International Journal of Humanities and Social Sciences Reviews

E-ISSN: 3047-5295
P-ISSN: 3047-5287

Research Article

Team Pair Solo–Based IPAS Learning for Enhancing Collaboration and Attitudes in Grade VI Students

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Abstract: This classroom action research investigates efforts to enhance sixth-grade students' ability to work together in Natural and Social Sciences (IPAS) learning at UPT SDN Unjuruiya No. 45 Selayar Islands by implementing the Team Pair Solo cooperative learning model. The study was conducted to address students' low collaboration skills and limited positive learning attitudes, which impeded the achievement of optimal learning outcomes. Through two learning cycles consisting of sequential group (team), pair, and individual (solo) activities, the research aimed to improve students' cooperative abilities and attitudes toward IPAS learning. Data were collected through observation, field notes, and learning attitude assessments, then analyzed descriptively to determine changes in performance. The findings indicated a significant improvement in students' cooperative skills, as reflected in the increase in the average percentage of collaboration indicators from 69% in Cycle I to 92% in Cycle II, covering aspects of participation, communication, responsibility, tolerance, and emerging leadership. Furthermore, students' learning attitudes also improved, with mastery increasing from 45% in the initial condition to 100% in Cycle II, and an average score of 87 surpassing the minimum completeness criterion (KKTP) of 70. These results demonstrate that the Team Pair Solo model effectively fosters collaboration while strengthening students' discipline, responsibility, and enthusiasm in learning. Thus, the model is proven to be a relevant strategy for enhancing cooperative skills and positive learning attitudes in IPAS instruction at the elementary level.

Keywords: Cooperative Learning; IPAS; Learning Attitude; Team Pair Solo; Teamwork Ability.

1. Introduction

The increasing demand for twenty-first-century competencies has positioned collaboration, critical thinking, and responsibility as core learning outcomes across global education systems (MY, 2024). In elementary education, these competencies must be nurtured through learning models that emphasize interaction, problem-solving, and shared knowledge construction. Science and Social Studies (IPAS), as an integrated subject combining scientific inquiry with social understanding, requires active student participation both individually and collaboratively to achieve deep and meaningful learning (Elpisah et al., 2024). However, in many learning contexts, students still face challenges in demonstrating effective teamwork and maintaining positive learning attitudes, which hampers the development of essential cognitive and social skills. Such conditions highlight the need for instructional models that not only support knowledge acquisition but also build strong character and collaborative dispositions in learners (Erwina et al., 2025; Suarlin et al., 2022).

The initial observations conducted in June 2025 at UPT SDN Unjuruiya No. 45 Kepulauan Selayar revealed several issues related to students' collaboration skills and learning attitudes in IPAS classes. Three students appeared reluctant to engage in group discussions, five preferred working individually, and three showed minimal participation in class activities. These empirical findings were corroborated by the sixth-grade teacher, who noted that only a small number of students exhibited enthusiasm and initiative, while most remained passive and unresponsive to collaborative tasks. The low level of cooperative behavior limits opportunities for exchanging ideas, constructing shared understanding, and fostering reflective

Received: October 13, 2025
Revised: October 28, 2025
Accepted: November 12, 2025
Online Available: November 18, 2025
Curr. Ver.: November 18, 2025

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thinking—elements crucial for mastering IPAS content under the Kurikulum Merdeka framework. As Sumartono emphasizes, collaboration is a foundational twenty-first-century competency that must be strengthened from the elementary level to cultivate responsibility, empathy, and mutual support (Sumartono et al., 2025). Likewise, Lestari and Wardani argue that positive learning attitudes, including motivation, discipline, curiosity, and perseverance, significantly influence learning outcomes, especially in subjects that require active engagement and exploration (Aziz, 2017).

From a theoretical perspective, this study is grounded in Vygotsky's social constructivism, which posits that learning is constructed through meaningful social interaction and guided participation. Mulyasa notes that effective learning environments must provide space for collaboration so that students can build knowledge collectively and gradually internalize skills toward independent performance (Mulyasa, 2021a). The Team Pair Solo model aligns with this theoretical foundation by offering a structured progression from teamwork to pair activities and ultimately to individual tasks. This staged learning design reinforces cooperative skills while nurturing independent thinking, aligning with the cognitive and affective processes expected in twenty-first-century learning. In addition, the model reflects the principles of differentiated learning emphasized in Kurikulum Merdeka, where students are allowed to progress according to their individual readiness and learning profiles. Ningsih dan Harahap assert that differentiated instruction requires flexible and adaptive learning models capable of accommodating diverse student characteristics needs that Team Pair Solo inherently supports (F. Ningsih, 2020).

Despite its theoretical strengths, empirical challenges persist in the field, particularly the predominance of conventional teaching methods that limit student interaction. According to reports from the sixth-grade teacher, instruction had relied largely on lectures and individual assignments, which restricted opportunities for collaboration and idea sharing among students. Such practices contradict the principles of active learning and often lead to disengagement, as noted by Damayanti dan Fadhillah, who explain that limited social interaction reduces learning interest and contributes to student passivity (Damayanti & Fadhillah, 2020). Furthermore, Suryani emphasizes that teacher success in facilitating learning depends on the strategic selection of models that stimulate student participation, especially in an era where active learning is essential (Suryani, 2020). These gaps highlight a persistent problem in elementary IPAS instruction: although collaboration and positive learning attitudes are mandated by curriculum standards, instructional practices often fail to cultivate these competencies.

