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WHEN GROUP WORK IS NOT COLLABORATION: A MIXED-METHODS INVESTIGATION OF ELEMENTARY STUDENTS' COLLABORATIVE SKILLS AND TEACHERS' PEDAGOGICAL PRACTICES

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Abstract

Collaborative skills are essential for 21st-century learning; however, empirical evidence indicates that elementary students' competencies in this area remain low, particularly in Indonesia. This study aims to identify students' collaborative skill profiles, analyze teachers' pedagogical practices, and examine the relationship between both within social learning contexts. A sequential explanatory mixed-methods design was employed, involving 132 fifth-grade students and five teachers from five public elementary schools in Cirebon, West Java. Data were collected through classroom observations, student self-assessment questionnaires based on the Partnership for 21st Century Learning framework ($\alpha = 0.986$), and semi-structured interviews. Quantitative data were analyzed using descriptive and inferential statistics, while qualitative data were analyzed through thematic analysis, with integration conducted using a joint display matrix. The findings show that students' collaborative skills were in the low category, with shared responsibility as the weakest dimension. No significant gender differences were found ($p > .05$), with very small effect sizes. Qualitative findings indicate that learning practices are predominantly pseudo-collaborative, lacking role differentiation, positive interdependence, and individual accountability. These findings are relevant to the Madrasah Ibtidaiyah (MI) context, highlighting the need for structured collaborative learning design, strengthened teacher competencies, and process-oriented assessment systems.

Keywords: collaborative skills, elementary school, natural and social sciences, pedagogical practices.

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INTRODUCTION

Collaborative skills are essential in 21st-century social life, which is characterized by problem complexity, global interdependence, and the growing demand for teamwork across diverse contexts (Griffin & Care, 2015; Kusumaningsih & Sun, 2025). Collaboration not only enhances the effectiveness of problem-solving but also serves as a foundation for developing empathy, communication, and high-quality collective decision-making. However, its development continues to face several challenges, including students' low social-emotional skills, the dominance of individualistic learning practices, and the lack of instructional designs that systematically facilitate meaningful collaborative interactions. Therefore, strengthening collaborative skills from the primary education level is crucial to prepare individuals who are adaptive and able to participate effectively in social life (Rojas et al., 2021).

In the context of basic education, collaboration skills serve not only as a learning method, but also as an important learning objective for developing students' social, cognitive, and emotional abilities (Johnson, & Johnson, 2018; Slavin, 2012). Natural and Social Sciences in elementary school is a strategic place to develop collaboration skills because the subject matter emphasizes social interaction, understanding human values, and shaping democratic citizens (Gillies, 2023).

Various relevant studies have identified the crucial role of collaborative skills in improving elementary school students' learning outcomes. Shimizu & Santos (2025) demonstrated, using the Community of Inquiry approach, that online multimodal collaborative learning can improve the quality of learning processes, products, and perspectives of students with diverse backgrounds. Rojas et al. (2021) confirmed that assessments of collaborative problem-solving skills showed significant improvements in elementary school students' ability to solve complex problems collectively. The findings of Lavasani et al. (2011) strengthen empirical evidence that cooperative learning has a positive effect on the development of students' social skills, especially in the early grades. Furthermore, Nurhamidah et al. (2025) demonstrated that the dialogic pedagogical model not only develops critical thinking skills but also students' social skills through meaningful collaborative interactions.

However, empirical evidence shows an alarming situation regarding students' collaboration skills, particularly in Indonesia. Based on the 2023 OECD Social and Emotional Skills Survey in Kudus Regency, Central Java, which involved 3,400 10-year-old students and 3,500 15-year-old students, it was found that the collaboration skills of elementary school students were at a low level (OECD, 2025). Collaborative skills show a significant decline as students grow older, with trust being one of the three social-emotional skills that decreases most sharply as students transition from age 10 to 15. At age 10, male students already exhibit lower levels of empathy than female students, indicating a weak foundation of empathy skills from an early age. This finding is reinforced by the PISA 2022 release, which still refers to the 2017

collaborative problem-solving assessment, showing that Indonesian students experience difficulties in working together to solve problems, thereby reflecting weak collaboration skills from the primary education level (OECD, 2023).

