students participating in collaborative learning was relatively small and all relevant to the research focus. This approach ensures the representativeness and comprehensiveness of the data, as suggested by Fraenkel et al. (2021) that total sampling is effective for limited populations to accommodate all perspectives.

Data collection was conducted through observations of students' collaborative interactions in class, interviews with homeroom teachers to understand their experiences in collaborative learning, and face-to-face questionnaires measuring students' critical thinking and initiative. Observations were used to assess how students collaborated with each other, while interviews provided in-depth insights into teachers' perceptions of the effectiveness of collaborative methods. The questionnaires were analyzed using descriptive statistics to calculate frequencies and percentages, while interview and observation data were analyzed thematically by constructing a narrative of the findings, following the principles outlined by Patton (2022) regarding theme-based qualitative analysis to gain a richer understanding of the context.

Data validity was maintained through triangulation, comparing the results of the questionnaires, interviews, and observations to obtain a comprehensive picture of the influence of collaborative learning on the development of critical thinking and student initiative. According to Merriam and Tisdell (2019, revised 2022), triangulation in mixed methods enhances the validity of findings by corroborating information from multiple sources. With this approach, the study was able to provide a comprehensive picture of the effectiveness of collaborative learning in fostering critical thinking and initiative in elementary school students.

3. Results and Discussion

Based on interviews with homeroom teachers and questionnaires distributed to sixth-grade students at SDN 1 Patalagan, it was discovered that the implementation of the collaborative learning model had a positive impact on the development of critical thinking and student learning initiative. Teachers explained that through collaborative activities, students were more active in discussions, providing feedback, and

collaborating to solve problems. Group interactions encouraged students to hone their analytical, evaluation, and synthesis skills in critical thinking.

Within the context of collaborative learning, indicators of 21st-century character that emerged included argumentative skills, the courage to ask questions, the ability to work together, learning initiative, and information literacy. These indicators were identified through observations of student interactions and their responses in completing collaborative assignments. Argumentative skills were evident in students' ability to express opinions with logical reasoning during discussions, while the courage to ask questions reflected their active involvement in learning.

Table 1. Teacher Interview Results

Theme Code	Topic	Description	Teacher Quote	21st Century Character
T1	Collaborative Learning and Critical Thinking	Improves critical thinking, collaboration, questioning, and argumentation skills.	Students actively participate in discussions, provide feedback, and solve problems.	Critical thinking, collaboration, communication, self-confidence, and caring.
T2	Challenges and Impacts of Character Change	Low learning initiative, information literacy, and active participation.	Students still demonstrate low learning initiative and are not yet actively receiving and filtering information.	Low learning initiative and information literacy, and a lack of appreciation for active participation.

Based on Table 1, the study shows that the implementation of the collaborative learning model has proven effective in improving critical thinking skills. Through group activities, students demonstrated increased active participation in exchanging opinions, providing feedback, and collaborating to solve problems. This was evident in changes in attitudes and increased participation throughout the learning process. However, the study also identified challenges, particularly in the learning initiative and information literacy skills of some students, which still need improvement.

Research data was obtained through triangulation of three main techniques: active classroom observation, structured questionnaires, and in-depth interviews with purposively selected homeroom teachers. Observations were conducted to directly assess students' collaborative interactions during learning, while questionnaires were used to quantitatively measure critical thinking and learning initiative.

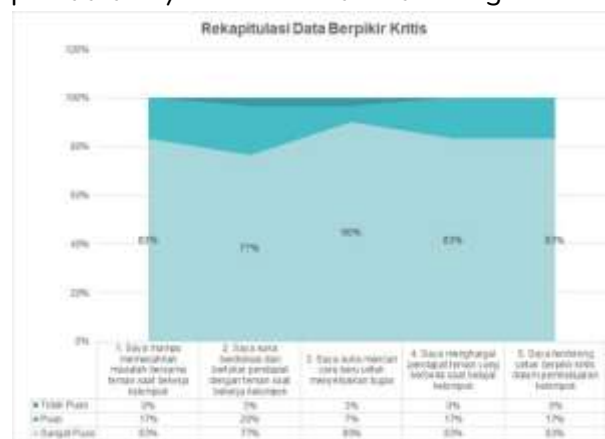


Figure 1. Critical Thinking Data Summary

Based on Figure 1, the study shows that implementing a collaborative learning model significantly improves critical thinking skills. The majority of students strongly agreed or agreed with aspects of problem-solving, discussion, finding new solutions, respecting opinions, and encouraging critical thinking. Most indicators showed an agreement level above 70%, confirming that group-based learning can create a learning environment that supports the development of 21st-century skills, particularly critical thinking skills.

