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RESEARCH ARTICLE

The Effect of Think Pair Share on Student Learning Activities and Outcomes in Geography

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ABSTRACT

Low student learning outcomes in geography are closely associated with insufficient active engagement during the learning process, resulting in passive attitudes, diminished self-confidence, and underdeveloped critical thinking skills. This study aims to analyze the effect of the Think Pair Share (TPS) cooperative learning model on the learning activities and learning outcomes of Grade X students at SMAN 1 Sragi, South Lampung Regency. A quantitative approach with a quasi-experimental design (Nonequivalent Control Group Design) was employed. The sample was selected through purposive sampling. Research instruments consisted of an observation sheet to measure learning activities and pre-test and post-test assessments to measure learning outcomes. Data were analyzed using the Mann-Whitney test and the Wilcoxon signed-rank test. Results indicate a significant improvement in both learning activities and learning outcomes following the implementation of the TPS model, with mean learning activity increasing from 57.8% to 75.5% and mean learning outcome scores rising from 57.73 on the pre-test to 76.4 on the post-test. These findings confirm that the Think Pair Share learning model is effective in enhancing students' learning activities and geography learning outcomes.

Keywords: Think Pair Share, Learning Activities, Learning Outcomes, Geography Education

1. INTRODUCTION

Learning outcomes represent the primary indicator for evaluating the success of educational processes, as they reflect the changes occurring in students following instructional experiences. These changes extend beyond the cognitive domain to encompass affective and psychomotor dimensions, collectively forming a comprehensive competency profile (Yandi et al., 2023; Harahap et al., 2023). Consequently, the measurement of learning success must transcend students' ability to answer questions and consider their engagement, attitudes, and skills developed throughout the learning process. Within this context, teachers occupy a strategic role as facilitators and instructional designers who determine the effectiveness of learning outcome attainment. The selection of appropriate instructional models therefore constitutes a critical factor, as these models serve as systematic frameworks for organizing learning experiences to optimally achieve instructional objectives (Lukman & Umar, 2022; Harianja et al., 2022).

However, in practice, teacher-centered learning frequently results in insufficient student engagement. The dominance of lecture and presentation methods tends to create unidirectional interaction, wherein students passively receive information rather than constructing understanding independently. This condition has been associated with diminished participation, reduced self-confidence in expressing opinions, and underdeveloped critical thinking capacities (Johnson & Johnson, 2009; Vygotsky, 1978). Such challenges were similarly identified in geography instruction at SMAN 1 Sragi, South Lampung Regency. Data from the mid-semester examinations for the 2024/2025 academic year revealed that the majority of Grade X students had not achieved the Minimum Completeness Criteria (KKM) established by the school, as presented in Table 1.

Table 1. Mid-Semester Examination Score Distribution in Geography for Grade X at SMAN 1 Sragi

No.	Class	Students	Score ≥80 (Pass)	Score <80 (Fail)
1	X Merdeka 1	34	5 (14.70%)	29 (85.30%)
2	X Merdeka 2	36	8 (22.22%)	28 (77.78%)
3	X Merdeka 3	30	5 (16.67%)	25 (83.33%)
4	X Merdeka 4	30	3 (10.00%)	27 (90.00%)
5	X Merdeka 5	30	4 (13.33%)	26 (86.67%)
Total		160	25 (15.63%)	135 (84.38%)

Source: Geography Teacher Documentation, SMAN 1 Sragi, South Lampung Regency, 2024.

As shown in Table 1, of the total 160 students, only 25 (15.63%) met the KKM threshold, while 135 students (84.38%) did not. This low pass rate indicates a serious problem in the geography learning process. Interviews with the subject teacher revealed that the instructional approach remained predominantly lecture- and presentation-based, affording students minimal opportunity to engage in discussion, express opinions, or collaboratively construct understanding. Geography as a subject demands analytical competencies related to spatial phenomena and the environment, which necessitate active student involvement (Jo et al., 2016; National Research Council, 2006). The discrepancy between the analytical nature of geography content and the conventional instructional strategy employed underscores the urgency for pedagogical innovation.

From a theoretical standpoint, cooperative learning approaches grounded in constructivism emphasize that knowledge is actively constructed by students through social interaction and experiential learning (Vygotsky, 1978; Rusman, 2018). One cooperative learning model particularly relevant to this context is Think Pair Share (TPS), which affords students structured opportunities to think independently (think), discuss in pairs (pair), and share outcomes with the class (share). This model promotes active participation, strengthens confidence in communicating ideas, and deepens conceptual understanding through structured discussion (Lyman, 1981; Ridwan, 2024). Through this mechanism, TPS has the potential not only to enhance cognitive learning outcomes but also to improve student engagement and interaction.

Prior research has demonstrated the effectiveness of TPS in improving either learning outcomes or motivation independently. Isnawati (2022) reported significant improvement in geography learning outcomes following TPS implementation. Amriansyah (2023) identified an 8.77% increase in learning motivation in the experimental class compared to the control class. Meanwhile, Putri et al. (2024) documented improvements in learning activity reaching the “very good” category. Nevertheless, the majority of these studies examined single variables and did not comprehensively test the simultaneous effect of TPS on both learning activities and outcomes within a unified experimental design. Furthermore, limited research has been conducted in the specific context of schools characterized by extremely low pass rates, such as SMAN 1 Sragi.