The implementation of collaborative learning in elementary schools faces various complex challenges that contribute to students' low collaborative skills. Research by Iraola et al. (2024) revealed that the quality of student collaboration is highly dependent on teachers' pedagogical practices in designing, facilitating, and evaluating collaborative activities. Gillies, (2023) showed that without adequate support from teachers, students' collaborative interactions are often superficial and do not contribute to deep learning. Dai et al. (2026) found that differences in student abilities in collaborative groups can produce mixed results, with high-achieving students tending to dominate interactions while low-achieving students become passive.

In Indonesia, although the Independent Curriculum prioritizes Natural and Social Sciences learning and the integration of collaborative skills (Wahyudin et al., 2024), Natural and Social Sciences learning should be implemented consistently to ensure the systematic development of these competencies. However, research by Muti'ah et al. (2021) indicates that elementary school teachers still face difficulties in implementing collaborative learning effectively, particularly in group formation, role assignment, and the assessment of collaborative skills. Similarly, Saborit et al., (2016) found that most elementary school teachers tend to prioritize content coverage over the development of students' collaborative competencies.

Although research on collaborative learning has grown rapidly, several specific and fundamental gaps remain. First, much of the existing literature tends to equate group work with collaboration, failing to clearly distinguish between simple group activities and authentic collaboration characterized by positive interdependence, role differentiation, and individual accountability (Johnson, & Johnson, 2018; Roghanizad & White, 2025). As a result, comprehensive mapping of students' actual collaboration skills remains limited, particularly in the context of Natural and Social Sciences learning at the elementary level. Second, research on teachers' pedagogical practices in facilitating collaboration remains limited in both approach and substance. Existing studies often fail to capture in depth how teachers design, implement, and reflect on authentic collaborative learning in the classroom, resulting in practices that are frequently reduced to unstructured group work without clear collaborative elements (Gillies, 2016). Third, studies that simultaneously integrate student and teacher perspectives to understand the dynamics of authentic collaboration in Natural and Social Sciences learning are still scarce (Abdeta et al., 2026). Fourth, although OECD data indicate low levels of collaborative skills among Indonesian students (OECD, 2025), there is still a lack of comprehensive research examining elementary students' collaboration skill profiles in relation

to the quality of teachers' pedagogical practices, particularly in distinguishing between mere group work and genuine collaboration

The novelty of this research lies in: (1) the use of a comprehensive framework on collaboration skills; (2) the triangulation of multiple perspectives (observations, student surveys, and teacher interviews) to capture the complexity of collaborative practices; and (3) the focus on social learning as a specific context with unique characteristics in the development of elementary school students' collaboration skills. More specifically, this research aims to: (1) identify and describe the profile of elementary school students' collaboration skills in social learning; (2) analyze teachers' pedagogical practices in facilitating the development of students' collaboration skills; and (3) explore the relationship between students' collaboration skill profiles and teachers' pedagogical practices in the context of social learning. The results of this research are expected to provide theoretical contributions to enrich the body of knowledge on collaborative learning in elementary schools, while also providing practical implications for developing more effective pedagogical strategies to develop students' collaboration skills in social learning.

METHODS

Research Design

This study used a mixed-methods sequential explanatory design (Creswell & Creswell, 2017) to explore the profiles of elementary school students' collaboration skills and teachers' instructional practices in Natural and Social Sciences subjects. This design was chosen because it integrates the strength of quantitative data in identifying collaboration skill patterns with the depth of qualitative data in explaining pedagogical practices and the challenges faced by teachers.

Participants, and Research Time

The research was conducted over four months (September–December 2025) in five public elementary schools in Cirebon, West Java, which were purposively selected based on the following criteria: (1) implementation of active collaborative learning in science, (2) principal approval, and (3) geographic accessibility. The five schools were SDN 3 Bakung Lor (25 students), SDN 1 Jamblang (33 students), SDN Gunungsari Dalam (22 students), SDN 1 Wangunharja (28 students), and SDN 2 Sindang Jawa (24 students). The total number of participants in the study consisted of 132 fifth-grade students (53 boys and 79 girls) and five fifth-grade teachers (one teacher from each school) from the five schools. All students were in the classes taught by these five teachers, so the distribution of students across the five schools was proportional to the number of students in each class.

