

The Effectiveness of the Think-Pair-Share Learning Model on Cooperation and Learning Outcomes of Elementary School Students

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ABSTRACT

This study aims to test the application of the Think-Pair-Share (TPS) learning model in improving cooperation and learning outcomes of fifth-grade students in Natural and Social Sciences (IPAS) at SD Gugus 02 Tegalombo Pacitan. The study used a quantitative approach with a Non-equivalent Control Group Design, involving 61 students as a population, consisting of 30 students in the experimental class and 31 students in the control class. Data were collected through learning outcome tests and cooperation questionnaires that had been tested for validity (value > 0.361) and reliability (coefficient = 0.793), with analysis using Paired Sample T-Test and N-Gain. The results showed a significant increase between the pretest and posttest in both variables ($p < 0.05$), which indicates that the TPS model is effective in improving students' cognitive, affective, engagement, and motivational aspects. The N-Gain analysis also strengthens this finding, with a substantial increase in the posttest compared to the pretest, so that TPS is proven to be successful in significantly improving student cooperation and learning outcomes.

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INTRODUCTION

Natural and Social Sciences (IPAS) are crucial for the development of students' knowledge and skills. They require students to memorize and understand the material. According to the OECD Programme for International Student Assessment (PISA), students' ability to explain scientific phenomena, evaluate and design investigations, and use data for decision-making in everyday life are crucial skills. In the context of fifth-grade elementary school (SD) science lessons, effective learning can help students develop critical thinking, problem-solving, and science-based decision-making skills relevant to their real-life situations (OECD, 2025).

PISA 2022 data shows that although the average proportion of students achieving basic science proficiency in OECD countries is around 76%, Indonesia still faces significant challenges, with many students not yet reaching Level 2 of scientific literacy (OECD, 2023). Indonesian students struggle to understand science concepts and connect scientific knowledge to real-world situations. These challenges impact students' problem-solving skills, evidence-based decision-making, and ability to address global challenges, such as health, environmental, and technological issues (OECD, 2023).

Initial observations at one of the schools in the Tegalombo 02 cluster, specifically at Kemuning 2 Elementary School in Tegalombo District, indicate that fifth-grade students' science learning outcomes still need improvement. Based on observations, most students have difficulty understanding basic science concepts and applying their knowledge in everyday life. Science

learning in the classroom tends to rely on lectures, resulting in less student engagement in practical experiments or group discussions that could deepen their understanding. Furthermore, the lack of supporting resources such as science teaching aids and engaging learning materials also poses a challenge. Some students demonstrate enthusiasm in science lessons, but they require a more interactive and experiment-based approach to develop critical thinking and problem-solving skills. This decline in learning outcomes is influenced by several factors, including limited learning facilities, a lack of teacher training in science learning methods, and the use of conventional learning approaches that do not prioritize interactive approaches.

One learning model that teachers can use in the science learning process is the Think-Pair-Share (TPS) cooperative learning model. The Think-Pair-Share (TPS) learning model was chosen to improve students' scientific literacy because this method can encourage active student involvement in learning. TPS provides opportunities for students to think individually, discuss in pairs, and share their understanding with a group, which can deepen their understanding of scientific and social concepts. This approach also facilitates the development of critical thinking and problem-solving skills. The use of the TPS method has clear procedures to provide sufficient time for students to think, provide answers, and help each other. Through this model, it is hoped that students can work together, need each other, and depend on each other in small groups cooperatively (Octavia, 2020).

TPS is a cooperative learning model that involves three stages (Cooper et al., 2021; Kombat et al., 2023; Phan, 2021): First, students are given time to think individually about a topic or question. Second, students discuss with their partners to share ideas and deepen their understanding. Third, students share the results of their discussions with the entire class. This model encourages active student engagement, strengthens conceptual understanding through social interaction, and develops communication and collaboration skills (Lascano, 2021; Guenther & Abbott, 2024).