Based on these conditions, a research gap exists with respect to the integrated analysis of learning activities and outcomes within a single complete experimental design, particularly in an empirical context where pass rates fall below 20%. The present study offers novelty by simultaneously examining the effect of the Think Pair Share model on both learning activities and geography learning outcomes in a setting that evidences urgent need for instructional improvement. Accordingly, this study is expected to contribute empirical and practical evidence toward the development of more effective instructional models for enhancing the quality of geography education at the senior secondary level.

2. LITERATURE REVIEW

This section presents the theoretical foundations and relevant empirical studies underpinning the investigation. It synthesizes key concepts including constructivist learning theory, cooperative learning models, the Think Pair Share framework, and the nature of learning activities and outcomes in geography education. The review further identifies the research gap that motivates the current study.

2.1 Constructivism and the Social Foundation of Learning

Constructivism posits that learning is an active process through which individuals construct knowledge by integrating new information with prior experience (Piaget, 1972). Vygotsky (1978) extended this perspective by emphasizing the role of social interaction and cultural tools in cognitive development, introducing the concept of the Zone of Proximal Development (ZPD) — the distance between what a learner can accomplish independently and what is achievable with guidance. This theoretical framework has significant implications for instructional design, suggesting that collaborative and dialogic learning environments facilitate deeper understanding than passive reception of information.

In geography education, constructivist principles are especially pertinent given the subject's emphasis on spatial reasoning, place-based understanding, and the interpretation of complex environmental and social phenomena (National Research Council, 2006; Bednarz et al., 2013). Research has consistently demonstrated that active, inquiry-based approaches promote higher-order thinking and spatial literacy in geography learners (Jo et al., 2016; Uttal & Cohen, 2012). The implication for classroom practice is that students must be provided with structured opportunities to engage with content actively, rather than passively receiving teacher-delivered knowledge.

2.2 Cooperative Learning Models in Secondary Education

Cooperative learning refers to a family of instructional approaches in which students work together in small groups to achieve shared learning objectives (Johnson & Johnson, 2009; Slavin, 1995). Grounded in constructivist theory, cooperative learning models are premised on the belief that learning is most effective when it occurs through social interaction, peer explanation, and joint problem-solving. Key features of cooperative learning include positive interdependence, individual accountability, face-to-face promotive interaction, social skills development, and group processing (Johnson & Johnson, 2009).

Extensive meta-analytic evidence supports the efficacy of cooperative learning across diverse subject areas and educational levels (Kyndt et al., 2013; Hattie, 2009). In secondary education specifically, cooperative models have been associated with higher academic achievement, improved intrinsic motivation, reduced anxiety, and enhanced prosocial behavior (Gillies, 2016). In the context of geography instruction, cooperative approaches align with disciplinary practices that require students to analyze spatial data, interpret maps, evaluate geographic patterns, and engage in place-based reasoning (Solem et al., 2013). The structured interaction inherent in cooperative models facilitates the development of these competencies while simultaneously building communication and collaborative skills.

2.3 Think Pair Share: Structure, Mechanism, and Theoretical Rationale

Think Pair Share (TPS) is a structured cooperative learning strategy originally developed by Lyman (1981) as a technique for fostering student reflection and dialogue. The model comprises three sequential phases: (1) the Think phase, in which individual students independently consider a posed question or problem for a specified duration; (2) the Pair phase, in which students discuss their individual responses with a designated partner; and (3) the Share phase, in which pairs communicate their conclusions to the broader class. This tripartite structure is designed to provide cognitive preparation time, lower affective barriers to participation, and maximize instructional dialogue (Lyman, 1981; Kagan, 1994).

The theoretical justification for TPS draws upon both Vygotskian social constructivism and cognitive elaboration theory (Wittrock, 1990). The Think phase allows students to activate prior knowledge and formulate initial understandings, while the Pair phase engages students in the explanatory and evaluative discourse characteristic of the ZPD. The Share phase then extends individual and paired understanding to the collective, enabling social knowledge construction at the classroom level (Johnson & Johnson, 2009). Empirical studies have confirmed that TPS increases student participation rates, reduces reluctance to respond, and promotes more equitable distribution of speaking opportunities compared to whole-class question-and-answer formats (Stahl, 1994; McTighe & Lyman, 1988).

In the Indonesian secondary education context, TPS has been applied across multiple disciplines with consistently positive outcomes. Research in geography education has shown that TPS implementation results in measurable improvements in both cognitive achievement and behavioral engagement (Isnawati, 2022; Ridwan, 2024; Mutia et al., 2020). These findings are consistent with international evidence suggesting that structured cooperative strategies are particularly effective when content requires analytical reasoning and when students exhibit heterogeneous prior knowledge — both conditions characteristic of the geography classroom (Solem et al., 2013; Wiegand, 2006).

2.4 Learning Activities in Cooperative Instructional Contexts

Learning activity, conceptualized as the behavioral and cognitive engagement of students during instructional processes, is recognized as a critical mediator between instruction and outcome in educational research (Fredricks et al., 2004). Active learning paradigms posit that student engagement — encompassing behavioral, emotional, and cognitive dimensions — is essential for deep processing and durable knowledge retention (Bonwell & Eison, 1991; Prince, 2004). In cooperative learning environments, behavioral engagement manifests through observable indicators such as participation frequency, responsiveness to peers, contributions to group discussion, and task completion (Gillies, 2016).