Teachers were selected purposively with the following criteria: (1) having at least three years of teaching experience, (2) having teacher certification, (3) actively implementing collaborative learning in science and science learning, and (4) being willing to be informants for

in-depth interviews. The selection of fifth-grade students was based on developmental psychology literature which shows that students aged 10–11 years have sufficient cognitive maturity and social competence to engage in complex collaborative tasks (Flavell, 2020; Vygotsky & Cole, 2018).

This research has obtained ethical approval from the relevant institutions and official permission from the school. Consent was obtained prior to data collection. All data will be kept confidential and used solely for research purposes to protect the rights of participants, especially minors.

Data Collection

Data in this study were collected through observations, surveys, and in-depth interviews. Observations were conducted over four weeks, with two meetings at each school (2 x 35 minutes per meeting). The observations aimed to describe the learning process implemented by teachers and students' collaborative behavior during natural and social sciences learning activities.

Quantitative data collection was conducted through a survey of students' collaboration skills using an instrument adapted from the Partnership for 21st Century learning (2015). The instrument consists of 25 statements divided into five dimensions, namely: (1) working effectively and respectfully in diverse teams, (2) flexibility and willingness to compromise, (3) shared responsibility, (4) adaptability and openness to other perspectives, and (5) valuing individual contributions. The measurement scale uses a Likert scale of 1–5, with the following information: 1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree, and 5 = strongly agree.

The instrument adaptation process was carried out through forward-backward translation and contextualization of the content and language to suit the cognitive development level of fifth-grade students (aged 10–11) and the context of natural and social sciences learning. Adaptations included simplifying sentence structures, using familiar vocabulary, and linking statements to collaborative learning activities.

The instrument was tested on 30 fifth-grade students outside the research sample. The empirical validity of the items was analyzed using the Pearson Product–Moment correlation. The results indicated that all items had statistically significant calculated r values ($p < 0.001$), with coefficients ranging from 0.698 to 0.953. Based on the criteria for interpreting correlation coefficients, these values fall within the strong (0.60–0.79) to very strong (0.80–1.00) categories; therefore, all items were deemed valid. Furthermore, the reliability test using Cronbach's alpha coefficient demonstrated very high internal consistency ($\alpha = 0.986$), indicating that the instrument is highly reliable.

A survey was administered to 132 students after the observation activities were completed. Subsequently, in-depth interviews were conducted with five teachers as key informants to strengthen and clarify the quantitative findings. The interview guide was developed based on literature on collaborative learning practices (Gillies, 2016) and covered five aspects: collaborative learning planning, facilitation strategies, assessment of collaboration skills, barriers to implementation, and adaptive strategies for overcoming barriers. Interviews lasted 60–90 minutes, were used in Indonesian, were recorded with the informants' consent, and were supplemented with field notes. All recordings were transcribed verbatim within a maximum of one week of the interviews.

This study has obtained ethical approval from the relevant institutions and permission from the schools. Furthermore, student consent was obtained prior to data collection to ensure the protection of the rights and safety of child participants

Data Analysis Techniques

Survey data were analyzed using SPSS version 29.0 using descriptive and inferential statistics. Descriptive statistics included the mean, standard deviation, minimum and maximum scores, and frequency distribution for each dimension of collaboration skills. Collaboration skill levels were categorized based on a 1-5 Likert scale interval using the formula (maximum score–minimum score)/number of categories = (5–1)/4 = 1.00, resulting in the following categories: low (1.00–1.99), moderate (2.00–2.99), high (3.00–3.99), and very high (4.00–5.00).

