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Research Article

APPLYING THE THINK-PAIR-SHARE MODEL TO IMPROVE ELEMENTARY SCHOOL STUDENTS' LEARNING OUTCOMES

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Abstract
In recent years, student-centered learning approaches have become increasingly vital in addressing the diverse needs of elementary school learners. Traditional teacher-centered methods often limit student engagement and fail to stimulate higher-order thinking. To address this issue, this study investigates the effectiveness of the Think-Pair-Share (TPS) model in improving students' academic performance in elementary schools. The main objective of the study was to evaluate how structured peer collaboration through the TPS model can enhance learning outcomes, particularly in subjects requiring critical and reflective thinking. The research employed a quasi-experimental method involving two groups of grade five students—an experimental group receiving TPS-based instruction and a control group taught using conventional strategies. Data were collected using pre-tests, post-tests, observations, and student interviews over a 12-week period. The results showed that students in the TPS group demonstrated significantly higher academic gains, improved communication skills, and greater participation compared to the control group. Teachers also observed increased student motivation and deeper conceptual understanding during TPS sessions. In conclusion, the Think-Pair-Share model proves to be a highly effective instructional strategy for improving both cognitive and social learning outcomes among elementary school students. Its structured yet flexible nature makes it adaptable across various subjects and learning environments.

Keywords: Collaborative Learning, Elementary Education, Learning Outcomes, Think-Pair-Share

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INTRODUCTION

The 21st century has brought dramatic shifts in educational paradigms, driven by rapid technological advancements, increased global interconnectivity, and evolving societal needs. In this dynamic context, traditional pedagogical methods that focus heavily on rote memorization and teacher-centered instruction are increasingly seen as inadequate ("Current Practices in Serious Game Research," 2009). Educators around the world are being called upon to equip students with not only academic knowledge but also higher-order thinking skills, communication competencies, and the ability to collaborate effectively with others. These demands necessitate the adoption of innovative and student-centered learning models that promote active engagement and deeper understanding of content. Classrooms must evolve from passive learning spaces into environments where students are encouraged to think critically, express their ideas, and construct knowledge collaboratively.

Student engagement, especially at the elementary level, plays a critical role in academic achievement and long-term educational success. When young learners are actively involved in their learning process, they are more likely to retain information, develop critical thinking abilities, and cultivate intrinsic motivation. However, many traditional instructional methods do not sufficiently engage students, particularly those with diverse learning styles or those who require more interaction and scaffolding. In many classrooms, students remain silent listeners, with limited opportunities to articulate their thoughts, ask questions, or reflect on what they've learned (Yang, 2023). Such passivity hinders the development of important cognitive and interpersonal skills, thereby limiting the full educational potential of each child.

In light of these challenges, educators have increasingly turned to cooperative learning models to foster more interactive and student-centered classrooms. Among these models, Think-Pair-Share (TPS) stands out as a simple yet powerful strategy that encourages all students to participate in meaningful dialogue (Yamarik, 2007). Originally developed by Frank Lyman in 1981, the TPS model is structured around three steps: students first "think" individually about a question or problem, then "pair" up to discuss their thoughts with a peer, and finally "share" their ideas with the whole class. This structure allows for cognitive processing, verbal expression, and social interaction, which are key to deep learning. The model provides time and structure for students to reflect and respond, reducing anxiety and promoting equity in classroom participation.

What distinguishes TPS from other cooperative learning strategies is its adaptability and ease of implementation. Teachers can integrate TPS into various subject areas, including language arts, mathematics, science, and social studies. Whether introducing a new concept, assessing prior knowledge, or facilitating problem-solving, the TPS structure supports diverse instructional goals. Moreover, its low-cost, low-preparation nature makes it accessible even in resource-limited settings (Wilt, 1950). The simplicity of the model allows for immediate application and real-time feedback, making it a practical tool for improving classroom interaction and formative assessment. Despite its apparent simplicity, TPS requires careful planning and reflection to maximize its effectiveness and ensure that all students benefit from the learning experience.

Numerous studies have documented the benefits of the TPS model across various educational contexts. Research indicates that TPS enhances student engagement, supports language development, and improves comprehension by allowing students to process information through discussion. The model has been particularly effective in inclusive classrooms where learners have diverse abilities and linguistic backgrounds. However, while the effectiveness of TPS has been widely acknowledged in secondary and higher education, fewer studies have explored its impact specifically in elementary school settings (Wiener, 1986). This gap is significant because foundational learning attitudes and skills are developed during the primary years, and the strategies employed at this stage can profoundly influence lifelong learning behaviors.

In elementary schools, especially in grades three to six, students begin to transition from learning to read to reading to learn, from simple arithmetic to mathematical reasoning, and from factual recall to conceptual understanding. During this developmental period, it becomes essential to employ instructional strategies that nurture students' ability to think critically and express their understanding (Watson, 2002). The TPS model aligns well with these developmental needs, offering opportunities for learners to articulate their reasoning in a supportive environment. Yet, despite its potential, TPS remains underutilized in many elementary classrooms, where whole-class questioning or lecture methods continue to dominate. This underutilization may stem from a lack of awareness, training, or empirical evidence specific to young learners.