Within this pedagogical landscape, the Team Pair Solo model offers a promising solution. Priyono explains that the model fosters gradual independence through initial collaborative engagement, allowing students to internalize shared knowledge before applying it individually (Priyono, 2022). Similarly, Putri dan Kurniawan demonstrate that Team Pair Solo is effective in inquiry- and project-based learning contexts such as IPAS, enabling students to practice conflict management, articulate ideas, and engage in reflective dialogue (Putri & Kurniawan, 2023). The team stage promotes tolerance and appreciation of diverse perspectives, the pair stage deepens conceptual understanding through structured dialogue, and the solo stage fosters responsibility and independent problem-solving. These attributes align with the objectives of Permendikbudristek No. 5 Tahun 2022, which outlines expectations for graduates to demonstrate cooperation, curiosity, critical thinking, and creativity—competencies achievable when learning conditions encourage meaningful interaction and student independence.

The research gap emerges from the mismatch between curriculum demands and classroom practices. Although national policy and theoretical frameworks emphasize collaboration, responsibility, and active engagement, the observed context indicates that students at UPT SDN Unjuruiya No. 45 Selayar Islands have not yet developed these competencies optimally due to limited opportunities for structured collaborative learning. While Team Pair Solo has been recognized as an effective cooperative model in several studies, its application within the IPAS context at this school has not been explored comprehensively. There is also limited empirical evidence on how this model simultaneously enhances both cooperative abilities and learning attitudes, particularly within the differentiated learning environment promoted by Kurikulum Merdeka. Thus, a systematic investigation is needed to determine the extent to which Team Pair Solo addresses these gaps and strengthens student engagement, social interaction, and character formation.

The urgency of this research lies in its potential to address multidimensional learning challenges. Improving collaboration and learning attitudes is not only essential for academic achievement but also for building foundational social competencies that support long-term student development. For the school, adopting an effective collaborative model aligns with

its vision of creating a character-driven learning environment. For teachers, the model provides a practical strategy to facilitate interactive, student-centered learning while managing diverse learning needs. For students, it offers structured opportunities to practice responsibility, confidence, and independence. Theoretically, the study strengthens the literature on cooperative learning by providing empirical evidence on the application of Team Pair Solo in elementary IPAS contexts. It also contributes to the discourse on twenty-first-century skills by demonstrating how collaboration and positive learning attitudes can be developed through classroom-based interventions. Based on this background, the present study aims to examine the implementation of the Team Pair Solo cooperative learning model to improve sixth-grade students' ability to work together and their learning attitudes in IPAS at UPT SDN Unjuruiya No. 45 Kepulauan Selayar. The research seeks to provide empirical insights into how this model can function as an effective pedagogical tool, offering practical recommendations for IPAS teachers and contributing to broader efforts to enhance active, collaborative, and meaningful learning in elementary education.

2. Literature Review

Twenty-first century learning demands the integration of collaborative competence, critical thinking skills, and positive learning attitudes, all of which are constructed through social interaction and meaningful learning experiences, making cooperative learning models highly relevant in this context (Arikunto, 2018). Through collaboration, students not only deepen their conceptual understanding but also cultivate interpersonal abilities such as tolerance, empathy, and responsibility (Trianto, 2021). Structured collaborative activities enable students to construct knowledge socially in accordance with social constructivist principles, positioning cooperation as a foundational pillar of effective learning in elementary schools (Mulyasa, 2021a). The success of cooperative learning is influenced by heterogeneous group structures, face-to-face interaction, and individual accountability, which balance contributions across group members (Rusman, 2022). This model also strengthens affective aspects such as self-confidence, responsibility, and cooperative attitudes, all of which are central to character education (Hosnan, 2023).

Cooperative Learning Model

Cooperative learning is defined as an instructional approach encouraging teamwork in small groups, in which students share responsibility and support one another in understanding learning material, thereby reinforcing both conceptual mastery and social attitudes simultaneously (Arikunto, 2020). According to Trianto, this model aims to enhance critical thinking through structured interaction and active participation, replacing traditional instruction that relies heavily on teacher dominance (Trianto, 2021). Cooperative learning creates a democratic, student-centered environment where interpersonal and cognitive skills are developed concurrently (Mulyasa, 2021b). Rusman explains that effective social interaction within groups enables negotiation of meaning, shared understanding, and constructive communication, contributing to the formation of collective knowledge (Rusman, 2022). Furthermore, cooperative learning fosters affective and social development through mechanisms such as positive interdependence and individual accountability, which ensure that every learner participates actively (Hosnan, 2020).

The goals of cooperative learning encompass holistic academic improvement, character building, and the enhancement of student confidence. Rusman emphasizes the importance of tolerance, leadership, and collaboration as key aspects that shape effective group-based learning (Rusman, 2022)\. Mulyasa highlights the defining characteristics of cooperative learning—positive interdependence, individual accountability, face-to-face interaction, interpersonal skills, and group processing—which collectively structure its implementation in the classroom (Mulyasa, 2021b).