Students engage in discussions with their partners to share ideas and deepen their understanding of the nature of collaboration. Collaboration is the ability of individuals to work together with others to achieve common goals through interactions that foster mutual assistance, respect, and responsibility. For both schoolchildren and students, collaboration is a crucial social skill that supports interpersonal development, communication, and group problem-solving skills. Collaboration can impact student engagement in learning, social interaction skills, and success in completing group assignments and collaborative learning activities (Rahmawati & Nurhayati, 2020; Johnson & Johnson, 2021).

Building students' collaborative skills is one of the teacher's responsibilities as a facilitator in learning. Teachers need to provide opportunities for students to interact, discuss, and work in groups to foster togetherness, solidarity, and shared responsibility in achieving learning objectives. Apriono (2011) explains that collaboration is the ability of several students in a group to help, support, and actively participate in achieving shared goals effectively. Collaborating students can learn to respect the opinions of others, improve social communication, and build a sense of community within the school environment.

The selection of the Think-Pair-Share model and student collaboration was based on its advantages compared to other methods. The TPS model allows students to actively engage in the thinking and discussion process, which can improve their understanding of the material in depth. Furthermore, this method reduces students' anxiety in providing answers in front of the class,

because they first discuss with their partners, thus creating a more cooperative and less stressful environment. Increased learning motivation serves to encourage engagement and increase student interest in learning, which in turn improves academic performance and forms better study habits. The main advantage of this solution is the combination of active participation and emotional support that is not found in traditional learning methods, which are often passive and do not encourage student interaction.

Several studies have explored the impact of TPS on learning outcomes across various subjects and contexts. The following is a list of relevant previous research articles. Wuryandani & Herwin (2021) examined the effect of the TPS model on Civics learning outcomes in elementary school students. This study used a pre-test and post-test design with 31 students. The results showed that student learning outcomes improved significantly after implementing the TPS model, with the average score increasing from 65.3 before implementation to 80.6 after implementation, indicating a positive effect of TPS on student understanding of Civics material.

Fikra et al.'s (2024) research analyzed the effect of the TPS model on the learning outcomes of Class X students of the Accounting Expertise Program at SMK Negeri 1 Gowa. The experimental group using the TPS model showed significantly higher learning outcomes compared to the control group, with regression analysis showing that the TPS model explained 44.1% of the variance in learning outcomes. These findings support the effectiveness of the TPS model in improving student engagement and academic performance. In line with this, Samaila et al. (2024) integrated the TPS strategy into the flipped classroom model (TPS-FCM) to improve students' academic achievement and self-efficacy in Information and Communication Technology (ICT) education. This study involved 173 students, where the experimental group using the TPS-FCM showed significant improvements in both learning achievement and self-efficacy compared to the control group. These findings indicate that the TPS-FCM can improve classroom learning activities and student learning outcomes.

Research by Alsmadi et al. (2023) applied the TPS model in an English as a foreign language (EFL) writing class. This study highlighted that the TPS method, supported by technology, improved student engagement and their writing skills. This reinforces the idea that TPS encourages collaborative learning and critical thinking, which are crucial for improving academic outcomes across a range of subjects. Clark et al. (2025) investigated the effect of the TPS strategy on chemistry instruction in secondary schools. This study found that the TPS model significantly improved student achievement in chemistry by promoting active participation, problem-solving, and peer collaboration. These findings align with other studies showing that TPS can enhance learning by making it more interactive and engaging for students.

While previous research has demonstrated the effectiveness of the Think-Pair-Share (TPS) model in improving student collaboration, learning outcomes, and argumentation skills, most studies are still limited to learning contexts relevant to students' daily lives. Furthermore, although many studies have examined the influence of the TPS model on learning outcomes in various subjects, few have comprehensively examined the application of this model in the context of science and social studies learning at the elementary school level, particularly with an approach that incorporates science learning that is more connected to students' real lives. Further research is needed that explores the application of the TPS model, particularly in efforts to improve student collaboration and learning outcomes at various levels of education, particularly in elementary schools.