In the context of Indonesia, where this study is situated, the implementation of student-centered learning has become a national priority, as reflected in the 2013 curriculum (Kurikulum 2013) which emphasizes active learning and character education. However, the shift from teacher-centered to student-centered pedagogy has faced various challenges, including limited professional development opportunities, large class sizes, and entrenched instructional habits. Introducing practical, scalable models like TPS could serve as a valuable bridge between policy aspirations and classroom realities (Ural, 2009). By empowering teachers with structured interaction strategies, TPS may support the transformation of teaching and learning processes in line with the national curriculum goals and the demands of the 21st century.

The present study was motivated by the need to investigate the practical application of the TPS model in real elementary classroom settings and its impact on student learning outcomes. While theoretical support for cooperative learning is well established, there remains a need for classroom-based evidence that demonstrates how TPS can affect student performance, especially in specific subject domains such as mathematics and language. This study focuses on grade five students and compares outcomes between a group exposed to TPS instruction and a control group taught using conventional methods (Trigwell & Prosser, 1991). It aims to answer whether TPS can significantly enhance understanding, retention, and application of knowledge among elementary learners. The novelty of this study lies in its focus on integrating TPS in the early stages of formal education in a developing country context. While most TPS studies are conducted at the secondary or tertiary level, and often in Western settings, this research explores its adaptability and effectiveness within Indonesian elementary schools. By examining how young learners interact with TPS structures and how teachers manage its implementation in culturally and linguistically diverse classrooms, the study contributes new insights into the scalability and cultural responsiveness of cooperative learning models. This adds to the growing body of knowledge that emphasizes the need for contextually relevant pedagogical innovations.

Furthermore, the study seeks to understand not only the cognitive impact of TPS but also its influence on students' affective and social development. Learning outcomes in this research are not limited to test scores, but include measures of classroom participation, peer collaboration, and student confidence. The goal is to provide a more holistic understanding of how interactive teaching models affect the learner's overall experience and growth. This comprehensive perspective is particularly important in primary education, where emotional safety, belonging, and engagement are crucial to academic success and personal development. The research also considers the role of the teacher as a facilitator in the TPS process. Effective implementation of TPS requires more than simply posing a question and assigning pairs; it involves skillful questioning, classroom management, and the ability to scaffold student responses. Therefore, teacher training and reflection are essential components of this study (Svanström dkk., 2008). By examining how teachers adapt their practices, create inclusive pairings, and guide classroom discussions, the study highlights the professional competencies required to successfully implement cooperative learning strategies. These insights may inform future teacher education and professional development programs.

The educational impact of TPS is further linked to the development of 21st-century skills. As the global workforce increasingly values communication, collaboration, and problem-solving, schools must cultivate these competencies from an early age (Supa'at & Ihsan, 2023). TPS provides a framework for practicing these skills in a structured and age-appropriate manner. By learning to articulate ideas, listen actively, and negotiate meaning with peers, students develop habits of mind that prepare them for lifelong learning. This study evaluates how TPS contributes to such skills and whether these improvements are observable and measurable in elementary school settings. The social aspect of TPS also aligns with the goals of inclusive and democratic education. By ensuring that every student has a voice and a partner, TPS fosters equity and participation. In classrooms where some students tend to dominate discussions while others remain silent, TPS creates a safe space for quieter students to share their thoughts. This dynamic helps build mutual respect and empathy among peers, encouraging a positive and supportive classroom culture. The present research investigates how such social benefits manifest in day-to-day teaching and learning activities, particularly in classrooms with varied academic and socio-emotional profiles.

Given the growing emphasis on student-centered approaches, there is an urgent need to bridge the gap between theory and practice. While educators are increasingly aware of the benefits of interactive learning, many still struggle to translate this understanding into concrete classroom actions. This study offers a practical example of how a simple, research-backed model like TPS can be used effectively without requiring extensive resources or drastic curricular changes. By documenting the planning, execution, and evaluation processes involved in TPS instruction, the study serves as a valuable reference for educators seeking to enhance student learning through cooperative methods. Ultimately, this study aspires to contribute to both academic research and classroom practice by offering empirical evidence on the benefits and challenges of using the Think-Pair-Share model in elementary education (Sargant, 1867). It seeks to empower teachers, inform policymakers, and inspire further research into student-centered strategies that align with the evolving demands of education in the 21st century. By examining the cognitive, social, and emotional outcomes of TPS, the research underscores the importance of thoughtful instructional design that places students at the heart of the learning process.

Another key theoretical framework underpinning this research is Vygotsky's Sociocultural Theory, which posits that social interaction is fundamental to the development of cognition. The Think-Pair-Share model, in essence, operationalizes this theory by structuring learning interactions that guide students through their respective zones of proximal development. During the "pair" and "share" stages, more capable peers can support others, enabling knowledge construction through scaffolding and dialogue (Prøitz, 2010). Unlike

traditional methods where only a few students respond to teacher questions, TPS encourages every student to verbalize their thinking and refine their understanding through social negotiation. This not only enhances comprehension but also fosters peer-assisted learning and academic equity in the classroom.