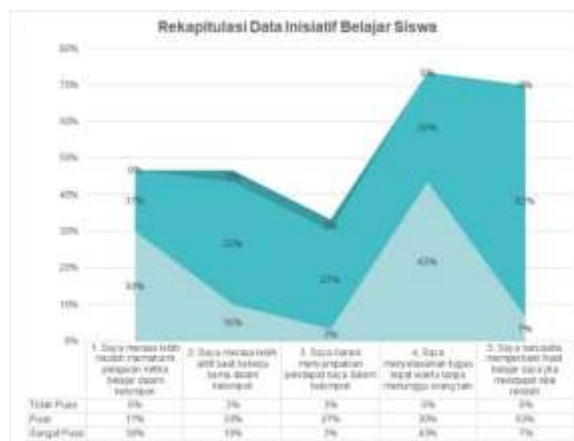


Figure 2. Summary of Learning Initiative Data

Figure 2 shows a decline in students' learning initiative. The majority of students disagreed with several indicators. Various internal factors, such as low motivation and interest in learning, as well as external factors such as a less conducive learning environment, contributed to this decline. This emphasizes the need for strategies to enhance student motivation, engagement, and independence in learning so that the collaborative learning model can have a sustainable positive impact.

The research findings revealed that the use of the collaborative learning model has proven effective in developing positive student character traits, including critical thinking, collaboration, communication, self-confidence, and increased concern for others. During learning activities, students appeared more active in discussions, asking questions, and solving problems in groups. This study also identified challenges that still require attention, including low levels of independent learning initiative and limited information literacy among some students.

The data presented in graphs and tables indicate that although there was a significant increase in critical thinking, students' learning initiative still requires further reinforcement and guidance to optimize learning outcomes. These findings align with character education and previous literature that suggests collaborative learning can develop students' social skills and knowledge and foster positive character. The integration of this model results in an inclusive and participatory learning environment, as described in previous research (Agung Wibowo et al., 2022). These studies identified gaps related to emotional readiness and self-regulation in elementary school students. This research reinforces the idea of more adaptive learning strategies to consistently foster learning initiative in elementary schools. The research provides practical benefits in developing learning strategies that prioritize collaborative models, which have been proven effective in enhancing critical thinking skills.

Interview results revealed that implementing collaborative learning models significantly increased student participation in discussions, expressing ideas, and solving problems in class. Teachers reported that students became more confident in expressing opinions and asking questions, fostering critical thinking, collaboration, communication, and caring for others skills. However, challenges persisted, such as low learning initiative and information literacy among some students, indicating the need for model adaptations to encourage active student participation in new knowledge.

These findings align with constructivist theory, which emphasizes the importance of social interaction in building student understanding and character. Previous research has shown that collaborative-based learning can improve critical thinking skills through shared activities that facilitate feedback, argumentation, and reflection (Kurniawati, 2024). Collaborative learning emphasizes the importance of innovative learning models in enhancing critical thinking skills, including through the Problem-Based Learning approach, which relies on interaction between students.

Questionnaire and interview results indicate that critical thinking skills are more easily developed through collaborative activities such as collaborating, expressing opinions, and solving problems. While initiative in learning, such as asking questions and offering ideas without instruction, still requires further development. Descriptive data shows that most students actively engage in critical thinking processes through data analysis, problem-solving through group discussions, and providing feedback among group members.

However, only a few students consistently demonstrate personal initiative to initiate discussions or contribute without teacher prompting. The initiative indicator still shows a low average score for the critical thinking aspect. This confirms the need for more intensive coaching to foster sustainable learning initiative. Although collaborative learning models are highly effective for improving cognitive and social aspects such as critical thinking, fostering a culture of initiative requires a more systematic and sustainable strategy to achieve optimal improvement in all students.

The results of this study align with previous findings, which indicate that the collaborative learning model is indeed effective in developing character education. The use of this model not only improves academic achievement but also encourages the development of a sense of responsibility and teamwork skills among students. Research by Astuti et al. emphasized the positive impact of character education implemented through collaboration, where students demonstrated improved discipline and improved social interaction skills (Astuti et al., 2024).

Connecting the main findings of this study with character education theory is an important step in strengthening the validity of the results and providing a solid theoretical foundation. Previous research emphasizes that character development in the educational process can improve the quality of learning by instilling moral and social values that serve as important foundations in students' lives (Education et al., 2021).

The implementation of the collaborative learning model at the elementary school level has proven effective in bridging the knowledge gap in strengthening character education while simultaneously developing critical thinking skills and student learning initiative. Various studies have shown that this model not only has a positive impact on academic learning outcomes but also significantly improves children's social skills and character development. The implementation of collaborative learning models in elementary schools still faces several challenges, as students have different cognitive, social, and psychological needs.

The findings of this study help fill this gap by demonstrating that the implementation of collaboration in both lower and upper elementary grades needs to be designed based on children's cognitive, social, and emotional developmental stages. This research provides evidence that engaging in collaborative learning environments can stimulate the development of social-emotional skills, which are crucial for early childhood learning (Hachem et al., 2022).

The results of this study demonstrate that collaborative learning models are effective in strengthening critical thinking skills and encouraging student learning initiatives at the elementary school level. Collaborative learning emphasizes students' active involvement in discussions and group work, which has

been shown to improve analytical and evaluation skills, as well as students' courage to ask questions and express arguments (Mukminah & Hirlan, 2025).