The urgency of this research is related to the implementation of the Think-Pair-Share (TPS) learning model in an effort to improve cooperation and learning outcomes of elementary school students, especially in science lessons in grade V. Research has shown the success of the TPS model in improving learning outcomes in other subjects such as Civics (Wuryandani & Herwin, 2021) and Accounting (Fikra et al., 2024), there are still few that specifically examine the effect of TPS in the context of science lessons in elementary schools. This study seeks to fill the research gap by analyzing how the Think-Pair-Share (TPS) type of cooperative learning model can be applied to improve students' science learning outcomes while developing their cooperation skills in elementary school learning. The TPS model is expected to be able to create a more interactive, collaborative, and student-centered learning atmosphere. This study aims to determine the effectiveness of the use of the Think Pair Share (TPS) cooperative learning model on elementary school students' cooperation and learning outcomes, as well as to determine the significant differences between cooperation and learning outcomes of students who use the Think Pair Share (TPS) cooperative learning model and students who use conventional learning in elementary schools. Thus, the results of this study are expected to provide a significant contribution to the development of interactive learning methods that are relevant to students' needs, as well as being a practical recommendation for teachers and educators in implementing innovative learning models in the classroom.

RESEARCH METHODS

This study uses a quantitative approach, the data collected is in the form of numbers that can be measured objectively to answer research questions related to cooperation and student learning outcomes in science learning. This approach allows researchers to measure changes that occur in these variables before and after treatment. In this study, a quasi-experimental design was used using a Non-equivalent control group design, where in this design the control group and the experimental group were given a pre-test. The treatment in the two groups was different, where the experimental group used the TPS learning model and the control group used the conventional learning model and ended with a final test for each group. The study was conducted on elementary school students in cluster 02 Tegalombo Pacitan.

Population refers to a generalization area consisting of objects or subjects that have certain quantities and characteristics determined by the researcher to be studied and from which conclusions are drawn (Sugiyono, 2016). The population in this study consisted of fifth grade elementary school students, in the experimental group consisting of SD Negeri 1 Kemuning, SD Negeri 2 Kemuning and SD Negeri 4 Kemuning with a total of 30 students consisting of 12 male students and 18 female students, then the control group consisting of SD Negeri 3 Kemuning, SD Negeri 1 Tegalombo and SD Negeri 3 Tegalombo with a total of 31 students consisting of 12 male students and 19 female students. The sampling technique used in this study is saturated sampling, which is a sampling technique in which all members of the population are used as samples. This technique is generally applied when the population size is relatively small, namely less than 30 people. Based on this consideration, because the population is relatively small, or less than 100 people, the sampling technique used in this study is total sampling, with a total of 61 students.

The data collection techniques used in this study include tests, observation, and documentation. The data sources for this study consist of primary and secondary data. Primary data were obtained directly from fifth-grade elementary school students who were the objects of

the study, collected through tests to measure students' learning outcomes in science lessons and their ability to work together in group activities. Secondary data were used to strengthen the research analysis, which included textbooks, scientific articles, and research reports related to education and student cooperation, which supported the theoretical study and theoretical foundation in the study.

The TPS learning model was chosen because it has the potential to increase student cooperation and their active involvement in the learning process. The grid of cooperation values is obtained from individual assessments resulting from cooperative situations based on group learning behaviors according to Deutsch (1949), including: discussion, orientation, togetherness (centeredness), involvement, communication, and attention, as well as attitudes of acceptance and rejection (in Huda, 2012). The data collection process was carried out using a learning outcome test (posttest) and a student cooperation questionnaire to measure student involvement and enthusiasm levels in participating in the applied learning. The learning outcome test measures the extent to which students can connect scientific concepts with their daily life situations.

In this study, the data obtained from the pretest and posttest will be analyzed using descriptive analysis to describe the characteristics of the data and statistical tests to test for significant differences between the results of the pretest and posttest students. The test used in this data analysis is the independent sample t test used to determine the differences in conditions before and after the treatment of cooperation and student learning outcomes, as well as the N-Gain test to see the level of effectiveness of the changes that occur. Researchers observed changes in student cooperation and learning outcomes before and after receiving the treatment, so that conclusions can be drawn regarding the effectiveness of the Think-Pair-Share (TPS) learning model in improving student cooperation and learning outcomes in science learning.