Research has demonstrated a consistent positive relationship between learning activity levels and academic achievement across secondary education contexts (Hattie, 2009; Kyndt et al., 2013). The TPS model, by obligating all students to participate in each phase, structurally incentivizes engagement and mitigates the social loafing and free-riding tendencies observed in less structured cooperative formats (Karau & Williams, 1993). Studies specifically examining TPS in geography classrooms have reported increases in asking behavior, peer responsiveness, and discussion contribution compared to conventional instructional approaches (Putri et al., 2024; Nurhijjah et al., 2024).

2.5 Geography Learning Outcomes and Assessment

Learning outcomes in geography education encompass changes across cognitive, affective, and psychomotor domains as a result of instructional experience (Bloom et al., 1956; Anderson & Krathwohl, 2001). Cognitive outcomes range from factual recall of geographic concepts to higher-order competencies such as spatial analysis, pattern recognition, and environmental problem-solving. Affective outcomes include dispositions toward place, environmental awareness, and cross-cultural sensitivity, while psychomotor outcomes involve cartographic and field observation skills (Solem et al., 2013).

In the Indonesian secondary curriculum, geography learning outcomes are typically assessed through written tests aligned with the national Minimum Completeness Criteria (KKM). Research indicates that conventional teacher-centered instruction tends to produce lower cognitive outcomes relative to student-centered approaches, particularly for higher-order thinking items (Widodo & Sari, 2023; Harianja et al., 2022). The integration of cooperative models such as TPS into geography instruction is therefore theorized to improve outcomes by aligning instructional methods with the constructivist epistemology underlying the discipline's cognitive demands (Bednarz et al., 2013; Jo et al., 2016).

2.6 Synthesis and Research Gap

The reviewed literature converges on several key conclusions: (1) constructivist and cooperative learning approaches are theoretically aligned with the cognitive demands of geography education; (2) TPS is a well-validated cooperative structure associated with improvements in both engagement and achievement; and (3) geography-specific research has demonstrated positive effects of TPS on individual outcome variables. However, a notable gap persists in the literature: the majority of studies have examined learning activities and learning outcomes as separate dependent variables, thereby limiting understanding of the simultaneous effects of TPS on both dimensions within a unified experimental design (Isnawati, 2022; Amriansyah, 2023; Putri et al., 2024).

Furthermore, extant research has rarely been conducted in the specific context of schools exhibiting critically low pass rates (below 20%), where the urgency of instructional intervention is most acute. The present study addresses this gap by employing a quasi-experimental design to simultaneously test the effect of TPS on learning activities (Y1) and geography learning outcomes (Y2) in a Grade X cohort at SMAN 1 Sragi, where baseline performance data indicate a systemic need for evidence-based pedagogical reform.

3. METHOD

This study employed a quantitative approach with a quasi-experimental design. The quantitative approach was adopted because the data obtained are numerical and were analyzed statistically to examine the effect of the treatment. A quasi-experimental design was selected given that the study was conducted within pre-formed classroom groups without full random assignment of subjects. The specific design employed was the Nonequivalent Control Group Design, which incorporates two groups: an experimental group and a control group (Creswell, 2014).

The experimental group received the Think Pair Share (TPS) cooperative learning model as the treatment, while the control group continued with conventional instructional methods. Both groups underwent a pre-test prior to the treatment and a post-test following its conclusion to measure learning outcomes. Student learning activities were measured using a structured observation sheet employing a Likert scale, incorporating indicators of participation, collaboration, confidence in expressing opinions, and involvement in discussion.

3.1 Research Procedure

The study was conducted across three meetings, each allocated two lesson periods (90 minutes per session), covering the hydrosphere topic in the Grade X geography curriculum. The systematic research procedure comprised the following stages: (1) instrument development, including the preparation of observation sheets and test items; (2) instrument validity and reliability testing; (3) administration of pre-tests to both experimental and control classes; (4) implementation of the TPS model in the experimental class and conventional instruction in the control class; (5) administration of post-tests to both classes; and (6) data analysis and conclusion drawing.

3.2 Participants and Sampling

The study population comprised all Grade X students at SMAN 1 Sragi for the 2024/2025 academic year (N = 160). Purposive sampling was employed, with selection criteria based on comparable mean mid-semester examination scores. Class X Merdeka 4 (n = 30) was designated as the experimental group and Class X Merdeka 5 (n = 30) as the control group. This sampling approach ensured baseline equivalence between groups while respecting the structural constraints of the school context.

3.3 Instrumentation

Two primary instruments were utilized. First, a structured observation sheet was developed to measure learning activity across four indicators: participation, collaboration, confidence in expressing opinions, and discussion engagement. The sheet employed a Likert scale and was completed by independent observers during each instructional session. Second, a written test consisting of multiple-choice items was used to measure learning outcomes, with parallel forms administered as pre-test and post-test. Content validity was established through expert judgment by university lecturers and practicing geography teachers. Item validity was assessed using Pearson product-moment correlation, and reliability was computed using Cronbach's Alpha for both instruments.

3.4 Data Analysis

The independent variable (X) was the Think Pair Share instructional model, while the dependent variables were learning activity (Y1) and geography learning outcomes (Y2). Prerequisite tests were conducted prior to hypothesis testing. Normality was assessed using the Kolmogorov-Smirnov and Shapiro-Wilk tests. Homogeneity of variance was evaluated using Levene's test. Given that the data did not conform to a normal distribution, nonparametric statistical procedures were employed: the Mann-Whitney U test was used to compare two independent groups, and the Wilcoxon signed-rank test was used to compare pre- and post-measurements within the same group (Field, 2018). All analyses were performed using IBM SPSS Statistics version 23. The significance threshold was set at $\alpha = 0.05$ for all tests.