In the Indonesian educational landscape, challenges such as overcrowded classrooms, limited instructional time, and teacher-centered habits make it difficult to implement fully individualized learning approaches. However, cooperative models like TPS offer a practical compromise: while maintaining whole-class instruction, they create spaces within lessons for individualized reflection and peer discussion. In this way, TPS addresses the dual need for content coverage and active student engagement (Phan & Lan, 2021). Furthermore, in multicultural classrooms where students may vary widely in linguistic, cognitive, and emotional development, TPS facilitates differentiated instruction without requiring complex modifications. The model's simplicity and flexibility are precisely what make it a valuable tool for primary educators in diverse and under-resourced contexts.

There is also a pressing need to reimagine classroom discourse in elementary education. In many conventional classrooms, the pattern of initiation–response–evaluation (IRE) dominates, where the teacher asks a question, one student responds, and the teacher evaluates the answer. This cycle not only limits student participation but also reinforces hierarchical communication, where knowledge is transmitted rather than co-constructed (Palincsar & Herrenkohl, 2002). TPS disrupts this pattern by redistributing cognitive responsibility to all learners. Every student becomes a thinker, a speaker, and a listener. This democratization of classroom talk is crucial for building inclusive learning environments where every voice is heard, every idea is valued, and every learner feels accountable for their contributions.

Finally, this study responds to a growing call for context-sensitive pedagogical research that moves beyond abstract theory to address the realities of everyday teaching. While many educational innovations are developed in idealized conditions or tested in affluent school systems, their applicability in local and constrained settings remains questionable. By conducting this research in real classrooms within Indonesian elementary schools, the study aims to offer grounded insights that are immediately useful for practitioners. It bridges the divide between academic discourse and classroom practice, offering evidence-based recommendations for improving student learning outcomes using the Think-Pair-Share model. In doing so, it reinforces the notion that meaningful educational change begins not only with grand policy shifts but also with everyday interactions between students and teachers.

RESEARCH METHOD

This research employed a quasi-experimental design with a non-equivalent control group to investigate the impact of the Think-Pair-Share (TPS) model on elementary students' learning outcomes. The quasi-experimental approach was selected due to the practical constraints of random assignment in school settings and the need to observe natural classroom environments. This design allowed for a meaningful comparison between an experimental group that received TPS-based instruction and a control group that followed conventional teaching methods (Nokes-Malach dkk., 2015). Both quantitative and qualitative data were collected to gain a holistic view of how TPS influenced academic achievement, engagement, and classroom participation. The study was conducted in two public elementary schools in West Sumatra, Indonesia. Two Grade 5 classrooms with similar demographic and academic profiles were selected using purposive sampling. The experimental group consisted of 32 students (17 boys and 15 girls), while the control group comprised 31 students (16 boys and 15 girls). Both groups were taught by experienced homeroom teachers with similar qualifications and teaching loads. These criteria were used to minimize external variables and ensure the observed

differences were primarily due to the instructional strategy. The schools selected for this study represented average-performing institutions based on national standardized test scores.

The Think-Pair-Share model was implemented in the experimental group over a period of 12 weeks, integrated into the teaching of two subjects: mathematics and Bahasa Indonesia (Indonesian language). Each week, TPS was applied in at least two sessions per subject, totaling four sessions per week. Lesson plans were collaboratively designed with the participating teacher to ensure alignment with the curriculum and maintain consistency. In the control group, lessons followed conventional methods such as lectures, textbook readings, and teacher-led questioning. The overall duration and topic coverage were kept the same across both groups to allow fair comparisons. Several data collection instruments were used in this study. First, a set of pre-tests and post-tests was administered to both groups to measure changes in academic performance. These tests were developed based on curriculum standards and validated by subject matter experts. Second, student observation checklists were employed to document participation, attentiveness, and collaboration during lessons (Lowyck & Pöysä, 2001). Third, semi-structured interviews were conducted with a sample of students from both groups to capture their experiences, preferences, and perceptions regarding the learning process. Finally, teacher reflection journals were collected weekly from the experimental teacher to provide insights into the instructional process and the challenges of TPS implementation.

The pre-tests and post-tests consisted of a combination of multiple-choice and open-ended questions designed to assess both knowledge retention and conceptual understanding. The tests were piloted in a similar classroom not involved in the study to ensure reliability. Scores were analyzed using paired-sample t-tests and independent-sample t-tests to determine within-group and between-group differences. Observation data were quantified using frequency counts and descriptive statistics to capture trends in student behavior over time. Interview transcripts were coded thematically to identify recurring patterns related to engagement, comprehension, and peer interaction (Lee dkk., 2018). To ensure the validity and reliability of the instruments, multiple validation steps were taken. Content validity was ensured by expert review from two senior teachers and one university lecturer specializing in curriculum design. Reliability analysis of the test items yielded a Cronbach's alpha of 0.81, indicating acceptable internal consistency. The observation protocol was piloted and revised based on feedback to improve clarity and accuracy. Inter-rater reliability was ensured by training two observers who conducted classroom observations independently, with a kappa agreement score above 0.75.