Normality was tested using the Shapiro-Wilk test, and homogeneity of variance was tested using the Levene test. Differences in collaboration skills based on gender were analyzed using an independent samples t-test. If the assumption of normality was not met, the nonparametric Mann-Whitney U test was used. Furthermore, if the Levene's test results indicated non-homogeneity of variance ($p < 0.05$), the Welch's t-test (equal variances not assumed) was used to ensure the validity of the analysis results.

Interview data were analyzed using Braun & Clarke (2019) thematic analysis through six stages: (1) data familiarization, (2) initial inductive coding, (3) theme identification, (4) theme review, (5) defining and naming themes, and (6) report preparation. Data validity was ensured through trustworthiness criteria (Lincoln, Y. S., & Guba, 1985), including member checking, peer debriefing, triangulation with observational data, and an audit trail.

Quantitative and qualitative data were integrated at the interpretation stage using a connecting strategy through a joint display in the form of a matrix. This integration combines quantitative profiles of collaboration skills with qualitative findings related to teachers' pedagogical practices and the barriers they face. Meta-inference is generated through a synthesis of both types of data and evaluated based on the criteria of integrative legitimacy (Tashakkori,

A., & Teddlie, 2008), namely integration effectiveness, interpretive consistency, and theoretical consistency.

RESULTS AND DISCUSSION

This study yielded findings on the profile of elementary school students' collaboration skills in science learning through the integration of quantitative data (n = 132) and qualitative data from observations and interviews with five teachers. The presentation of the results begins with the quantitative findings, continues with an analysis of differences based on gender, and concludes with an integration of the findings through a joint display matrix.

Elementary School Students' Collaboration Skills Profile

The results of the descriptive analysis show that students' overall collaboration skills are in the low category (M = 1.93; SD = 0.219), based on the category interval 1.00–1.99. Statistical details for each dimension are presented in Table 2.

Table 1. Descriptive Statistics for Collaboration Skills

Dimensions of Collaborative Skills	N	Min	Max	Mean	Std. Deviation
Working effectively and respectfully with diverse teams	132	1.30	3.10	1.8411	0.38043
Flexibility and willingness to compromise	132	1.70	2.90	2.1292	0.24658
Shared responsibility	132	1.20	2.45	1.6576	0.26394
Adaptability and openness to different perspectives	132	1.40	3.00	2.0708	0.33544
Valuing individual contributions	132	1.45	2.90	1.9511	0.31893
Overall collaboration skills score	**132**	**1.60**	**2.70**	**1.9333**	**0.21918**

Based on Table 2, students' overall collaboration skills were in the low category (M = 1.93; SD = 0.219). Dimensionally, flexibility and willingness to compromise (M = 2.13) and adaptability and openness to other perspectives (M = 2.07) were in the medium category. Meanwhile, working effectively and respecting teamwork (M = 1.84), valuing individual contributions (M = 1.95), and shared responsibility (M = 1.66) were in the low category, with the lowest score being in the shared responsibility dimension. These findings indicate that while flexibility and openness are relatively well developed, collective responsibility and collaborative participation still need to be improved.

Comparison of Collaboration Skills by Gender

The results of the Kolmogorov–Smirnov normality test showed that most of the data were not normally distributed ($p < 0.05$), except for the adaptability and openness dimensions ($p = 0.085$). Therefore, the main analysis used the nonparametric Mann–Whitney U test. To

increase the robustness of the findings, a parametric independent samples t-test was also conducted as a comparison.

Table 2. Comparison of Collaboration Skills by Gender

Dimensions of Collaborative Skills	Male M (SD)	Female M (SD)	*t*	*p*	*U*	*Z*	*p*	*r*
Working effectively and respectfully	1,819 (0,386)	1,855 (0,377)	-0,531	0,298	1872.500	-1.028	0,304	-0,089
Flexibility and willingness to compromise	2,102 (0,244)	2,146 (0,248)	-1,005	0,158	1882.500	-0,983	0,326	-0,086
Shared responsibility	1,640 (0,264)	1,669 (0,264)	-0,605	0,273	1892.000	-0,940	0,347	-0,082
Adaptability and openness	2,050 (0,319)	2,084 (0,347)	-0,583	0,280	1956.000	-0,640	0,522	-0,056
Valuing individual contributions	1,928 (0,311)	1,966 (0,324)	-0,661	0,255	1959.000	-0,626	0,532	-0,054