4. RESULTS AND DISCUSSION

4.1 Descriptive Analysis of Learning Activities

Observation data on student learning activity were collected across two instructional meetings for both the experimental class (X Merdeka 4) and the control class (X Merdeka 5). The following figure presents the distribution of learning activity categories at Meeting 1.

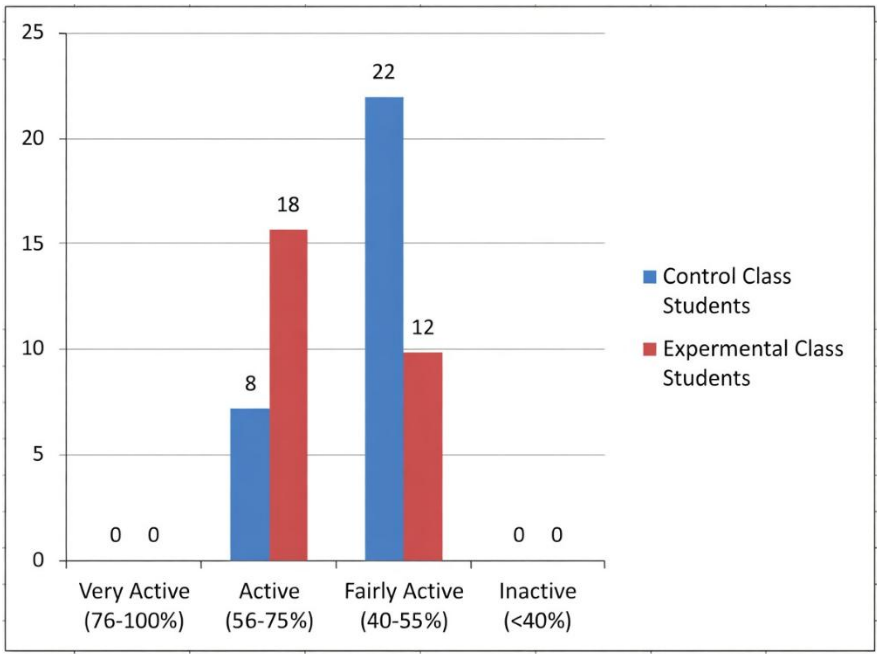

Figure 1. Learning Activity Distribution at Meeting 1
Source: Author's Data Processing, 2025.

As shown in Figure 1, no students in the control class were classified as "very active" during Meeting 1. Eight students (26.7%) were classified as "active" and 22 students (73.3%) as "moderately active." In the experimental class, 18 students (60%) were classified as "active" and 12 students (40%) as "moderately active," indicating comparably low initial levels across both groups.

Following the TPS treatment in the experimental class, a markedly different pattern emerged at Meeting 2, as illustrated in Figure 2.

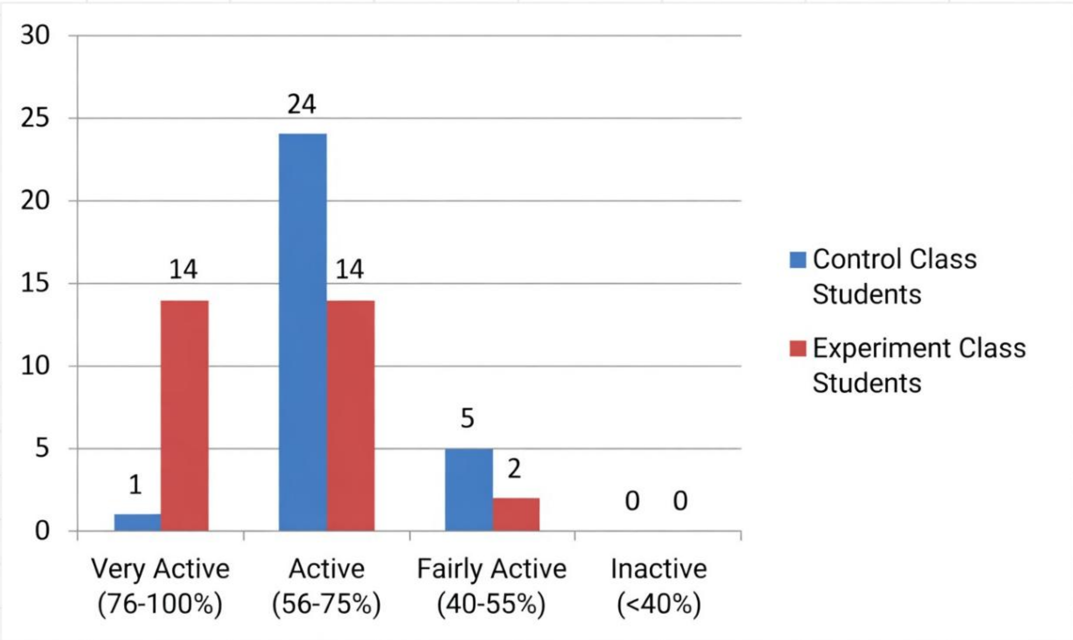

Figure 2. Learning Activity Distribution at Meeting 2

Source: Author's Data Processing, 2025.