Team Pair Solo Cooperative Model

The Team Pair Solo (TPS) model is a structured cooperative learning strategy designed to facilitate gradual learning transitions from collaboration to independence through three sequential stages: team learning, paired discussion, and individual work (Huda, 2020:144). These stages enable students to construct understanding collectively before working independently, making the process of conceptual internalization more effective, particularly for learners with lower initial abilities (Huda, 2020). Suyadi asserts that TPS strengthens learning autonomy through collaborative experiences, reflection, and gradual intellectual progression, aligning well with the thematic characteristics of elementary learning (Suryadi, 2021).

Indrawati highlights that TPS enhances students' problem-solving skills by providing opportunities to engage in deep discussion prior to independent reinforcement (Indrawati, 2022). Suprijono argues that TPS accommodates both social and individual learning styles, effectively training communication skills, critical thinking, and personal responsibility (Suprijono, 2023). Philosophically, TPS begins with collaborative interaction and ends with individual internalization, reducing anxiety and improving students' sense of ownership over learning—an approach highly relevant for IPAS instruction requiring both cognitive and socio-emotional engagement (Wahyudin, 2024).

The TPS procedural steps—from large-group discussions, to pair work, to independent tasks—are designed to strengthen understanding progressively while cultivating personal accountability for learning outcomes (Huda, 2020). TPS offers advantages such as increased confidence, communication skills, character development, and improved learning outcomes through reflective and structured engagement. Its limitations, however, include classroom management challenges, the need for detailed planning, and high pedagogical readiness from teachers to guide and facilitate group dynamics effectively.

Collaboration Skills

Collaboration skills are essential in cooperative learning because they involve interaction, mutual support, and collective responsibility, all of which influence group success (Sumartono, 2021). Lestari and Wardani emphasize the importance of listening, contributing ideas, and maintaining group dynamics as key components of students' social and academic development (Lestari & Wardani, 2020). Wahyuni explains that effective collaboration is characterized by cooperative attitudes, task commitment, and willingness to share information, which flourish only in an environment of mutual trust (Wahyuni, 2021). Ningsih and Harahap view collaboration as reciprocal engagement that yields better outcomes than individual work while fostering empathy and respect for differences (W. Ningsih & Harahap, 2021). Suryani notes that successful collaboration is reflected in balanced task division, joint decision-making, and effective management of group time (Suryani, 2020). Priyono adds that active collaboration shapes students into effective communicators and creative problem solvers (Priyono, 2022).

Learning Attitude

Learning attitude reflects students' psychological readiness to engage positively in learning, demonstrated through motivation, responsibility, and perseverance (Lestari & Wardani, 2020). Suryani asserts that learning attitude is shaped through mental habits such as discipline, orderliness, and a willingness to grow, influenced by the quality of interaction between teachers and students (Suryani, 2020). Sumartono emphasizes that learning attitude is influenced by intrinsic motivation and positive perceptions of learning supported by a conducive environment . Wahyuni explains that learning attitude manifests through enthusiasm, curiosity, and diligence in completing tasks (Wahyuni, 2021). Priyono views learning attitude as a reflection of personal values related to academic responsibility and collaboration (Priyono, 2022). Ningsih and Harahap highlight the importance of positive habits, motivation, and meaningful learning experiences as key factors shaping learning attitudes (W. Ningsih & Harahap, 2021).

IPAS Learning in Elementary Schools

IPAS learning is an integrated instructional approach combining natural science (IPA) and social science (IPS) concepts to develop students' holistic understanding of natural and social phenomena in their environment (Mutiah, 2021). Mulyasa explains that IPAS in the Kurikulum Merdeka emphasizes contextual, environment-based, and problem-focused learning through projects, observation, and exploration (Mulyasa, 2022). Sani states that IPAS fosters students' ability to investigate scientific and social issues through simple experiments and reflective discussions (Sani, 2022). Siregar and Nara regard IPAS as an exploratory and reflective approach that builds cross-disciplinary thinking through observation, analysis, and interpretation of natural and social events (Siregar & Nara, 2023).

The goals of IPAS include functional integration of IPA and IPS concepts, enhancement of scientific and social literacy, development of twenty-first-century competencies, and the reinforcement of civic responsibility and character (Siregar & Nara, 2023). Hidayat emphasizes IPAS functions in scientific literacy, social literacy, environmental adaptability, and problem-solving, all of which prepare students to navigate real-world challenges through collaborative and scientific reasoning.

3. Proposed Method

Research Design

This study employed a classroom action research (CAR) design aimed at improving students' collaboration skills and learning attitudes in Integrated Natural and Social Sciences (IPAS) through the implementation of the Team Pair Solo cooperative learning model. The research was conducted in two iterative cycles consisting of planning, action, observation, and reflection phases, allowing continuous refinement of instructional strategies based on the outcomes of the previous cycle. The study took place at UPT SDN Unjuruiya No. 45 Selayar Islands during the first semester of the 2025/2026 academic year, spanning July to October 2025. The CAR approach was selected to enable direct intervention in the learning environment and systematic evaluation of changes in classroom dynamics, student participation, and learning behavior.