RESULTS AND DISCUSSION

Results

The results of the study indicate that student collaboration has demonstrated validity and reliability suitable for research analysis. The validity test on student collaboration was conducted involving 30 respondents, and the results showed a validity value of more than 0.361, which means the instrument is valid for measuring student collaboration in the Think-Pair-Share learning model. Meanwhile, the reliability test showed a reliability coefficient value of 0.793, which is above the accepted threshold, indicating that the instrument used has a high level of reliability and can be relied upon to produce consistent data.

Table 1 Description of Student Collaboration Categories

Conversion Value	Category	Pretest		Posttest	
		Control	Experiment	Control	Experiment
<61	Very bad	13	0	0	0
61-70	Bad	13	10	0	0
71-80	Enough	5	9	8	3
81-90	Good	0	8	13	9
91-100	Very good	0	3	10	18
TOTAL		31	30	31	30

Source: SPSS 26 for Windows

Student cooperation variable data obtained from the pretest and posttest in the control and experimental groups showed significant differences in student learning outcomes. In the pretest, student cooperation scores in the control group showed the majority were in the "Poor" (13 students) and "Very Poor" (13 students) categories, with only a few students in the "Fair" (5 students) category. On the other hand, the experimental group had a more even distribution of scores, with most students in the "Fair" (9 students) and "Good" (8 students) categories, as well as a few students in the "Poor" (10 students) category. In the posttest, the control group showed significant improvement, with more students falling into the "Good" (13 students) and "Very Good" (10 students) categories, although there were still students in the "Fair" (8 students) category. Meanwhile, the experimental group showed very good results, with most students falling into the "Very Good" (18 students) and "Good" (9 students) categories, indicating a positive influence of the Think-Pair-Share learning model.

Table 2 Statistical Description of Student Collaboration

	Pretest		Posttest	
	Control	Experiment	Control	Experiment
Mean	63.13	77.20	86.41	91.49
Std. Dev	6.85	8.68	6.77	7.08
Minimum	53.57	62.50	76.79	76.79
Maximum	76.79	91.07	98.21	100.00
Median	62.50	75.00	85.71	91.96

Source: SPSS 26 for Windows

Statistical description, in the pretest, the control group had an average value (mean) of 63.13 with a standard deviation of 6.85, while the experimental group had a higher average value, namely 77.20 with a standard deviation of 8.68. In the posttest, the control group showed an increase in the average value to 86.41 with a standard deviation of 6.77, while the experimental group had an even higher average, namely 91.49 with a standard deviation of 7.08. The minimum and maximum values in the pretest for the control group were 53.57 and 76.79, while in the experimental group the minimum value was 62.50 and the maximum was 91.07. In the posttest, the minimum value in the control group was 76.79, while the maximum reached 98.21, and the experimental group showed a minimum value of 76.79 and a maximum of 100.00. The median score for the pretest in the control group was 62.50, while in the experimental group it was 75.00, while in the posttest the median score for the control group was 85.71 and the experimental group was 91.96, indicating a significant improvement in both groups, with more prominent results in the experimental group.

Table 3 Statistical Description of Student Learning Outcomes

	Pretest		Posttest	
	Control	Experiment	Control	Experiment
Mean	46.45	56.40	80.90	86.80
Std. Dev	10.10	12.31	8.68	9.23
Minimum	28.00	36.00	64.00	68.00

Maximum	68.00	84.00	100.00	100.00
Median	48.00	56.00	80.00	86.00

Source: SPSS 26 for Windows

Statistical description of student learning outcomes in the pretest and posttest for the control and experimental groups. In the pretest, the control group had an average score of 46.45 with a standard deviation of 10.10, while the experimental group had an average of 56.40 with a standard deviation of 12.31. The minimum score in the pretest for the control group was 28.00 and a maximum of 68.00, while the experimental group had a minimum score of 36.00 and a maximum of 84.00. The median for the pretest of the control group was 48.00, while that of the experimental group was 56.00. In the posttest, both groups experienced significant improvement, with the control group having an average score of 80.90 and a standard deviation of 8.68, while the experimental group had an average of 86.80 with a standard deviation of 9.23. The minimum posttest score for the control group was 64.00 and the maximum was 100.00, while the experimental group had a minimum score of 68.00 and a maximum of 100.00. The median posttest score for the control group was 80.00, and for the experimental group was 86.00, indicating a greater improvement in the experimental group compared to the control group. Overall, both groups experienced an improvement in learning outcomes, with the experimental group showing higher results after treatment.