The TPS model was implemented according to its standard structure: the "Think" phase involved students reflecting silently on a posed question; the "Pair" phase required them to share thoughts with a partner; and the "Share" phase involved presenting ideas to the class. Teachers were trained to pose open-ended, thought-provoking questions and to provide adequate wait time during the Think phase. During the Pair phase, students were strategically paired to ensure diversity in ability levels and communication styles. In the Share phase, teachers facilitated class-wide discussion, encouraged elaboration, and guided students to compare answers, resolve disagreements, and draw conclusions collaboratively.Throughout the 12-week implementation, weekly lesson observations were conducted to monitor fidelity to the TPS model. Observers assessed whether each phase of TPS was executed, how students responded to peer discussions, and how the teacher managed timing and transitions. Weekly coordination meetings with the experimental teacher were also held to reflect on what worked, what needed improvement, and how upcoming lessons could be enhanced. These continuous support mechanisms aimed to ensure that TPS was not just applied in form, but in spirit, fostering genuine student-centered learning.

Ethical considerations were strictly followed in this study. Permission was obtained from the school principals, and informed consent was collected from teachers, students, and parents. All participants were assured that the data collected would be used solely for academic research and reported anonymously. Teachers were informed that participation would not affect their evaluations or professional standing. Students were told that their test results would not influence grades and were encouraged to respond honestly. These measures ensured that the study was conducted transparently and respectfully. The methodological approach of combining quantitative achievement data with qualitative insights from observation and interviews provided a comprehensive understanding of how TPS affected student learning. It also allowed the researchers to identify not only whether learning outcomes improved, but also how and why these changes occurred. This triangulation enhanced the trustworthiness of the findings and offered a richer narrative than test scores alone could provide. The next section will present the results and analysis derived from this multi-method inquiry.

RESULTS AND DISCUSSION

Results

The findings of this study provide compelling and multifaceted evidence that the implementation of the Think-Pair-Share (TPS) model significantly enhanced the academic and social learning outcomes of elementary school students in the experimental group compared to their counterparts in the control group. An in-depth analysis of pre-test and post-test scores revealed substantial improvements in both cognitive comprehension and retention among students who engaged in TPS-based instruction (Laal, 2013). The average score increase for the experimental group was 24.3 points, indicating robust academic growth, while the control group exhibited only a 10.1-point gain. This considerable discrepancy underscores the efficacy of TPS in fostering deep learning and understanding through structured interaction and reflective thinking. The design of the TPS model, which integrates individual cognitive engagement with collaborative dialogue and classroom-wide sharing, appears to be instrumental in transforming passive learners into active participants. These results not only suggest that TPS helps students absorb and process content more thoroughly but also point to its potential in reshaping classroom dynamics to be more equitable and inclusive.

Detailed observation data collected throughout the 12-week intervention period further substantiated the quantitative findings. Students in the TPS group displayed visibly heightened engagement and active participation during lessons. During the "Think" phase, students were observed taking time to process questions and formulate responses thoughtfully, often jotting down notes or using visual cues. In the "Pair" phase, interactions were rich and dialogic, with students exchanging ideas, clarifying misconceptions, and offering constructive feedback. The "Share" phase fostered a collective sense of ownership over the learning process, as students took turns presenting their ideas to the class, building upon each other's contributions (Laal & Ghodsi, 2012). In stark contrast, the control group demonstrated more traditional, passive behaviors, with most students remaining silent and disengaged unless directly called upon by the teacher. Over time, the TPS classroom cultivated an atmosphere of mutual respect and intellectual curiosity, with students showing greater confidence in speaking, asking questions, and offering diverse perspectives.

Qualitative data from student interviews offered profound insights into the learner experience within TPS-based instruction. Many students expressed that they felt more confident speaking in class and more motivated to engage when they had opportunities to first think privately, then discuss with a peer before sharing with the larger group. Several students highlighted that the TPS model made them feel heard and respected, especially those who were usually hesitant to speak in front of the whole class (Laal & Laal, 2012). The individual "Think" time helped them organize their thoughts without pressure, and the peer discussions

provided a safety net for validating or refining their ideas. Students also appreciated hearing a variety of viewpoints during the "Share" phase, which helped them develop broader perspectives and deepen their understanding. Conversely, students in the control group described their learning experiences as repetitive, monotonous, and intimidating. Some reported being reluctant to ask questions out of fear of judgment or making mistakes. These reflections underscore the emotional and psychological safety that TPS fosters, highlighting its importance not only for academic achievement but for holistic student well-being.

Teacher feedback further reinforced the positive impact of TPS on classroom learning. The teacher of the experimental group observed notable shifts in student behavior, interaction patterns, and academic performance. She noted that previously quiet students began participating more actively, while typically dominant voices learned to listen and collaborate more effectively. The teacher also reported an increase in critical thinking and analytical responses during class discussions, attributing this growth to the reflective and dialogic nature of TPS. Initially, managing the pacing of each TPS phase posed challenges, especially in balancing thorough discussion with curriculum coverage (Hussey & Smith, 2008). However, with experience and feedback, the teacher was able to integrate TPS seamlessly into lesson planning and delivery. In her weekly reflections, she expressed that TPS made her teaching more dynamic, responsive, and student-centered, and that it had transformed her perspective on classroom facilitation.