Participants

The participants of this study were 11 sixth-grade students at UPT SDN Unjuruiya No. 45 Selayar Islands, comprising 5 male and 6 female learners. Students served as both subjects of learning activities and sources of data related to collaboration and learning attitude. The teacher played a dual role as both instructional facilitator and collaborator in the implementation of the Team Pair Solo model. The research setting included the learning environment, instructional materials, and school facilities that supported the teaching and learning process.

Data Collection Procedures

Data collection involved a combination of observation, interviews, tests, and documentation to capture both process- and outcome-oriented indicators. Observations were conducted systematically throughout each learning session to record changes in students' collaborative behavior and learning attitudes, following the criteria outlined by Arikunto concerning the use of observational data to assess classroom engagement. Semi-structured interviews were carried out with students and the teacher to obtain deeper insights into their experiences and perceptions of the learning model. Tests were administered at the end of each cycle to assess cognitive understanding related to IPAS content. Documentation such as field notes, student worksheets, and photographs served as supplementary data to strengthen the overall analysis.

Instruments and Measures

The research utilized observation sheets to assess collaboration skills and learning attitudes, interview guidelines for gathering qualitative insights, cognitive tests to measure academic achievement, and documentation logs to capture supporting evidence from classroom activities. Collaboration skills were evaluated based on indicators such as participation, communication, responsibility, and teamwork, while learning attitudes were assessed using validated criteria adapted from Taufik's scale of learning attitude classification. Each student's learning attitude score was computed using the formula NA = (Observed Score / Maximum Score) × 100, and subsequently categorized into five levels ranging from Very Poor to Very Good. Learning mastery was determined using Taufik's mastery criteria with a cutoff score of 70 for individual mastery and classical mastery calculated using the proportional formula for students achieving scores above the threshold.

Research Procedure

The implementation of the Team Pair Solo model followed a structured progression in each cycle. During the planning stage, the researcher prepared lesson modules, designed learning scenarios aligned with the cooperative model, and developed the required research instruments. Coordination with the teacher ensured that learning materials and strategies were contextually aligned with students' needs. The action stage consisted of instructional activities structured into an introductory phase, a core learning phase incorporating the Team, Pair, and Solo stages, and a closing reflection phase. In the Team stage, students discussed IPAS topics in large groups, followed by paired discussions designed to deepen conceptual understanding. The Solo stage required students to complete tasks independently as a way to assess their individual comprehension. During each lesson, the teacher facilitated dialogue, monitored progress, and provided support as needed. The observation stage documented students' behavioral and affective changes, whereas the reflection stage analyzed whether the instructional implementation aligned with planned objectives and identified aspects requiring

improvement. The findings from the first cycle informed revisions and enhancements in the second cycle, which was continued until the predetermined indicators of success were achieved.

Data Analysis Techniques

Data analysis combined qualitative and quantitative approaches. Qualitative descriptive analysis was applied to interpret observational data, interview responses, and documentation, focusing on changes in collaboration and learning attitudes across cycles. Quantitative analysis was used to compute attitude scores, categorize learning attitudes, and measure the degree of classical mastery. Student scores were calculated using standardized formulas, and learning attitude categories followed Taufik's classification system. Classical completeness was determined by comparing the number of students achieving scores ≥70 to the total population.

Validity and Reliability

The validity of qualitative data was strengthened through triangulation of observation, interviews, and documentation, ensuring consistency across data sources. The iterative nature of CAR also enhanced reliability, as repeated cycles allowed cross-verification of student behavioral changes over time. Observation sheets, interview guides, and tests were reviewed collaboratively with the teacher to ensure content relevance and alignment with learning objectives. The structured design of the Team Pair Solo model served as an additional safeguard for procedural consistency.

Indicators of Success

The research was considered successful if at least 80% of students demonstrated improvement in collaboration skills and learning attitudes categorized as "good" or "very good," accompanied by a significant rise in IPAS learning mastery compared to baseline conditions. Success was also reflected in students' active participation, constructive teamwork, and ability to transition smoothly across Team, Pair, and Solo learning phases with increasing independence.

4. Results and Discussion

Result of Research

In this section, the author needs to explain the hardware and software used, dataset This section presents the results of the discussion regarding the application of the Team Pair Solo cooperative learning model in improving the ability to work together and the attitude of learning science in grade VI students of UPT SDN Unjuruiya No. 45 Kepulauan Selayar. The discussion is carried out by comparing the results of observations and evaluations in cycles I and II, to see the extent of improvement that occurred after corrective actions were taken at each stage of learning.

Improving Students' Ability to Work Together

Students' ability to work together is observed through five main aspects, namely: (1) participation, (2) communication, (3) responsibility, (4) tolerance, and (5) leadership. Each aspect was observed in two meetings in cycle I and two meetings in cycle II. The following data shows significant changes in each aspect after implementing the Team Pair Solo model.

Table 1. Observation Results of Students' Ability to Work Together in Cycle I.

No	Aspect	Pert. I	Pert. II	Percentage
1	Participation	7	8	68%
2	Communication	7	9	73%
3	Responsibility	7	9	73%
4	Tolerance	7	8	68%
5	Leadership	6	8	64%
		Average		69%

Table 2. Observation Results of Students' Ability to Work Together in Cycle II.