The analysis results showed no significant differences in collaboration skills between male and female students across all dimensions, based on either the independent samples t-test or the nonparametric Mann–Whitney U test ($p > 0.05$). Descriptively, female students had slightly higher average scores than male students across all dimensions. However, these differences were not statistically significant. The Mann–Whitney U test results also demonstrated consistency, with all significance values above 0.05 ($p = 0.304–0.532$). The effect size (r) values ranged from -0.054 to -0.089, which is considered very small, indicating that the differences between groups are weak in practical terms.

These findings confirm that gender is not a determining factor in students' collaboration skills. The consistency of the results between the parametric and nonparametric tests, along with the small effect size values, suggests that variations in collaboration skills are more influenced by pedagogical factors, learning experiences, and social context than by gender differences.

The quantitative and qualitative findings were integrated through a joint display matrix, as presented in Table 3.

Table 3. Matrix of Collaboration Skills and Teacher Practices

Collaboration Dimension	Quantitative Result	Qualitative Findings	Meta-Inference
Shared responsibility	Low (M = 1.66)	No clear role division in groups	Lack of structured collaboration limits collective responsibility
Working effectively	Low (M = 1.84)	Discussions dominated by a few students	Unequal participation reduces collaboration quality
Flexibility	Moderate (M = 2.13)	Students tend to follow peers	Flexibility exists but lacks active engagement
Adaptability	Moderate (M = 2.07)	Students are open but passive	Openness does not translate into meaningful interaction
Individual contribution	Low (M = 1.95)	Assessment focuses on group outcomes	Absence of individual accountability

The findings indicate that students' low levels of collaboration skills, particularly in the dimensions of shared responsibility and active participation, are closely related to teachers' suboptimal pedagogical practices. Collaborative learning tends to be implemented procedurally without clear structures, such as role allocation, discussion facilitation, and process assessment. The absence of gender differences confirms that collaboration skills are more influenced by contextual learning factors than individual characteristics. Therefore, improving collaboration skills requires systematic pedagogical interventions, particularly in the design of structured collaborative activities and process-based assessments.

Teacher Pedagogical Practices in Facilitating Collaborative Skills

Analysis of interviews with teachers and classroom observation notes yielded four main themes that describe teacher practices in collaborative learning: (1) strategies for forming student groups; (2) how teachers facilitate group discussions; (3) assessing collaborative skills; and (4) obstacles encountered in collaborative learning.

Formation of Groups Without Clear Role Structure

All interviewed teachers exhibited the same pattern in group formation, namely merely dividing students into several groups without providing clear role or task distribution to each member. IF.1 DT explained:

> "*When I want to do group work, I usually just divide them into several groups directly. Sometimes I determine the members myself, sometimes I let them choose on their own. After that, I immediately give them tasks to discuss together.*" (IF.1 DT, interview, October 15, 2025).

Observations in IF.1 DT class revealed the impact of this absence of role distribution. In the lesson on "Let's Get to Know Our Earth," it was evident that in each group, only 2-4 students were actively speaking and working on the tasks, while other students remained mostly silent or even chatted among themselves (Observation notes, October 21, 2025).

IF.2 DS as the teacher acknowledged that the group division they implemented was still very simple:

> "*I usually divide groups based on seating arrangements for practicality. Those sitting close together I put in one group. Indeed, sometimes the smart ones end up in one group, and the weaker ones also gather together. But if I have to rearrange them, time runs out.*" (IF.2 DS, interview, November 18, 2025).

IF.3 SN as the teacher also employed a similar approach:

> "*I more often use a system where students choose their own group members. So they feel comfortable and no one protests. If I'm the one who decides, usually there are complaints about not wanting to be in the same group with student A or student B.*" (IF.3 SN, interview, November 25, 2025)

This self-selection system turned out to create new problems. Classroom observations showed that students tended to choose their close friends, so group discussions often turned into casual conversations. Shy students struggled to find groups and had to be "placed" by the teacher into groups willing to accept them (Observation notes, November 26, 2025).