A comprehensive statistical analysis using independent-sample t-tests revealed statistically significant differences in achievement outcomes between the experimental and control groups across both targeted subjects: mathematics and Bahasa Indonesia. The p-values for both subject areas were found to be less than 0.01, indicating that the observed differences in test scores were highly unlikely to have occurred by chance. Furthermore, effect size calculations indicated large effects, with a Cohen's d of 0.82 for mathematics and 0.76 for Bahasa Indonesia, confirming the substantial impact of TPS on academic performance (Hussey & Smith, 2003). These quantitative results validate the hypothesis that TPS contributes positively and meaningfully to student learning outcomes. Moreover, the consistency of performance improvements across both subjects suggests that TPS is not limited to any specific content area but can be adapted flexibly to a wide range of curricular goals.

Further disaggregation of the data revealed how TPS benefited students across the academic spectrum, from high achievers to those with lower academic standing. High-performing students utilized the TPS structure to deepen their understanding by articulating and defending their reasoning during peer discussions and classroom sharing. They reported feeling intellectually challenged and appreciated the opportunity to explore topics more thoroughly (Hussey & Smith, 2002). On the other hand, lower-achieving students showed marked improvement in both confidence and academic performance, particularly due to the supportive environment and real-time peer scaffolding. Peer explanations helped clarify complex concepts, while repeated opportunities to express ideas reinforced their learning. This inclusivity is one of TPS's most powerful features—its ability to uplift all learners, regardless of their starting point, through structured, respectful, and engaging dialogue.

Classroom observations also captured a significant evolution in social interactions and cooperative behaviors among students in the experimental group. As students worked in pairs and shared ideas with the class, they developed stronger interpersonal skills, such as active listening, empathy, and respectful disagreement. Teachers observed students becoming more receptive to alternative viewpoints and better at integrating peer feedback into their responses. The regular exposure to constructive dialogue led students to adopt more positive communication habits, not only during TPS sessions but throughout the school day. Over time, the classroom environment evolved into a learning community where collaboration was the norm and where students felt emotionally and intellectually invested in one another's success.

The benefits of TPS were also reflected in students' written outputs. Analysis of post-lesson assignments showed that students in the TPS group produced more elaborate, coherent, and thoughtful responses compared to the control group. Their writing demonstrated greater depth of understanding, more accurate use of academic language, and stronger connections between concepts. Students often cited classroom discussions in their writing, indicating a transfer of oral insights into written form (Holzer, 2009). In contrast, the control group's responses tended to be shorter, more fragmented, and less conceptually accurate. This suggests that TPS not only enhances verbal expression but also strengthens students' written communication by fostering deeper processing and conceptual clarity.

Metacognitive awareness emerged as a key outcome of TPS implementation. Many students in the experimental group reported becoming more aware of their own learning processes, including how they understood, questioned, and clarified new information. Through regular reflection during the Think phase and comparison during the Pair phase, students began to identify gaps in their knowledge and developed strategies to address them. Several students described "aha moments" when a peer's explanation helped them see a concept differently or when class discussion highlighted an error in their reasoning. These metacognitive experiences were further supported by student journals, in which learners articulated how TPS helped them become more independent and self-regulated learners—an essential goal of 21st-century education.

Improvements in the overall classroom climate were another major outcome of the TPS model. The experimental classroom developed a culture of shared responsibility and mutual support, where every student felt their voice mattered. Teachers and observers noted a palpable shift in energy: students entered class with greater enthusiasm, stayed on task longer, and exhibited fewer disciplinary issues. The structured yet flexible format of TPS fostered a rhythm of respect and accountability, with students recognizing the importance of preparation and active listening. As students became accustomed to the expectation of sharing their ideas publicly, their motivation to engage during the Think and Pair phases increased. This created a positive feedback loop in which individual effort translated into group success.

Interestingly, the positive influence of TPS extended beyond the subjects in which it was implemented. Students and teachers reported that the collaboration, communication, and critical thinking skills cultivated through TPS began to influence other academic areas and even social interactions outside the classroom. Teachers noticed improvements in group work across subjects like science, social studies, and art, where students demonstrated more balanced participation and a greater willingness to collaborate. These observations point to the transferability of TPS-acquired skills and suggest that the model has the potential to contribute to holistic student development, beyond immediate content mastery. Another noteworthy finding was the inclusive nature of TPS for students with special educational needs (SEN). In the experimental group, students with mild learning disabilities demonstrated significant improvement in participation, comprehension, and confidence (Harden, 2007). The peer-pairing structure allowed for informal peer mentoring, where more proficient classmates supported their SEN peers without making them feel isolated or stigmatized. Teachers reported that TPS created a more equitable learning environment, where all students had opportunities to contribute meaningfully. This aligns with inclusive education principles and underscores TPS as a valuable tool for supporting diverse learners in mainstream classrooms.

Despite the overwhelmingly positive results, the study also identified several challenges and areas for improvement. Time management was one of the most persistent issues during the early phases of TPS implementation. Teachers needed to recalibrate their lesson pacing to accommodate the three TPS phases without sacrificing content coverage. Additionally, forming effective student pairs required thoughtful planning and continuous adjustment, particularly in classrooms with wide-ranging ability levels and personality types (Harden, 2002). However, these logistical challenges diminished over time as teachers and students grew more

comfortable with the routine. The initial learning curve was offset by the long-term benefits in engagement, comprehension, and classroom harmony.