No	Aspect	Pert. I	Pert. II	Percentage
1	Participation	9	10	86%
2	Communication	10	11	95%
3	Responsibility	9	11	91%
4	Tolerance	10	11	95%
5	Leadership	9	11	91%
	Average			92%

The data in Tables 1 and 2 show an increase in collaborative skills across all aspects. In Cycle I, the average achievement percentage was only 69%, below the 75% success criterion. The lowest achievement was in leadership (64%), followed by participation (68%). These low scores indicate that students were less actively involved and were not yet able to take on leadership or directing roles in the group. After the actions taken in Cycle II, all aspects experienced significant improvement. The average collaborative ability jumped to 92%, well above the success criteria. The communication and tolerance aspects reached their highest score of 95%, indicating that students were increasingly able to express their opinions and respect the ideas of their peers. The most significant improvement occurred in the leadership aspect, which rose from 64% in cycle I to 91% in cycle II. This indicates that the Team Pair Solo model is effective in providing opportunities for students to play an active role, lead discussions, and direct group members. Overall, the implementation of the Team Pair Solo model has been proven to have a positive impact on improving the cooperative skills of sixth grade students.

Improving Students' Attitudes in Learning Science

Learning attitudes are an important indicator in determining the success of the learning process. In this study, students' attitudes towards science learning were measured through attitude tests at the end of each cycle to observe changes in learning behavior after the implementation of the Team Pair Solo cooperative learning model. The analysis of learning attitudes included the average score, highest score, lowest score, frequency distribution of categories, and percentage of completion in cycles I and II. The measurement results showed a significant increase from cycle I to cycle II both in terms of student achievement scores and learning attitude categories.

Table 3. Statistics of Science Learning Attitude Scores of Students in Cycle I.

Statistics	Mark
Subject	11
Ideal Values	100
Average value	69
The highest score	77
Lowest Value	63

The statistical results in Table 3 show that the students' science learning attitude in Cycle I is still in the moderate category. The average score of 69 indicates that the overall learning attitude has not yet reached the expected standards, considering the ideal value is 100. The highest score of 77 suggests that only a few students demonstrated good learning attitudes, while the lowest score of 63 reflects that several students are still struggling to show consistent engagement, responsibility, and enthusiasm in the learning process. These findings confirm the need for continued instructional improvement to enhance students' learning attitudes in the next cycle.

Table 4. Frequency Distribution of Science Learning Attitude Scores of Students in Cycle I.

Score	Frequency	Percentage	Category
0–39	0	0%	Very less
40–54	0	0%	Not enough
55–69	5	55%	Enough
70–84	6	45%	Good
85–100	0	0%	Very good

The data in Table 4 indicates that the majority of students' science learning attitude scores in Cycle I fall within the "Enough" and "Good" categories. A total of 55% of students (5 out of 11) are categorized as "Enough," meaning that more than half of the class demonstrates only moderate learning attitudes and requires improvement in aspects such as participation, motivation, and responsibility. Meanwhile, 45% of students fall into the "Good" category, showing satisfactory learning attitudes. However, none of the students reach the "Very Good" category, and none fall into the "Very Less" or "Not Enough" categories. These results imply that although no student is at a very low level, overall learning attitudes still need strengthening to achieve higher categories in the subsequent cycle.

Table 5. Science Learning Attitude Completion Cycle I.

Category	Frequency	Percentage
Incomplete (0–69)	5	55%
Completed (70–100)	6	45%

The results in Table 5 show that more than half of the students, namely 55%, did not achieve the minimum required standard for science learning attitudes in Cycle I. Meanwhile, only 45% of students reached the "Completed" category. These findings indicate that students' learning attitudes were still below expectations, and the majority experienced difficulties in demonstrating consistent engagement, responsibility, or motivation during the learning process. This condition reinforces the need for improvements and the continuation of the intervention into Cycle II.

Table 6. Statistics of Science Learning Attitude Scores of Students in Cycle II.

Statistics	Mark
Subject	11
Ideal Values	100
Average value	87
The highest score	92
Lowest Value	83

The data in Table 6 demonstrates a significant improvement in students' science learning attitudes in Cycle II. The average score increased substantially to 87, indicating a strong overall learning attitude among students. The narrow range between the highest score (92) and the lowest score (83) shows that students' performance improved evenly and consistently across the class. Compared to Cycle I, where the lowest score was 63, the improvement reflects the positive impact of the Team Pair Solo learning model on student engagement and learning responsibility.

Table 7. Frequency Distribution of Science Learning Attitude Scores of Students in Cycle II.

Score	Frequency	Percentage	Category
0–39	0	0%	Very less
40–54	0	0%	Not enough
55–69	0	0%	Enough
70–84	2	18%	Good
85–100	9	82%	Very good

Table 7 reveals a dramatic shift in the distribution of science learning attitude scores during Cycle II. A high proportion of students, namely 82%, achieved scores within the "Very Good" category, which is a considerable improvement from Cycle I where no students reached this category. Additionally, 18% of students were in the "Good" category, while no students were categorized as "Enough," "Not Enough," or "Very Less." This clear upward shift indicates that the majority of students developed excellent learning attitudes, demonstrating motivation, confidence, and active engagement after the implementation of the Team Pair Solo model.