By Meeting 2, the experimental class showed substantial improvement: 14 students (46.7%) were classified as "very active," 14 students (46.7%) as "active," and only 2 students (6.6%) as "moderately active." In contrast, the control class demonstrated comparatively marginal improvement, with 1 student (3.3%) classified as "very active," 24 students (80%) as "active," and 5 students (16.7%) as "moderately active." The mean learning activity in the experimental class increased from 57.8% to 75.5% across the two meetings, exceeding the control class improvement and confirming the positive behavioral impact of TPS implementation.

4.2 Pre-Test Results

Table 2 presents the descriptive statistics for pre-test scores in both the control and experimental classes.

Table 2. Pre-Test Score Summary

No.	Statistic	Control <80	Control ≥80	Exp. <80	Exp. ≥80
1	Count	30	0	30	0
2	Maximum	76	-	76	-
3	Minimum	36	-	36	-
4	Mean	55.86	-	57.73	-
5	Median	56	-	60	-
6	Mode	60	-	40	-

Source: Recapitulation of Test Results, 2025.

As shown in Table 2, neither class achieved the KKM threshold of 80 at pre-test. Both classes recorded maximum scores of 76 and minimum scores of 36. The control class mean was 55.86 (median = 56; mode = 60), while the experimental class mean was 57.73 (median = 60; mode = 40). The comparability of pre-test scores across classes supports the equivalence of baseline achievement levels and the appropriateness of the purposive sampling procedure. Figure 3 provides a visual comparison of pre-test means.

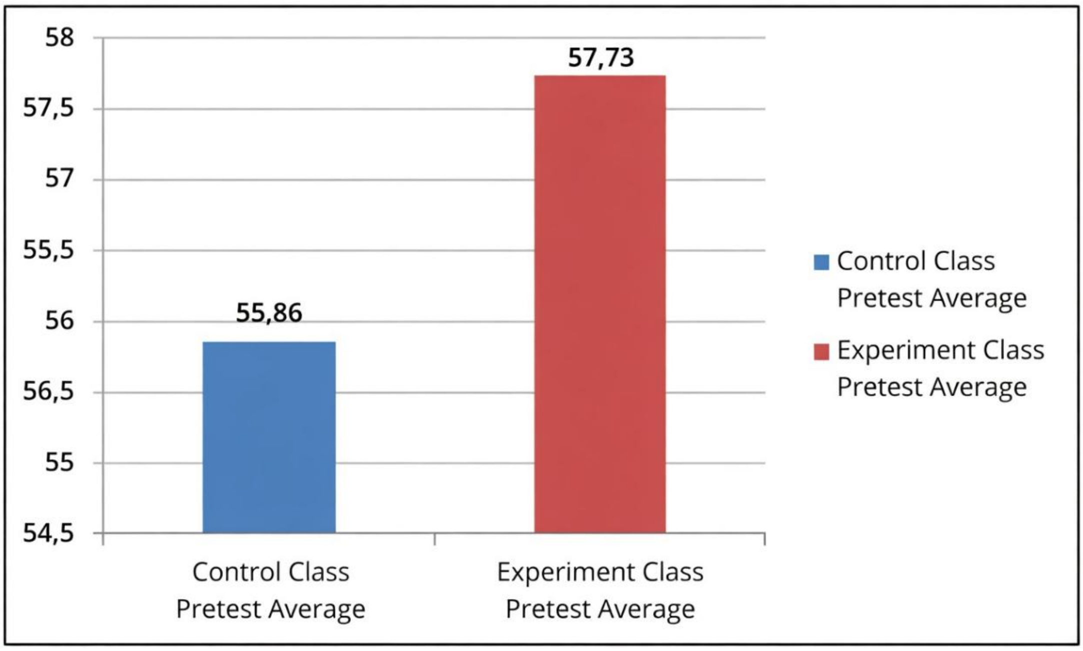

Figure 3. Comparison of Pre-Test Mean Scores

Source: Recapitulation of Pre-Test Results, 2025.

4.3 Post-Test Results

Table 3 presents post-test score distributions for the control and experimental classes following the completion of the instructional intervention.

Table 3. Post-Test Score Summary

No.	Statistic	Control <80	Control ≥80	Exp. <80	Exp. ≥80
1	Count	25	5	14	16
2	Maximum	88	88	88	88
3	Minimum	52	-	52	-
4	Mean	68.60	-	76.40	-
5	Median	66	-	80	-
6	Mode	64	-	88	-

Source: Recapitulation of Test Results, 2025.

Table 3 reveals a pronounced difference in post-test performance between the two classes. In the control class, only 5 students (16.67%) achieved the KKM of 80, while 25 students (83.33%) remained below threshold. In contrast, 16 students (53.33%) in the experimental class achieved the KKM, with 14 students (46.67%) still below threshold. The experimental class post-test mean of 76.4 substantially exceeded the control class mean of 68.6, with median scores of 80 and 66, respectively. Figure 4 illustrates the comparison of post-test means.