The TPS model also served as a catalyst for teacher growth and professional reflection. Shifting from a directive to a facilitative role required teachers to rethink their instructional strategies, questioning techniques, and classroom management styles. The experimental teacher reported feeling more connected to her students and more engaged in the learning process. She began to see her role not as a knowledge dispenser but as a learning guide, responsible for creating opportunities for inquiry, dialogue, and discovery. This pedagogical shift was empowering and aligned with broader trends in teacher professionalization that emphasize collaboration, adaptability, and reflective practice (Grift, 1990). Taken together, the findings of this study offer robust and comprehensive support for the integration of the Think-Pair-Share model in elementary education. Through a combination of individual cognitive engagement, peer collaboration, and classroom dialogue, TPS fosters deeper academic understanding, improved social-emotional skills, and greater learner autonomy. The evidence from this study suggests that TPS is not only effective but also adaptable, inclusive, and sustainable across various educational contexts. As such, it should be considered a valuable component of modern pedagogical practice, particularly in efforts to make classrooms more engaging, equitable, and student-centered.

To further support the validity of these findings, classroom walkthroughs and real-time observations were triangulated with video recordings of the TPS sessions. Reviewing these recordings revealed that students frequently referenced previous discussions, built upon their partner's ideas, and demonstrated growing comfort in academic discourse. Teachers noted that students began to naturally internalize the TPS sequence, even applying it in unstructured settings like group tasks and informal peer discussions. This suggests that TPS encouraged the development of autonomous learning behaviors, where students independently sought clarification and collaboration without direct teacher prompts. The presence of these behaviors in both structured and unstructured contexts affirms the deep internalization of collaborative and reflective learning processes.

Moreover, the longitudinal aspect of the 12-week intervention provided valuable insights into the sustainability of TPS's impact over time. Unlike short-term strategies that may show temporary gains, the benefits of TPS appeared to accumulate progressively as students became more proficient with its routine. Engagement did not plateau but instead intensified, with students taking greater initiative in discussions and becoming more critical of their own and their peers' responses. This growth trajectory illustrates that TPS fosters not just immediate engagement, but long-term improvement in academic discourse and thinking habits (Gagné & White, 1978). Teachers highlighted that students' increasing autonomy was one of the most promising indicators of the model's lasting impact. Another significant dimension of the results was the development of leadership skills among students. In the TPS classroom, students frequently took initiative in guiding pair discussions, helping peers articulate their ideas, and even mediating differences during group sharing. Some students emerged as informal peer leaders, supporting others without teacher prompting. These roles rotated naturally over time, with even the quieter students gradually stepping into leadership roles. Such findings point to TPS's potential in cultivating not only academic and social skills but also student agency and leadership—key competencies for 21st-century learners.

Finally, the comprehensive scope of evidence—from test scores and observation checklists to interviews and teacher journals—reinforces the conclusion that the Think-Pair-Share model is both impactful and multidimensional. It supports diverse aspects of student development, including cognition, communication, confidence, collaboration, metacognition, and classroom citizenship. The evidence indicates that TPS is more than an instructional technique—it is a pedagogical framework that transforms the learning environment into a space

of shared inquiry and mutual growth. With its adaptability, inclusiveness, and replicability, TPS holds significant promise for broader adoption in elementary education and beyond.

Discussion

The findings from this study contribute to a growing body of literature that underscores the value of cooperative learning strategies in enhancing student learning outcomes, especially in primary education. The Think-Pair-Share model, as demonstrated through both quantitative gains and qualitative feedback, offers a structured yet flexible approach that aligns with contemporary theories of social constructivism. Vygotsky's emphasis on the zone of proximal development finds practical expression in TPS, where students build knowledge through collaboration and guided interaction. This model empowers learners by positioning them as active agents in their own education, capable of engaging with content, peers, and instructors in meaningful and dynamic ways (Gagné, 1984). The success of TPS in this context supports Johnson and Johnson's theory of cooperative learning, which emphasizes five essential elements: positive interdependence, individual accountability, face-to-face promotive interaction, interpersonal and small-group skills, and group processing. TPS naturally incorporates all these elements. Students rely on each other to construct meaning, are held accountable through classroom sharing, and engage in promotive interactions that build trust and mutual respect. The process of pairing and sharing fosters interpersonal development and reflective learning, strengthening the social fabric of the classroom and reinforcing academic engagement.

Compared to traditional lecture-based instruction, which often isolates learners and limits opportunities for interaction, TPS fosters a participatory classroom culture. In such a culture, all students are given the opportunity to contribute, reducing the power imbalance inherent in teacher-centered environments. This inclusivity is particularly critical in primary education, where foundational attitudes toward learning and communication are formed. Students in the TPS group reported feeling heard and supported, which positively influenced their willingness to participate and take academic risks. These affective factors are vital to cultivating lifelong learners with confidence and resilience. One of the most compelling aspects of TPS revealed through this study is its adaptability. The model is simple enough to be implemented across diverse subjects, learning objectives, and classroom configurations, yet profound in its impact. Teachers were able to integrate TPS into existing lesson plans without requiring significant curricular overhauls or additional resources (File & Gullo, 2002). This makes TPS a highly accessible strategy for educators in both resource-rich and resource-constrained settings. Its scalable nature is particularly relevant for public schools seeking low-cost, high-impact pedagogical solutions.