After conducting descriptive categorical and statistical analyses of student learning outcomes and collaboration, normality and homogeneity tests were conducted to ensure the validity of further analysis. The results of the normality test showed that most of the pretest and posttest data, for both student collaboration and learning outcomes, were normally distributed, as the significance values in the Kolmogorov-Smirnov and Shapiro-Wilk tests were greater than 0.05, indicating that the data were normally distributed. Although in some conditions, such as the experimental group in the pretest and posttest of student collaboration, there were slight deviations, the significance value approaching the 0.05 limit was still considered acceptable. For the homogeneity test, the results of the Levene test showed that the variance between the control and experimental groups in the pretest and posttest of student collaboration and learning outcomes was homogeneous, as the significance value was greater than 0.05, indicating that the variance between groups did not differ significantly. Thus, the data in both variables met the assumptions of normality (significance value > 0.05) and homogeneity (significance value > 0.05), so that they could be further analyzed using appropriate parametric statistical tests.

Table 4 Results of Independent Sample T-Test

Variables	Group	N	Mean	Std Deviation	Sig (2-tailed)
Student Collaboration Pretest	Control	31	63.1332	6.84712	0,000
	Experiment	30	77.2023	8.68162	
Student Collaboration Posttest	Control	31	86.4048	6.76998	0.006
	Experiment	30	91.4883	7.07546	
Learning Outcome Pretest	Control	31	46.4516	10.10227	0.001
	Experiment	30	56.4000	12.31091	
Posttest Learning Outcomes	Control	31	80.9032	8.68468	0.013

Experiment	30	86,8000	9.22665
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Source: SPSS 26 for Windows

The results of the Independent Sample T-Test showed significant differences between the control and experimental groups in the pretest and posttest for both variables, namely student cooperation and learning outcomes. In the pretest of student cooperation, the experimental group (30 respondents) had a higher average score than the control group (31 respondents), with a significant difference at 0.000 ($p < 0.05$), indicating that the experimental group was better in student cooperation before the treatment. Likewise, in the posttest of student cooperation, the experimental group showed a higher average with a significant value of 0.006 ($p < 0.05$), indicating that the experimental group experienced a better increase in student cooperation after the treatment. In the pretest of learning outcomes, the experimental group also showed a higher average score than the control group, with a significant value of 0.001 ($p < 0.05$), indicating that the experimental group was superior in learning outcomes before the treatment. A similar result was seen in the posttest of learning outcomes, where the experimental group had a higher average with a significant value of 0.013 ($p < 0.05$), indicating that the experimental group experienced better learning outcomes than the control group after the treatment. Overall, the t-test results showed that the learning model in the experimental group had a more positive impact on student collaboration and learning outcomes compared to the control group.

Table 5 Paired Sample T-Test Results

Variables	N	Mean	Std Deviation	Sig (2-tailed)
Student Cooperation Pretest - Student Cooperation Posttest	61	-18.85246	5.25204	0,000
Learning Outcome Pretest - Learning Outcome Posttest	61	-32.45902	7.93636	0,000

Source: SPSS 26 for Windows

The results of the Paired Sample T-Test showed a significant difference between the pretest and posttest for both variables, namely student cooperation and learning outcomes. In student cooperation, there was a significant increase between the pretest and posttest, with an average pretest score of 70.05 and a posttest score of 88.90, resulting in a mean difference of -18.85 and a significance of 0.000 ($p < 0.05$). This indicates that the applied learning model succeeded in significantly increasing student cooperation. The correlation between the pretest and posttest for student cooperation was also very high with a value of 0.886 ($p < 0.05$), indicating a very strong relationship between the two measurements. Likewise, in learning outcomes, there was a significant increase between the pretest and posttest, with an average pretest score of 51.34 and a posttest score of 83.80, resulting in a mean difference of -32.46 and a significance of 0.000 ($p < 0.05$). These results indicate that the treatment given to the experimental group had a positive effect on improving student learning outcomes. The correlation between pretest and posttest learning outcomes was also significant at 0.761 ($p < 0.05$), indicating a fairly strong relationship between the two measurements. Overall, the t-test results showed a very significant increase in

student cooperation and learning outcomes after the treatment, indicating the effectiveness of the applied learning model.