Table 8. Science Learning Attitude Completion Cycle II.

Category	Frequency	Percentage
Incomplete (0–69)	0	0%
Completed (70–100)	11	100%

The data in Table 8 shows that all students (100%) successfully met the completion criteria for science learning attitudes in Cycle II. This is a substantial increase from Cycle I, where only 45% of students achieved completion. The total achievement of completion indicates that the intervention—through the Team Pair Solo learning strategy—was highly effective in improving students' learning attitudes. The results demonstrate that students not only responded positively to the learning model but also developed the necessary behaviors such as discipline, cooperation, and enthusiasm for learning.

Discussion

The implementation of the Team Pair Solo cooperative learning model is a learning innovation designed to foster collaborative skills while instilling learning independence in students. This model was developed with three core stages, namely learning in groups (teams), then pairs (pairs), and finally independent learning (solo). In grade VI of UPT SDN Unjuruiya No. 45 Kepulauan Selayar, the implementation of this model has proven effective in improving students' collaborative skills and learning attitudes in the subject of Natural and Social Sciences (IPAS). Through these tiered learning activities, students are not only trained to collaborate and discuss with friends, but also to be responsible for their own learning outcomes. This demonstrates a balance between social learning and the development of individual potential, which is one of the main goals of 21st-century education.

In cycle I, based on the results of the study of 11 students, it was found that no students were in the very low or low category. A total of 5 students (55%) were in the sufficient category, while 6 students (45%) were in the good category, and none had reached the very good category. This indicates that in the initial stages of implementation, students were still adjusting to the new cooperative learning mechanism they were introduced to. Some students still depended on their group mates to complete assignments and not all demonstrated optimal independent learning attitudes. However, active discussions and a sense of group responsibility began to appear to increase compared to before the implementation of the Team Pair Solo model. The learning process also became more lively because all students had their respective roles in the team.

After improvements and reinforcement in cycle II, the results showed significant improvement. No students were classified as very low, low, or adequate. Two students (18%) were classified as good, and nine students (82%) achieved the excellent category. These results indicate that the Team Pair Solo cooperative learning model has a positive impact on improving students' collaborative skills and learning attitudes. They become more independent in their learning, while still being able to appreciate and work effectively in groups. This improvement also demonstrates that learning that provides opportunities for students to experience social and individual learning processes alternately can foster a sense of responsibility and critical thinking skills.

According to Suryani (2021:45), the Team Pair Solo learning model provides opportunities for students to experience three stages of thinking: teamwork, pairwork, and individual thinking. She explains that these stages can increase students' motivation and responsibility for their own learning outcomes because they are trained not to depend on others. Furthermore, Rahmat and Kurniawan (2023:67) state that the Team Pair Solo model can develop communication and social cooperation skills in the context of science learning, because students learn to share ideas, discuss, and solve problems together before working on them independently. In addition, Putri (2024:112) emphasizes that this model is effective in elementary schools because it suits the characteristics of children who enjoy learning in groups but also need to be accustomed to independent learning so as not to depend on peers.

The advantage of implementing the Team Pair Solo cooperative learning model is that it combines the advantages of group work with the development of individual independence. In the team phase, students help each other and learn to build solidarity, while the pair phase fosters effective two-way communication to deepen understanding. The solo phase culminates in students demonstrating their learning outcomes and individual responsibility for the material. This process helps sixth-grade students hone their social skills and independent thinking skills in a balanced manner. Furthermore, learning becomes more enjoyable and meaningful because students are actively involved in every aspect of the process.

This model also has drawbacks that need to be considered. First, implementing the Team Pair Solo model requires relatively longer time than conventional learning because each stage (team, pair, and solo) requires its own time allocation. Second, teachers must have good classroom management skills to prevent group and pair discussions from turning into unproductive activities. Third, not all students have the same social skills; some quiet or shy

students may need more guidance to express their opinions in groups. Furthermore, assessment of individual and group learning outcomes must be carried out carefully to ensure fairness and appropriateness to students' contributions at each stage of learning.

To clarify the increase in students' interest in learning social studies in grade VI, this can be seen in the following table:

Table 9. Improvement in the Collaborative Skills of Grade VI Students.

No	Aspect	Indicator	Cycle		Success Criteria
			I	II	
1.	Participation	Students actively participate in group discussions.	68 %	86 %	75%
2.	Communication	Students express their opinions politely and listen to their friends' ideas.	73 %	95 %	
3.	Responsibility	Students complete group assignments according to agreed roles.	73 %	91 %	
4.	Tolerance	Students appreciate differences of opinion and respect the ideas of friends who will be presented.	68 %	95 %	
5.	Leadership	Students are able to lead and direct group members to work together to achieve learning goals.	64 %	91 %	
Average Percentage of Indicators of Ability to Work Together for Grade VI Students			69 %	92 %	