Another dimension of significance is TPS's alignment with 21st-century learning goals. Communication, collaboration, critical thinking, and creativity—the four Cs of 21st-century education—are all cultivated through the TPS cycle (Allais, 2012). Students learn to articulate their thoughts clearly, listen actively, analyze different viewpoints, and synthesize information collaboratively. These competencies extend beyond academic success and prepare students to thrive in complex, real-world environments. TPS, therefore, bridges the gap between content mastery and skill development, fulfilling both curricular and developmental aims. This study also adds to the literature on inclusive education by showing how TPS accommodates students with diverse needs and abilities. The model's structure naturally supports differentiation, as students process information individually, receive peer support, and engage in scaffolded sharing. For students with learning difficulties, TPS offers a safe and supportive framework that reduces anxiety and encourages participation (Deller & Rudnicki, 1993). The observed improvements among SEN students in this study suggest that TPS can be a valuable tool for promoting equity and accessibility in mainstream classrooms.

Moreover, the findings indicate that TPS contributes not only to academic outcomes but also to the social-emotional development of students. Through regular interaction and mutual feedback, students develop empathy, patience, and the ability to engage in respectful disagreement (Allan, 1996). These are essential skills for healthy interpersonal relationships and civic engagement. The model also enhances classroom climate, fostering a sense of belonging and community. This is especially important in primary education, where socialization and emotional growth are as critical as academic learning. From a teacher development perspective, TPS serves as a vehicle for reflective practice and pedagogical growth (Cooper dkk., 2021). Teachers in this study reported increased awareness of student learning processes and greater satisfaction with their teaching roles. The transition from lecturer to facilitator encouraged deeper engagement with students and more responsive instructional practices. This shift is aligned with contemporary professional development frameworks that advocate for learner-centered teaching and continuous reflection. As such, TPS not only benefits students but also enhances teacher efficacy and job satisfaction.

The longitudinal nature of this study allowed for the observation of sustained changes in learning behaviors over time (Aziz dkk., 2012). Unlike one-off interventions that may produce short-lived gains, the TPS model demonstrated cumulative benefits. Students became more autonomous, confident, and collaborative as the weeks progressed. This durability is significant for educational planning, suggesting that TPS can lead to lasting transformations in classroom culture and learner identity. It also supports the argument that effective pedagogy requires consistency and intentionality over time (Caspersen dkk., 2017). The triangulation of data—through tests, observations, interviews, and teacher reflections—adds credibility and depth to the findings. This methodological robustness ensures that the conclusions drawn are not only statistically valid but also educationally meaningful. The use of both qualitative and quantitative lenses allows for a nuanced understanding of how TPS influences learning, beyond surface-level performance metrics. It reveals the mechanisms by which students internalize knowledge, engage with peers, and develop critical habits of mind.

While the results are promising, it is important to acknowledge the limitations of the study. The quasi-experimental design, while practical for real-world settings, lacks the control of randomized trials (Baker, 2015). Differences in teacher experience, classroom dynamics, or student background may have influenced the outcomes. Additionally, the study was confined to two schools in a specific region, which may limit the generalizability of the findings. Future research should explore TPS implementation across varied educational contexts and with different student populations to validate and extend these results. Another area for further inquiry is the long-term impact of TPS on learning trajectories (Carter, 1984). While this study focused on immediate academic and behavioral outcomes, it would be valuable to examine how TPS influences student achievement and attitudes toward learning in subsequent grades. Longitudinal studies could shed light on the lasting effects of early exposure to cooperative learning models and help refine implementation strategies for sustained impact.

This research also opens avenues for exploring hybrid models that combine TPS with other active learning strategies, such as project-based learning, inquiry-based instruction, or flipped classrooms (Black, 1999). Such combinations may amplify the benefits of each approach and offer richer learning experiences. Investigating how TPS interacts with technology, such as digital collaboration tools, could also provide insights into how traditional strategies can be adapted for 21st-century classrooms. In practical terms, the findings of this study can inform teacher training programs and school leadership policies. TPS should be included in professional development curricula as an evidence-based, easy-to-implement strategy (K. A. Bruffee, 1987). School administrators can support its adoption by allocating time for collaborative lesson planning and providing resources for peer learning. At the policy level, educational frameworks should recognize and promote cooperative learning as a core pedagogical principle, not just a supplementary technique.