Table 6 Results of the N-Gain Test of Student Cooperation

	Pretest		Posttest	
	Mean	Std Dev	Mean	Std Dev
N Gain	0.65	0.13	0.70	0.22
N Gain Percent	65.45	13.22	69.63	21.76

Source: SPSS 26 for Windows

Table 6 shows the results of the N-Gain test of student collaboration at the pretest and posttest stages. Based on the table, the average N-Gain value in the pretest was 0.65 with a standard deviation of 0.13, while in the posttest it increased to 0.70 with a standard deviation of 0.22. If expressed as a percentage, the average N-Gain value in the pretest was 65.45% with a standard deviation of 13.22, then increased in the posttest to 69.63% with a standard deviation of 21.76.

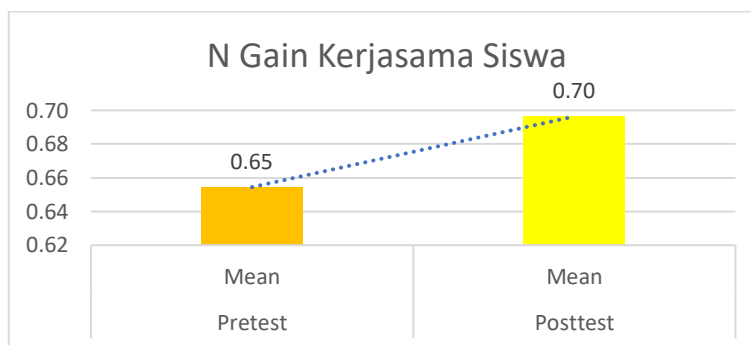


Figure 1 Graph N – Gain of Student Cooperation

This increase is also evident in the graph, where the average N-Gain score for student collaboration increased from 0.65 in the pretest to 0.70 in the posttest. This increase indicates an increase in student collaboration after the implementation of the treatment or learning model. However, the increase in the standard deviation in the posttest indicates that the variation in collaboration abilities among students is more diverse than in the pretest. Thus, it can be concluded that the implementation of the learning model has a positive effect on improving student collaboration, although the level of improvement is moderate and not evenly distributed across all students.

Table 7 Results of the N-Gain Test of Student Learning Outcomes

	Pretest		Posttest	
	Mean	Std Dev	Mean	Std Dev
N Gain	0.65	0.14	0.73	0.17
N Gain Percent	65.35	13.65	72.62	17.07

Source: SPSS 26 for Windows

Table 7 shows the results of the N-Gain test of student learning outcomes at the pretest and posttest stages. Based on the table, the average N-Gain value in the pretest was 0.65 with a

standard deviation of 0.14, while in the posttest it increased to 0.73 with a standard deviation of 0.17. If expressed as a percentage, the average N-Gain value in the pretest was 65.35% with a standard deviation of 13.65, then increased in the posttest to 72.62% with a standard deviation of 17.07.

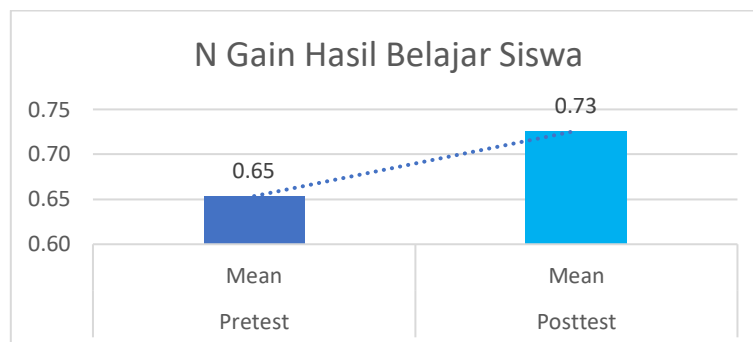


Figure 2 Graph N – Gain of Student Learning Outcomes

This improvement is also supported by the graph, which shows an increase in the average N-Gain value of student learning outcomes from 0.65 in the pretest to 0.73 in the posttest. This increase indicates that the implementation of the learning model has a positive impact on improving student learning outcomes. In addition, the standard deviation in the posttest is slightly higher than the pretest, indicating that there is variation in learning outcomes between students after the treatment, although overall learning outcomes have improved. Thus, it can be concluded that the implemented learning model is effective in improving student learning outcomes, with N-Gain achievements in the medium to high category.