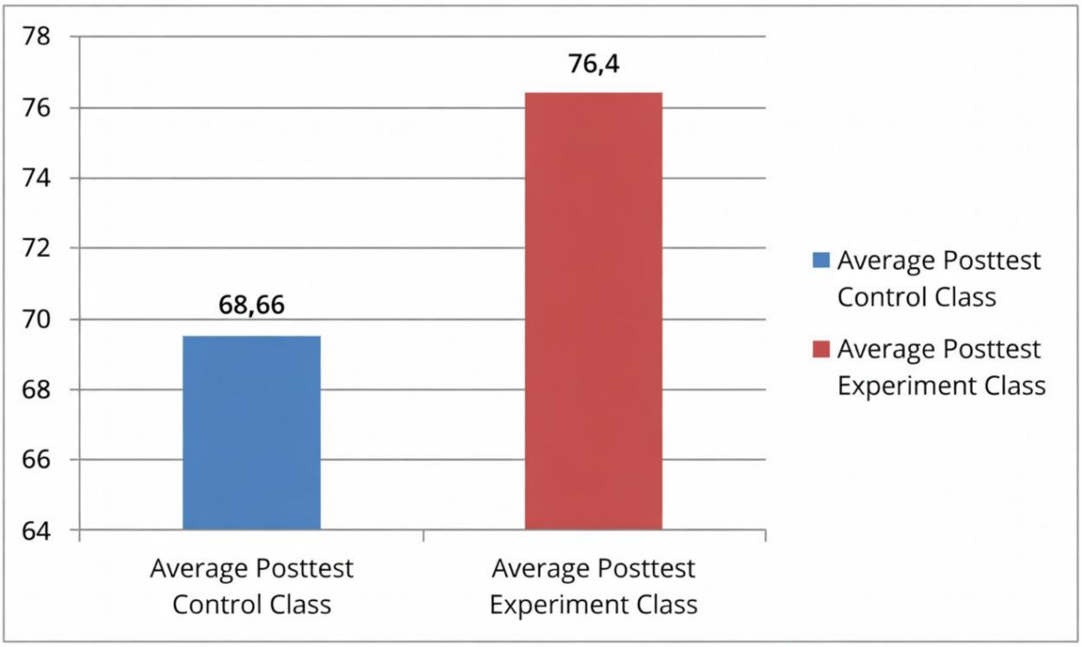

Figure 4. Comparison of Post-Test Mean Scores
Source: Recapitulation of Post-Test Results, 2025.

Figure 5 further illustrates the distribution of students above and below the KKM threshold across both classes, highlighting the substantially higher proportion of students achieving academic mastery in the experimental class relative to the control class.

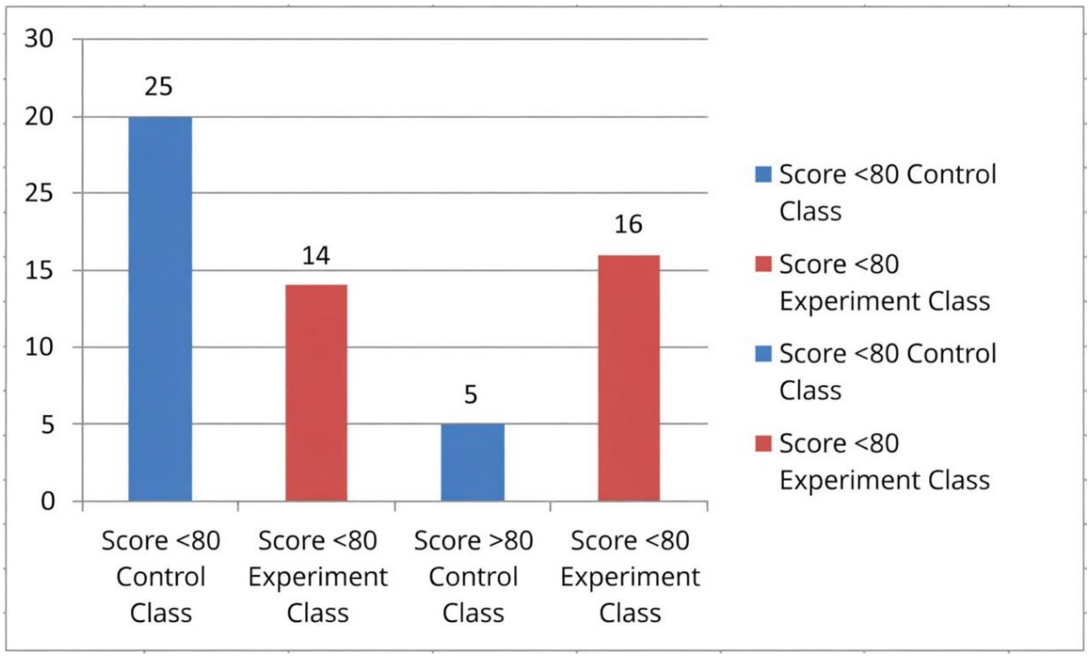

Figure 5. Comparison of Post-Test Score Distribution by KKM Threshold
Source: Recapitulation of Test Results, 2025.

The increase from zero students meeting the KKM at pre-test to 16 students at post-test in the experimental class, alongside the improvement in mean score from 57.73 to 76.4, constitutes substantive evidence of the instructional effectiveness of the TPS model. This improvement pattern is consistent with findings reported by Purba and Umar (2025) and Mutia et al. (2020), who similarly observed significantly higher post-test means in TPS-treated classes relative to control conditions.

4.4 Prerequisite Tests

Prior to hypothesis testing, normality and homogeneity of variance were assessed for all variables.