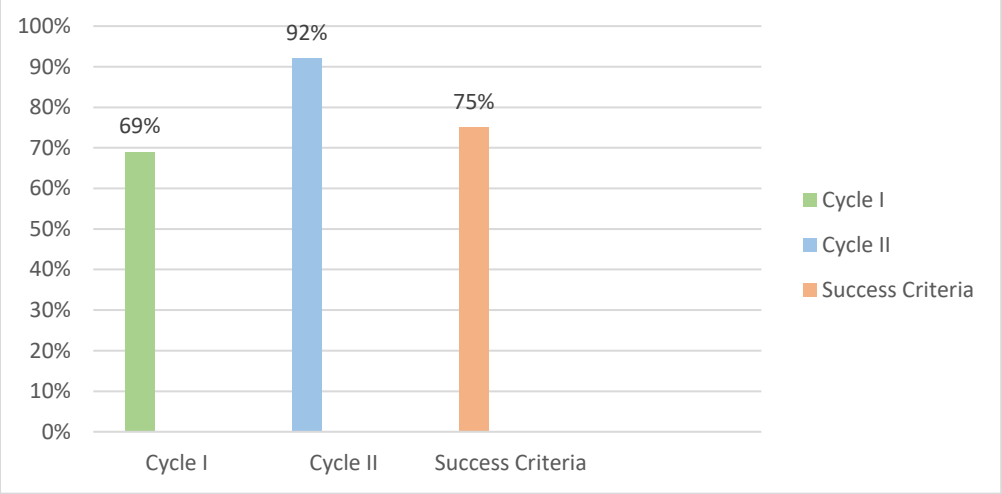

Figure 1. Chart of Improvement in Collaboration Skills of Grade VI Students.

This research is also said to be successful if 75% of the sixth grade students of UPT SDN Unjuruiya No. 45 Kepulauan Selayar have a minimum score of 70 in the subject of Social Studies. This is based on the curriculum of UPT SDN Unjuruiya No. 45 Kepulauan Selayar regarding the Learning Objective Achievement Criteria (KKTP) in the subject of Social Studies, namely 70. The following table presents the percentage of student learning outcomes that achieve the KKTP score in cycles I to II.

Table 10. Improvement in Students' Attitudes in Learning Science in Cycles I and II.

Category	Cycle I	Cycle II
Incomplete (0 - 64)	55%	0%
Completed (65 -100)	45%	100%

Based on table 11 above, it can be seen that in students' learning attitudes in cycle I, the percentage of students who achieved a passing grade has not reached the success criteria of 75% because it only reached 55% so it needs to be improved again in cycle II. In the results of cycle II, students who achieved a passing grade have achieved the predetermined success criteria and even exceeded it. The results of cycle II show that the percentage of students who have achieved a score of 70 is 100%.

For more details, please see the chart below:

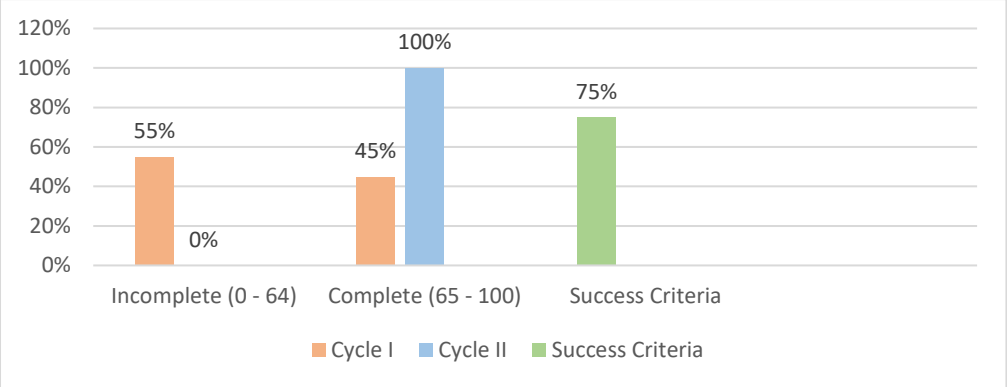

Figure 2. Chart of Improvement of Student Learning Attitudes in Cycles I and II.

Overall, the results of the study in class VI of UPT SDN Unjuruiya No. 45 Kepulauan Selayar proved that the implementation of the Team Pair Solo cooperative learning model was able to significantly improve students' ability to work together and their learning attitudes. From the research data between cycles I and II, there was a sharp increase in the excellent category from 45% to 100%. This demonstrates the success of the learning strategy that combines group cooperation and individual responsibility in a balanced manner. Thus, this model can be used as an effective alternative in science learning, especially in elementary schools.

5. Conclusions

Based on the results of classroom action research conducted on sixth grade students at UPT SDN Unjuruiya No. 45 in the Selayar Islands, it can be concluded that the application of the Team Pair Solo cooperative learning model can significantly improve students' ability to work together in IPAS learning. This can be seen from the increase in the average percentage of indicators of students' ability to work together from 69% in cycle I to 92% in cycle II, which covers the aspects of participation, communication, responsibility, tolerance, and leadership. In addition to improving collaboration skills, the application of the Team Pair Solo cooperative learning model also had a positive effect on the IPAS learning attitudes of sixth-grade students at UPT SDN Unjuruiya No. 45 in the Selayar Islands. Based on the evaluation results, the average score for students' learning attitudes in cycle II reached 87 with 100% mastery, an increase from 45% of students who mastered the material in cycle I to all students mastering the material in cycle II. This indicates that students have achieved the success criteria set in the KKTP, which is 70, so the research does not need to be continued to cycle III. This improvement reflects that students have become more disciplined, responsible, and enthusiastic in participating in IPAS learning.