DISCUSSION

The results of this study indicate that the implementation of the Think-Pair-Share (TPS) learning model significantly improves student collaboration and learning outcomes in Natural and Social Sciences (IPAS) in elementary schools. As a preliminary illustration, the student collaboration measurement instrument demonstrated validity that met the standards, with a validity value of more than 0.361 and a reliability coefficient of 0.793, indicating that the instrument is reliable in measuring the intended variables. These results are consistent with previous findings, which state that valid and reliable instruments are crucial in ensuring the quality of data collection in educational research (Sekaran, 2006). The pretest and posttest results showed significant differences in the categories of student collaboration in the experimental group compared to the control group. The experimental group showed a better distribution of scores, with the majority of students in the "Very Good" and "Good" categories after treatment. This is in line with the theory that cooperative learning models such as TPS can increase student engagement, as students have the opportunity to think individually, discuss in pairs, and share ideas in groups (Cooper et al., 2021). The decrease in the number of students in the "Poor" and "Very Poor" categories in the experimental group indicates that the TPS model encourages improvements in the quality of interactions between students.

The statistical table depicting the mean differences between the pretest and posttest scores of the two groups also supports this finding. On the posttest, the experimental group recorded a higher mean score than the control group, with significant differences between the two groups on both variables (cooperation and learning outcomes). Previous research by Wuryandani and Herwin

(2021) also showed that the TPS model significantly improves learning outcomes, primarily because this model strengthens student understanding through active interaction. Furthermore, a t-test analysis showed that both groups experienced significant improvements in learning outcomes after the treatment. These results align with research by Fikra et al. (2024), which concluded that the TPS model can improve student learning outcomes by facilitating more effective communication among students, which in turn helps them understand the material better. The mean learning outcomes of students in the experimental group increased more sharply than those in the control group, indicating that the social interaction facilitated by the TPS model plays a crucial role in a more effective learning process.

The results of the Paired Sample T-Test also confirmed a significant increase between the pretest and posttest in both variables, student cooperation and learning outcomes, with a very low significance value ($p < 0.05$). This strengthens the argument that the TPS model not only improves students' cognitive aspects, but also their affective aspects, such as engagement and motivation in working together. Thus, the results of the N-Gain test indicate that the TPS model succeeded in improving student cooperation and learning outcomes substantially, with a higher increase in the N-Gain percentage in the posttest than in the pretest. This increase demonstrates the effectiveness of the learning model in significantly changing student learning outcomes, which is in line with research by Clark et al. (2025), which found that TPS can improve classroom learning through active collaboration between students. The results of this study indicate that the implementation of the TPS model in fifth grade elementary school can improve both student cooperation and their learning outcomes, especially in the context of science learning. This model not only improves conceptual understanding but also creates a more cooperative and interactive learning environment. It is recommended that learning models such as TPS be used more widely in elementary education to increase student engagement and academic achievement.

CONCLUSION

The implementation of the Think-Pair-Share (TPS) model successfully improved student collaboration and learning outcomes in fifth-grade science lessons, demonstrating the method's effectiveness in strengthening conceptual understanding and collaboration among students. However, this study has limitations, such as the sample size being limited to a few schools in one area, which limits the generalizability of the findings. Furthermore, external factors such as limited facilities and teacher support for the TPS model have not been fully accounted for. It is recommended to test this model in various contexts and expand its application to see broader impacts. The authors would like to thank Prof. Dr. Yoppy Wahyu Purnomo, S.Pd., M.Pd., for his input and suggestions on the initial draft of this study, which enabled this article to be further refined.

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