This aligns with research that found that collaborative learning models create space for students to explore their ideas and opinions in a supportive environment, thereby strengthening their mastery of the material and their overall cognitive abilities (Anggriani et al., 2022).

However, previous research still has several limitations that require attention. Most studies used relatively short implementation periods, thus failing to provide an in-depth picture of the long-term impact of collaborative learning on student character development. Group dynamics are also a factor that has not been thoroughly explored, where aspects such as the dominance of certain members, dependence on peers, and lack of discipline within the group sometimes lead to inconsistent learning outcomes.

To address these limitations, collaborative learning models need to be adapted to be more contextual and aligned with the characteristics of elementary school students. Suggested adjustments include implementing longer and more continuous learning periods, utilizing a mixed methods approach in data collection, and developing effective techniques for managing group dynamics.

A more adaptive, interactive, and experience-based approach to student learning also needs to be integrated, tailored to the psychological and cognitive developmental needs of elementary school (Awaluddin et al., 2024). Thus, an updated collaborative learning model will be more effective in fostering critical thinking and ongoing learning initiatives.

This research offers tangible benefits for teachers, schools, and policymakers in elementary education. For teachers, the results can provide valuable guidance for developing more vibrant and effective learning models, particularly collaborative models, which have been proven to foster critical thinking skills and encourage students to take greater initiative in their learning. This will help teachers design learning that emphasizes more than just academic grades, but also equips students with the character traits necessary to face 21st-century challenges.

Students' improvements in critical thinking, learning initiatives, and information literacy provide a strong rationale for encouraging teacher training and curriculum updates to better align with real-world classroom needs. Research shows that students engaged in project-based learning experience improvements in their critical and collaborative skills, in line with established education policies (Nalli et al., 2022).

This study provides valuable recommendations on the importance of implementing project-based learning, the use of innovative media, and participatory strategies. Research shows that Project-Based Learning not only encourages active student engagement but also develops critical thinking skills, creativity, and independence (NURHASANAH et al., 2024). Furthermore, the use of engaging, relevant, and easily understood learning media helps create a more interactive learning experience and accommodates the needs of each student.

Previous studies have revealed that the implementation of collaborative learning in elementary schools has not been fully optimized, as it places greater emphasis on cognitive achievement and less priority on character development and student learning initiative. Contextual data and longitudinal assessments at the elementary school level are still limited, so its impact on character development cannot be fully described. This gap highlights the importance of innovative models tailored to the social-emotional characteristics of elementary school-aged children and the learning environment.

The uniqueness of this study lies in the use of Project-Based Collaborative Learning, which combines collaborative activities with authentic projects to foster critical thinking and collaboration skills among elementary school students. Mixed methods were applied to evaluate academic outcomes and the process

of character internalization within a relevant learning context. This model also aligns with the principles of Freedom to Learn (Merdeka Belajar), which encourage active participation and student independence.

This study concluded that the collaborative project-based learning model is effective in shaping the character of elementary school students in the 21st-century education era, particularly in aspects of critical thinking, collaboration, responsibility, and learning initiative. The study demonstrated how developing a project-based learning model can improve students' critical thinking skills, emphasizing the importance of holistic assessment in evaluating student achievement (Jamilah et al., 2024).

From a theoretical perspective, this study deepens insight into the integration of Project-Based Collaborative Learning as a character education approach in elementary schools. Practically, the results can be used as a reference by teachers and policymakers to design curricula that emphasize active participation and student self-reflection. A key recommendation from this study is the need for further longitudinal evaluation to measure the sustainability of the model's impact on character development and 21st-century skills in elementary school students.

This research provides a conceptual and empirical foundation for the implementation of collaborative learning tailored to the context of elementary education in Indonesia. The implementation of character values in elementary schools not only prioritizes academic knowledge but also builds students' ethical and moral foundations (Kollo et al., 2024). Furthermore, previous research highlights the need for learning that integrates critical reasoning to support students' moral development (Nursalam & Suardi, 2022).

4. Conclusion

Collaborative learning models have proven effective in shaping the character of elementary school students, particularly in developing critical thinking skills, responsibility, collaboration, and self-confidence. The application of project-based collaborative techniques creates a dynamic, inclusive learning environment and encourages active student participation in discussions and problem-solving. Active student participation is key to fostering critical thinking, the courage to ask questions, and to argue, as well as developing information literacy relevant to the demands of 21st-century learning.

Research findings show significant improvements in critical thinking, although challenges remain in fostering independent learning initiatives and strengthening information literacy. This research emphasizes the importance of adapting collaborative learning models to be more contextualized to the developmental characteristics of elementary school students, as well as the need for sustainable strategies to foster learning initiatives.

The research findings provide empirical and conceptual contributions to curriculum development, teacher training, and educational policies that emphasize character building and strengthening 21st-century competencies. Thus, collaborative learning not only improves academic learning outcomes but also builds the ethical, social, and independence foundations essential for elementary school students to face future challenges.

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