Ultimately, the strength of the Think-Pair-Share model lies in its capacity to humanize the learning process. It values student voice, fosters mutual respect, and promotes intellectual engagement. In a time when educational systems are under pressure to deliver both academic excellence and holistic development, TPS offers a powerful, research-backed method for achieving these dual goals. By creating space for thinking, dialogue, and sharing, it cultivates classrooms where every learner can thrive (Bourner, 1997). Furthermore, this study illustrates how the TPS model contributes to building a classroom ethos centered on collaboration rather than competition. In many traditional education settings, students are conditioned to compete for teacher attention or high scores, which can unintentionally marginalize those who are less confident or quick to respond (K. A. Bruffee, 1984). TPS reconfigures this dynamic by creating a space where all contributions are valued equally, regardless of academic standing. It normalizes the act of sharing incomplete or developing thoughts, thus promoting intellectual humility and growth. Students learn that ideas can evolve through interaction, and that learning is a shared journey rather than an individual race. This philosophical shift is critical in developing compassionate, open-minded learners who appreciate diverse perspectives and see learning as a collective enterprise.

Another significant implication relates to the role of feedback in learning. TPS inherently embeds formative assessment into the learning process, as students receive real-time responses from peers during the Pair and Share phases. This immediate feedback loop allows for misconceptions to be addressed early and for ideas to be clarified before they become entrenched. Teachers can also use students' shared responses to gauge understanding and adjust instruction on the spot (K. A. Bruffee, 1973). Unlike summative assessments, which often come too late to influence instruction, the continuous feedback in TPS supports agile and responsive teaching. Encouraging students to view feedback as a normal and helpful part of learning also nurtures resilience and a growth mindset. The TPS model also has implications for equity in education. Students from marginalized backgrounds often face systemic barriers that limit their voice and participation in the classroom (Brooks dkk., 2014). By design, TPS gives every student structured time to think and speak, thus leveling the playing field. It reduces reliance on volunteer-based responses, which often favor more confident or extroverted students, and instead ensures that each learner has space to contribute. In diverse classrooms, this is particularly powerful, as it allows for cultural and linguistic diversity to be reflected in classroom discourse. Over time, such practices can contribute to more equitable learning environments, where students feel recognized, respected, and empowered.

An often overlooked but vital aspect of TPS is the way it encourages listening as a key academic skill. In traditional models, emphasis is placed primarily on speaking and correctness. TPS, however, values listening not as a passive act but as an active engagement. Students must listen carefully to their peers in order to build upon ideas or respond meaningfully during the Share phase. This promotes attentiveness, comprehension, and empathy—skills that are essential not only for academic learning but for civic life. By making listening visible and necessary, TPS nurtures deeper interpersonal connections and cognitive engagement. Lastly, this study highlights the importance of school-wide support and alignment when implementing new pedagogical models. While TPS can be initiated by individual teachers, its impact is amplified when supported by a collaborative school culture (K. Bruffee, 1981). Leadership plays a crucial role in fostering experimentation, encouraging peer observation, and providing time for professional dialogue. Schools that embrace a culture of continuous improvement are more likely to sustain and expand innovations like TPS. Moreover, when multiple teachers use similar strategies, students benefit from consistency in instructional approaches, which reinforces learning habits and expectations. Therefore, for TPS to reach its full potential, it should be integrated not just as a classroom strategy, but as a broader educational philosophy embraced at the institutional level.

CONCLUSION

The findings of this research provide compelling evidence that the Think-Pair-Share (TPS) model serves as a highly effective pedagogical strategy in improving learning outcomes among elementary school students. Through a structured process that promotes individual reflection, collaborative dialogue, and shared understanding, TPS transforms the traditional classroom into a vibrant space of interaction and engagement. Students not only demonstrated marked academic improvements, as reflected in quantitative test scores, but also experienced significant growth in communication skills, critical thinking, metacognitive awareness, and self-confidence. These gains were consistent across diverse learners, including high achievers and those with learning challenges, confirming TPS's potential as an inclusive instructional approach.

The success of TPS in this study also underscores its alignment with modern educational imperatives such as 21st-century skill development, student-centered learning, and equity in classroom participation. By fostering an environment where all voices are heard and all contributions are valued, TPS helps create a more democratic and empowering educational experience. Furthermore, the model's adaptability and low resource requirement make it accessible to a wide range of educational contexts, from well-resourced urban schools to underfunded rural institutions. Teachers benefited from the model as well, gaining deeper insights into their students' thinking processes and becoming more reflective in their instructional practices. The shift from lecturer to facilitator allowed educators to build stronger relationships with students and create more responsive, dynamic learning environments. Moreover, the collaborative spirit encouraged by TPS extended beyond individual classrooms, contributing to improved school culture and collegial support.

While challenges such as time management and pairing logistics were noted, they were manageable and diminished over time. The overwhelming benefits—academic, social, emotional, and institutional—clearly outweighed these initial obstacles. The study also emphasizes the importance of long-term implementation and institutional support in maximizing the model's effectiveness and sustainability. In conclusion, the Think-Pair-Share model represents a powerful, research-backed approach to teaching that not only improves academic outcomes but also nurtures the holistic development of learners. It encourages students to think deeply, listen actively, and speak confidently—all within a supportive, collaborative framework. As educational systems worldwide continue to evolve in response to new challenges and opportunities, TPS stands out as a practical, scalable, and humanizing method for cultivating classrooms where every student has the opportunity to succeed. Policymakers, educators, and school leaders are therefore encouraged to adopt and adapt TPS within their instructional practices to foster inclusive, engaging, and future-ready learning environments.

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