All teachers did not provide specific role assignments such as group leader, note-taker, presenter, or timekeeper to group members. Teacher explained: "*For roles like that, I don't assign them. I think they can organize themselves who wants to do what. Besides, the important thing is that the task gets completed.*" (IF.1 DT, interview, October 15, 2025). Observation results showed that there was often ambiguity about who was responsible for what in the group. In one group, two students competed to write, while others just watched. In another group, no one wanted to write (Observation notes, October 21, 2025).

Limited Facilitation During Group Discussions

The results indicated that group discussion facilitation remained minimal. The teachers' role was predominantly that of a supervisor ensuring students were not disruptive, rather than a facilitator guiding the collaborative process. IF.1 DT described their activities during student discussions: "*Once they start discussing, I usually sit at the front while checking assignments or preparing the next materials. Occasionally I go around if there's a group that's noisy or arguing. If someone asks, then I explain.*" (IF.1 DT, interview, October 15, 2025). Observation results confirmed that IF.1 DT indeed spent most of the time at the teacher's desk. When there were groups that appeared confused and whose discussions stalled, the teacher did not approach to assist. Those groups ultimately waited until time ran out (Observation notes, October 23, 2025). IF.2 DS also acknowledged limitations in facilitating each group: "*I do go around to each group, asking 'how far*

have you gotten?' or 'don't be noisy, okay'. I've already given them the task, they just need to do it." (IF.2 DS, interview, November 20, 2025).

When conflicts occurred within groups, teachers tended to provide direct solutions rather than guiding students to resolve them independently. Observations showed that when two students argued about which answer was correct, IF.2 DS immediately stated "*The correct one is this, so use this answer*" without giving students the opportunity to discuss and reach consensus (Observation notes, November 20, 2025). This results-oriented approach caused teachers to pay less attention to collaborative dynamics within groups. Observations revealed that in one group, only one student completed nearly all the tasks while their peers were occupied with other matters (Observation notes, November 26, 2025).

All teachers did not provide guidelines or rules about how to conduct proper discussions. There were no explanations about how to express opinions, listen to peers, or respond to differing viewpoints. Observation results showed many unproductive group discussions. Some groups' discussions were dominated by one or two individuals, some had all members talking simultaneously without anyone listening, and others remained completely silent because they did not know where to begin (Observation notes, November 19, 2025).

Assessment Focused on Group Outcomes

Interview results revealed similarities in the methods of assessing group work, which focused more on the final group product rather than the collaborative process or individual student contributions. IF.1 DT explained the assessment system: "*I assess based on the presentation results or worksheets submitted. If the answers are correct and complete, that group's grade is good. All group members receive the same grade*." (IF.1 DT, interview, October 15, 2025). This uniform grading system for all group members created fairness issues. Observations showed that students who contributed very actively received the same grade as students who merely sat silently throughout the discussion (Observation notes, October 23, 2025).

IF.2 DS acknowledged difficulties in assessing collaborative skills:

> "*Honestly, I don't know how to assess students' teamwork abilities. It has no tangible form, unlike math problems that have answers. So I only assess the results. If it's good, it means they collaborated well; if it's not good, it means their collaboration was lacking.*" (IF.2 DS, interview, November 20, 2025).

The assumption that good results indicate good collaboration proved not always accurate. Observations revealed groups whose work outcomes were excellent but were actually completed by only one capable student, while other members contributed nothing at all (Observation notes, November 19, 2025).

Without clear assessment instruments, the evaluation of collaborative skills became highly subjective and inconsistent. Observations showed that students who actively disrupted

their peers were assessed the same as students who attempted to help peers understand the material, because teachers did not differentiate types of participation within groups (Observation notes, November 26, 2025). Interview results indicated that teachers also did not involve students in assessing their own collaborative process or that of their group members. IF.2 DS stated: "*If I ask children to assess themselves or their friends, I'm concerned it won't be objective. Friends will definitely give each other good grades, while those who aren't close will get bad grades instead. So it's better if I'm the one who assesses*." (IF.2 DS, interview, November 19, 2025)

Obstacles in Collaborative Learning

From the interview analysis, several main obstacles were revealed which caused collaborative learning not to run optimally: (1) teachers' limited understanding of collaborative learning; (2) limited time; (3) focus on completing material; and (4) difficulty managing the class.