Table 4. Normality Test Results for Learning Activity Data

Group	Statistic	df	Sig.	Statistic	df	Sig.
	Kolmogorov-Smirnov[a]			**Shapiro-Wilk**		
Control Meeting 1	0.183	30	0.012	0.933	30	0.059
Control Meeting 2	0.277	30	0.000	0.871	30	0.002
Experiment Meeting 1	0.195	30	0.005	0.947	30	0.141
Experiment Meeting 2	0.180	30	0.014	0.925	30	0.036

Source: SPSS Data Processing, 2025.

Table 4 indicates that learning activity data at Meeting 1 for both classes showed mixed normality results: Kolmogorov-Smirnov values were below 0.05 for all groups, while Shapiro-Wilk results exceeded 0.05 for Meeting 1 in both classes but were significant for Meeting 2. Based on the overall pattern, the learning activity data were concluded to be non-normally distributed, necessitating nonparametric analysis.

Table 5. Normality Test Results for Pre-Test and Post-Test Data

Group	Statistic	df	Sig.	Statistic	df	Sig.
	Kolmogorov-Smirnov[a]			**Shapiro-Wilk**		
Pre-test Control	0.139	30	0.146	0.973	30	0.616
Post-test Control	0.178	30	0.016	0.921	30	0.029
Pre-test Experiment	0.120	30	0.200*	0.939	30	0.084
Post-test Experiment	0.180	30	0.014	0.872	30	0.002

Source: SPSS Data Processing, 2025.

As shown in Table 5, pre-test scores for both classes satisfied normality assumptions (Sig. > 0.05 for both Kolmogorov-Smirnov and Shapiro-Wilk), while post-test scores did not. Given that post-test data violated the normality assumption, nonparametric tests were applied for all hypothesis testing procedures (Field, 2018).

Table 6. Homogeneity Test for Learning Activity Data

Basis	Levene Statistic	df1	df2	Sig.
Based on Mean	3.736	1	58	0.058
Based on Median	4.600	1	58	0.036
Based on Median (adj. df)	4.600	1	57.081	0.036
Based on Trimmed Mean	4.003	1	58	0.050

Source: SPSS Data Processing, 2025.

Table 7. Homogeneity Test for Pre-Test and Post-Test Data

Basis	Levene Statistic	df1	df2	Sig.
Based on Mean	1.851	1	58	0.179
Based on Median	1.149	1	58	0.288
Based on Median (adj. df)	1.149	1	57.992	0.288
Based on Trimmed Mean	1.796	1	58	0.185

Source: SPSS Data Processing, 2025.

Tables 6 and 7 demonstrate that homogeneity of variance was satisfied for all data sets (Based on Mean Sig. > 0.05). Nonetheless, given the non-normal distribution of key outcome variables, nonparametric procedures were maintained throughout hypothesis testing (Aprizan et al., 2021; Iskandar et al., 2025).

4.5 Hypothesis Testing

Hypothesis 1 posited that there is a significant difference in learning activity between students using the TPS model and those receiving conventional instruction. This hypothesis was tested using the Mann-Whitney U test to compare the activity scores of the two independent groups at Meeting 2. Decision criteria: accept the hypothesis if Asymp. Sig. (2-tailed) < 0.05.

Table 8. Mann-Whitney U Test Results for Learning Activity (H1)

Test Statistic	Value
Mann-Whitney U	142.000
Wilcoxon W	607.000
Z	-4.622
Asymp. Sig. (2-tailed)	0.000

Source: SPSS Data Processing, 2025.

As shown in Table 8, the Mann-Whitney U test yielded an Asymp. Sig. (2-tailed) value of 0.000, which is less than 0.05. Hypothesis 1 is therefore accepted: there is a statistically significant difference in learning activity between students taught using TPS and those receiving conventional instruction.

To further examine within-group change in the experimental class, the Wilcoxon signed-rank test was applied to compare Meeting 1 and Meeting 2 activity scores.

Table 9. Wilcoxon Test Results for Learning Activity – Experimental Class

Test Statistic	Meeting 2 Exp. – Meeting 1 Exp.
Z	-4.734[b]
Asymp. Sig. (2-tailed)	0.000

Source: SPSS Data Processing, 2025.

The Wilcoxon test (Table 9) confirmed a statistically significant improvement in learning activity within the experimental class from Meeting 1 to Meeting 2 ($Z = -4.734$, Sig. = 0.000). This intraclass change corroborates the between-class comparison and affirms that the TPS treatment produced a meaningful improvement in student engagement over time.

Hypothesis 2 posited that there is a significant difference in learning outcomes between students taught using TPS and those receiving conventional instruction. The Mann-Whitney U test was applied to post-test scores from both classes.

Table 10. Mann-Whitney U Test Results for Learning Outcomes (H2)

Test Statistic	Value
Mann-Whitney U	275.500
Wilcoxon W	740.500
Z	-2.608
Asymp. Sig. (2-tailed)	0.009

Source: SPSS Data Processing, 2025.

Table 10 shows that the Mann-Whitney U test yielded an Asymp. Sig. (2-tailed) of 0.009, which is less than 0.05. Hypothesis 2 is therefore accepted: there is a statistically significant difference in geography learning outcomes between students taught using TPS and those in the conventional instruction condition.

The Wilcoxon signed-rank test was additionally applied within the experimental class to compare pre-test and post-test outcomes, confirming the significance of within-class improvement.

Table 11. Wilcoxon Test Results for Learning Outcomes – Experimental Class

Test Statistic	Post-test Exp. – Pre-test Exp.
Z	-4.654[b]
Asymp. Sig. (2-tailed)	0.000

Source: SPSS Data Processing, 2025.