References

Arikunto, S. (2018). Prosedur penelitian: Suatu pendekatan praktik. Rineka Cipta.

Arikunto, S. (2020). Prosedur penelitian: Suatu pendekatan praktik. Rineka Cipta.

Aziz, A. L. (2017). Pengaruh motivasi intrinsik dan motivasi ekstrinsik terhadap prestasi belajar ekonomi bisnis kelas X di SMKN 4 Makassar. Pascasarjana Universitas Negeri Makassar, 87(1–2), 149–200.

Damayanti, R., & Fadhillah, N. (2020). Penerapan pembelajaran kooperatif dalam meningkatkan minat dan hasil belajar. Alfabeta.

Elpisah, E., Suarlin, Latang, & Pada, A. (2024). Indonesian higher education's entrepreneurial curriculum: A literature review. The Journal of Education Culture and Society, 2(2), 815–833. https://doi.org/10.15503/jecs2024.2.815.833

Erwina, Elpisah, & Syarifuddin. (2025). Influence of discipline, character, and creativity on noble behavior in P5 IPAS grade IV. International Journal of Social Welfare and Family Law, 1(2), 37–47. https://doi.org/10.62951/ijsw.v2i2.307

Hosnan, M. (2020). Pendekatan saintifik dan pembelajaran berbasis kompetensi. Ghalia Indonesia.

Hosnan, M. (2023). Strategi pembelajaran saintifik dalam Kurikulum Merdeka. Ghalia Indonesia.

Huda, M. (2020). Model-model pengajaran dan pembelajaran: Isu-isu metodis dan paradigmatis. Pustaka Pelajar.

Indrawati, R. (2022). Model pembelajaran kooperatif dalam Kurikulum Merdeka. Alfabeta.

Lestari, N., & Wardani, S. (2020). Pengembangan sikap belajar siswa sekolah dasar. Rajawali Pers.

Mulyasa, E. (2021a). Kompetensi guru dan transformasi pendidikan. Bumi Aksara.

Mulyasa, E. (2021b). Menjadi guru profesional: Strategi meningkatkan kualitas pembelajaran di era Merdeka Belajar. Remaja Rosdakarya.

Mulyasa, E. (2022). Pengelolaan KKG untuk peningkatan kompetensi guru. Kencana.

Mutiah, et al. (2021). Ilmu pengetahuan alam dan sosial untuk SD/MI. Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi.

MY, N. (2024). Junior leadership program: Empowering elementary students to develop 4C skills (critical thinking, creativity, communication, collaboration). Advances in Community Services Research, 2(2), 74–86. https://doi.org/10.60079/acsr.v2i2.333

Ningsih, F. (2020). Implementasi IPAS dalam Kurikulum Merdeka. Prenadamedia Group.

Ningsih, W., & Harahap, R. (2021). Pembelajaran berdiferensiasi di sekolah dasar. Deepublish.

Priyono, A. (2022). Model-model pembelajaran inovatif abad 21. Pustaka Pelajar.

Putri, S. M., & Kurniawan, R. (2023). Strategi penguatan karakter melalui model kooperatif. Literasi Nusantara.

Rusman. (2022). Model-model pembelajaran: Mengembangkan profesionalisme guru. Rajawali Pers.

Sani, R. A. (2022). Pembelajaran kolaboratif di sekolah dasar. Edukatif Press.

Siregar, E., & Nara, I. M. (2023). Model pembelajaran terpadu Kurikulum Merdeka. Rajawali Pers.

Suarlin, S., Elpisah, E., Nurwajidah, N., & MY, N. (2022). Pengaruh pola asuh orang tua terhadap hasil belajar siswa pada pembelajaran pendidikan kewarganegaraan di sekolah dasar. Jurnal, 7(4), 631–641. https://doi.org/10.29210/020211182

Sumartono, S., Puteri, W. A., & Hashemi Rafsanjani, W. A. (2025). Transforming education: The impact of artificial intelligence on learning and pedagogical practices. https://doi.org/10.25139/eckll.v12i1.9605

Sumartono. (2021). Keterampilan abad 21 dalam pendidikan dasar. Prenadamedia Group.

Suprijono, A. (2023). Cooperative learning: Teori dan aplikasi dalam Kurikulum Merdeka. Prenadamedia Group.

Suryadi, B. (2021). Kompetensi profesional guru di era digital. Andi Offset.

Suryani, M. (2020). Peran guru dalam merancang pembelajaran bermakna. Ombak.

Trianto. (2021). Model pembelajaran terpadu: Konsep, strategi, dan implementasinya dalam Kurikulum Merdeka. Kencana.

Wahyudin. (2024). Inovasi model pembelajaran abad 21. Rajagrafindo Persada.

Wahyuni, D. (2021). Strategi penguatan karakter dalam pembelajaran kolaboratif. Alfabeta.