All informants acknowledged that their understanding of collaborative learning was limited. IF.5 EK explained:

> "*What I know is that collaborative learning involves students working in groups. So, if I divide students into groups and give them assignments, I've implemented collaborative learning. I don't really understand specific techniques or steps*." (IF.5 EK, interview, November 28, 2025).

This limited understanding leads teachers to only implement group learning in its simplest form, neglecting important elements of collaboration such as positive interdependence, individual accountability, or interpersonal skills.

Furthermore, time constraints are also a major reason why teachers don't provide more intensive guidance. IF.1 DT explained:

> "*The science lesson is only two hours, and even then, it's often shortened due to school activities. If I have to organize groups in detail, assign roles, and then provide one-on-one guidance, there's not enough time. There's a lot of material to teach*." (IF.1 DT, interview, October 15, 2025).

IF.4 RM added that the pressure to complete the curriculum leaves them feeling rushed:

> "*Curriculum targets must be achieved. If every topic requires lengthy group work, when will it be finished? So I only use group work when the material is appropriate and the time is right. Even then, it's often shortened*." (IF.4 RM, interview, November 26, 2025)

Classroom management during group learning also presents a significant challenge. IF.2 DS described the difficulty:

> "*Once we're divided into groups, the class becomes chaotic. Some people move around, some fight over stationery, and some even come and go. I'm overwhelmed managing them. That's why I sometimes remind the students to stay in their groups*." (IF.2 DS, interview, November 19, 2025)

All informants also mentioned that they had never received specific training on how to implement effective collaborative learning. IF.3 SN said: "*The training I've attended has been more*

about curriculum or learning technology. There's nothing specifically about collaborative learning. So I just implement it based on my own experience and understanding." (IF.3 SN, interview, November 25, 2025).

Collaborative Skills of Elementary School Students

The results of the study indicate that elementary school students' collaboration skills remain low, with the most prominent weakness in the shared responsibility dimension (M = 1.66). This finding indicates an imbalance in the development of collaboration skills, with basic aspects such as flexibility and openness being relatively more developed than those requiring shared regulation and collective accountability.

These findings confirm that collaboration skills do not develop uniformly or automatically through group activities. Skills such as flexibility and openness tend to develop through everyday social interactions, while shared responsibility is a more advanced competency that requires structured learning design and deliberate pedagogical interventions (Novianti et al., 2024). This aligns with recent research emphasizing that collaboration is a competency that must be developed through structured interaction and guided participation, not simply the result of group work (Gillies, 2023; Roghanizad & White, 2025; Rojas et al., 2021).

More specifically, low scores on the shared responsibility dimension correlate directly with teacher instructional practices identified in the qualitative findings. Teachers fail to establish clear role divisions, develop individual accountability mechanisms, and facilitate positive interdependence within groups. This situation triggers the emergence of a free-rider phenomenon, where some students do not actively contribute, while others dominate task completion. This finding is consistent with research by Dai et al. (2026), which shows that without a clear collaborative structure, differences in student ability actually weaken the quality of group interactions.

Furthermore, the lack of teacher facilitation during group discussions indicates that student collaborative interactions occur without adequate guidance. Teachers tend to adopt a passive position after group formation, thus depriving students of support in developing important skills such as negotiating meaning, shared decision-making, and conflict resolution. However, research by Iraola et al. (2024) confirms that the quality of collaboration is highly dependent on the intensity and quality of teacher mediation during the learning process. This finding is consistent with Ardiana (2024), who emphasizes that improvements in students' learning outcomes and responsibility attitudes do not occur automatically through group work; rather, they are largely determined by the quality of teachers' pedagogical practices in facilitating, guiding, and directing collaborative interactions during the learning process.