The Wilcoxon test result (Z = -4.654, Sig. = 0.000) confirms a highly significant improvement in learning outcomes within the experimental class from pre-test to post-test, further validating the effectiveness of TPS in this context.

4.6 Discussion

The findings of this study provide robust empirical support for the effectiveness of the Think Pair Share model in enhancing both learning activities and geography learning outcomes among Grade X students. The statistically significant between-group differences observed on all dependent measures, in conjunction with the within-group improvements documented in the experimental class, collectively confirm that TPS constitutes a meaningful instructional intervention in this educational context.

With respect to learning activity, the structured participatory framework inherent in TPS obligates engagement at every phase of the instructional cycle. The Think phase reduces cognitive anxiety by providing individual preparation time prior to public sharing; the Pair phase normalizes dialogue and builds confidence through low-stakes dyadic interaction; and the Share phase creates accountable community knowledge exchange (Lyman, 1981; Kagan, 1994). This mechanistic progression explains why learning activity levels in the experimental class increased substantially from Meeting 1 to Meeting 2, while control class improvements remained comparatively modest. The present findings are consistent with Putri et al. (2024), who reported mean learning activity of 87.42% in TPS-treated geography classes compared to 72.71% in conventional classes, and with Nurhijjah et al. (2024), who documented increases in student asking behavior and post-discussion learning scores.

From a social constructivist perspective, the Pair phase of TPS creates conditions approximating Vygotsky's (1978) Zone of Proximal Development: students with slightly different conceptual understandings scaffold each other's learning through reciprocal explanation. This mechanism is particularly powerful in geography education, where spatial concepts and environmental phenomena frequently require multiple representational forms and explanatory approaches to achieve understanding (Uttal & Cohen, 2012; Solem et al., 2013). The empirical improvements observed across both activity and outcome measures suggest that TPS successfully activated these ZPD dynamics within the hydrosphere topic context.

The improvement in learning outcomes from pre-test to post-test in the experimental class (mean increase of 18.67 points, from 57.73 to 76.4) further underscores the cognitive effectiveness of TPS. The model's capacity to enhance outcomes appears to operate through multiple pathways: increased time-on-task engagement, elaborated processing of content through peer explanation, reduced test anxiety resulting from prior discussion experience, and alignment of instructional format with the constructivist epistemology of geographic inquiry (Bednarz et al., 2013; Hattie, 2009). These findings align with Isnawati (2022), who found significant outcome improvements in TPS-treated geography classes at the senior secondary level, and with Yani (2022), who documented significant pre-post differences using nonparametric analysis.

The role of the teacher in the TPS model warrants particular attention. As Rusman (2018) and Widodo and Sari (2023) observe, the transition from direct instruction to facilitative pedagogy fundamentally repositions the teacher as a guide who stimulates thinking through contextual questioning rather than transmitting pre-formed knowledge. This role transformation was observed in the present study, as the geography teacher reported qualitative changes in classroom interaction dynamics over the three TPS sessions, including increased voluntary questioning from students and more substantive content discussions during the Share phase. Such changes are consistent with the broader literature on teacher professional development and the pedagogical prerequisites of cooperative learning implementation (Gillies, 2016; Slavin, 1995).

The study does acknowledge several limitations. The three-session treatment duration, while sufficient to detect significant effects, may not fully capture the longitudinal trajectory of TPS benefits. The single-school, single-topic design limits the generalizability of findings to other geographic contexts, subject matter areas, and student populations. Additionally, while the study measured behavioral learning activity through observation, it did not capture deeper cognitive engagement indicators such as metacognitive awareness or conceptual change. Future research should address these limitations by employing extended interventions, multi-site designs, and mixed-methods approaches that combine quantitative outcome assessment with qualitative exploration of student learning processes (Johnson & Johnson, 2009; Creswell, 2014).

5. CONCLUSION

The present study investigated the effect of the Think Pair Share cooperative learning model on student learning activities and geography learning outcomes among Grade X students at SMAN 1 Sragi, South Lampung Regency. Employing a quasi-experimental design with nonparametric statistical analysis, the study demonstrated that TPS implementation produced statistically significant improvements in both dependent variables. Mean learning activity increased from 57.8% to 75.5% in the experimental class, and mean post-test score improved from 57.73 to 76.4, compared to 68.6 in the control class. Mann-Whitney U and Wilcoxon signed-rank tests confirmed the significance of both between-group and within-group differences.

These findings contribute to a growing body of evidence supporting the application of cooperative learning strategies in geography education at the secondary level. The structured tri-phase mechanism of TPS — individual thinking, paired discussion, and class sharing — appears particularly well-suited to the analytical and communicative demands of geographic content. The teacher's facilitative role within this framework is essential: by relinquishing direct transmission in favor of contextual questioning, teachers create the dialogic conditions necessary for constructivist knowledge building.

From a practical standpoint, the findings recommend that geography teachers at the senior secondary level consider systematic integration of TPS into their instructional repertoire, particularly in contexts where low pass rates signal a need for active engagement strategies. Institutional-level support for cooperative learning implementation, including professional development and curricular flexibility, would further enhance the sustainability of these effects. Future research is encouraged to explore the effects of TPS across extended instructional periods, multiple geographic topics, and diverse student populations, as well as to examine the interaction between TPS and other student-level variables such as spatial thinking ability, environmental attitudes, and learning motivation.

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