Thus, these findings demonstrate a clear causal relationship between poor pedagogical practices and the underdevelopment of more complex dimensions of collaboration. Without

learning designs that explicitly integrate collaborative elements such as individual accountability, positive interdependence, and group regulation, the development of collaborative skills will remain partial and uneven (Gillies, 2023; Nurhamidah et al., 2025; Yuliastanti et al., 2024).

Pseudo-Collaboration in Learning Practices

The results of this study also revealed that the learning practices implemented by teachers are more accurately categorized as pseudo-collaboration, namely group activities that are not supported by an authentic collaborative structure. This finding directly confirms criticisms in the literature that many learning practices still equate group work with collaboration, without adhering to the basic principles of true collaboration (Roghanizad & White, 2025).

Group formation strategies based on proximity or student choice result in homogenous groups and reinforce social segregation. This limits the exchange of perspectives and reduces the potential for collaborative knowledge construction. These findings reinforce research by Shimizu & Santos (2025), which showed that the quality of collaboration significantly improves when interactions are heterogeneous and structured.

On the other hand, a learning orientation focused on task completion (product-oriented) deems the collaborative process a primary focus in learning. Assessments based solely on group outcomes, without considering individual contributions, eliminate personal accountability and reinforce the practice of pseudo-participation. This aligns with the findings of Saborit et al. (2016), which show that without process-based assessment, collaboration skills struggle to develop optimally.

The finding that there were no significant differences based on gender, reinforced by statistical test results and very small effect sizes, suggests that collaborative skills are not innate. Instead, these skills are strongly influenced by learning experiences and the quality of interactions within the learning environment. This is consistent with the social constructivist approach, which emphasizes that collaborative competencies are formed through structured social practices (Gillies, 2023; Nurhamidah et al., 2025).

The findings of this study make an important contribution by demonstrating that students' poor collaboration skills are inextricably linked to the quality of teachers' pedagogical practices. The integration of quantitative and qualitative data consistently indicates that weaknesses in the shared responsibility dimension are a direct reflection of the lack of a structured collaborative learning design.

Theoretically, this study reinforces the literature emphasizing the importance of distinguishing between group work and authentic collaboration. Practically, these findings underscore the need to develop collaborative learning models that explicitly address role allocation, accountability mechanisms, and interaction facilitation strategies. Without such

interventions, collaborative learning has the potential to remain procedural without significantly impacting student skill development.

This study has several limitations that require consideration. First, the use of a self-assessment instrument on students aged 10–11 has the potential to introduce social desirability bias, so students' answers may not fully reflect the actual situation. Second, the limited observation period of four weeks does not provide a comprehensive picture of learning dynamics over the long term. Third, the limited context and sample size limit the generalizability of the study findings.

Future research is recommended to use a longitudinal approach, combining various assessment techniques such as peer assessment and performance assessment, and testing the effectiveness of a structured collaborative learning model. This approach is expected to provide a deeper understanding of strategies for developing students' collaboration skills sustainably.

CONCLUSION

This study confirms a gap between curriculum demands for developing collaboration skills and classroom learning practices. Students' collaboration skills were low, with shared responsibility as the weakest dimension, indicating that complex collaboration competencies do not develop naturally without structured pedagogical support. The findings reveal that ongoing learning practices are still dominated by pseudo-collaboration, namely group activities lacking essential collaborative structures, such as role allocation, individual accountability, and positive interdependence. This condition results in uneven participation and limited meaningful interactions between students. Therefore, the low quality of collaboration skills, particularly in the area of shared responsibility, is directly related to suboptimal learning design and facilitation by teachers. Conceptually, this research confirms that the development of collaborative skills is highly dependent on the quality of pedagogical design. Effective collaborative learning requires systematic planning, active facilitation of interaction, and assessment that emphasizes the process and individual contributions. This implies the need for strengthened teacher professional development that focuses on structured collaborative learning strategies, as well as a reconstruction of learning designs and assessment systems that support authentic collaboration. Without such interventions, group activities have the potential to remain procedural and not result in optimal collaborative skill development.

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