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Association between the Two Stay Two Stray Cooperative Learning Model, Learning Preferences, and Cognitive Outcomes in Pancasila Education

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Abstract

This study aims to analyze the association between the implementation of the Two Stay Two Stray (TSTS) cooperative learning model, along with students' learning preferences, and cognitive learning outcomes in Pancasila Education among Grade XI students at SMAN 1 Banyuwangi. This intervention addressed low academic



achievement caused by teacher-centered learning dominance. Employing a non-experimental associative quantitative design, the study involved a sample of 72 students selected via purposive sampling. Data were collected through learning preference questionnaires, structured observation sheets, and cognitive test scores. Inferential data analysis was conducted using non-parametric statistics, specifically the Pearson Chi-Square test and Contingency Coefficient. The results revealed a marked improvement in students' average scores, increasing from 76 to 90, with the minimum score baseline rising from 62 to 85. The Chi-Square test confirmed a statistically significant association between the studied variables ($\chi^2 = 4.192, p = 0.041 < 0.05$). A Contingency Coefficient value of 0.235 indicated a moderate strength of association. This association aligns with the preferences of the majority of students who favor group learning modes (61.1%) and practical-kinesthetic understanding (36.1%). Consequently, the TSTS syntax is shown to align well with diverse learning modalities in facilitating the mastery of cognitive learning outcomes in Pancasila Education.

Keyword

Cognitive learning outcomes, Cooperative learning, Learning preferences, Pancasila Education, Two Stay Two Stray.

Abstrak

Penelitian ini bertujuan untuk menganalisis keterkaitan antara penerapan model pembelajaran kooperatif tipe *Two Stay Two Stray* (TSTS) serta preferensi belajar peserta didik terhadap ketuntasan hasil belajar kognitif Pendidikan Pancasila kelas XI SMAN 1 Banyuwangi. Intervensi ini dilakukan untuk mengatasi rendahnya ketuntasan belajar akibat dominasi metode pembelajaran searah (*teacher-centered*). Penelitian ini menggunakan desain kuantitatif asosiatif non-eksperimental dengan sampel sebanyak 72 peserta didik yang dipilih melalui teknik *purposive sampling*. Pengumpulan data dilakukan menggunakan angket preferensi belajar, lembar observasi terstruktur, dan dokumentasi tes hasil belajar kognitif. Data dianalisis secara inferensial menggunakan statistik non-parametrik *Pearson Chi-Square* dan uji Koefisien Kontingensi (*Contingency Coefficient*). Hasil penelitian menunjukkan peningkatan nilai rata-rata peserta didik dari 76 menjadi 90, dengan batas nilai minimum melompat dari 62 menjadi 85. Pengujian *Chi-Square* mengonfirmasi keberadaan hubungan yang signifikan secara statistik antara variabel yang diteliti ($\chi^2 = 4,192; p = 0,041 < 0,05$). Nilai Koefisien Kontingensi sebesar 0,235 mengindikasikan tingkat kekuatan asosiasi berada pada kategori moderat. Keberadaan asosiasi ini sejajar dengan karakteristik mayoritas peserta didik yang menyukai moda belajar kelompok (61,1%) serta gaya pemahaman kinestetik-praktis (36,1%). Oleh karena itu, sintaks TSTS terbukti berkesesuaian dalam memfasilitasi keberagaman modalitas belajar peserta didik guna meningkatkan ketuntasan hasil belajar Pendidikan Pancasila.

Kata Kunci

Hasil belajar kognitif, pembelajaran kooperatif, pendidikan Pancasila, preferensi belajar, Two Stay Two Stray.

INTRODUCTION

Pancasila Education holds a strategic position within the national education system as

a vehicle for shaping students' character, national insight, and civic values (Sudrajat & Astuti, 2023). In accordance with the mandate of Law No. 20 of 2003 on the National Education System, this subject is designed to develop students' potential to become noble, creative, critical, and democratic citizens. However, in secondary school practices, Pancasila Education is frequently perceived as an uninspiring, overly theoretical subject centered primarily on rote memorization (Afifatimah et al., 2024; Aisah et al., 2022).

This general issue was empirically confirmed through preliminary observations and documentation studies at SMAN 1 Banyuwangi. Cognitive learning achievement data from Grade XI daily tests in Pancasila Education revealed that out of eight classes, six failed to meet the Minimum Mastery Criterion (KKM) set by the school, which is 80. Overall, 77% of students scored below this mastery threshold. Classroom observations and teacher interviews indicated that the instructional process was heavily dominated by one-way lecturing (*teacher-centered*), characterized by limited active participation and minimal peer-to-peer discussion.

In light of the high non-mastery rate, a diagnosis of the underlying causes highlighted the necessity of a pedagogical intervention shifting toward a student-centered approach. A pertinent method is cooperative learning, which places students in small groups to achieve learning targets through peer cooperation and interaction (Rorimpandey et al., 2022). This framework fosters active engagement, communication, and reciprocal learning within groups (Pusantra, 2020). Within this context, the Two Stay Two Stray (TSTS) cooperative learning model emerges as a highly suitable alternative due to its structured facilitation of intergroup communication and knowledge exchange.

By assigning distinct roles—where two group members remain (*stay*) to convey information and two members visit (*stray*) other groups to gather insights—this syntax enables students to explain, receive, compare, and reconstruct knowledge through structured intergroup interactions (Nuryyati, 2023; Serandoma et al., 2026). Consequently, the implementation of TSTS holds the potential to facilitate a deeper conceptual understanding of Pancasila Education through active group learning and information exploration.

Numerous prior studies have consistently confirmed the effectiveness of the Two Stay Two Stray (TSTS) cooperative model in Pancasila Education (Kosamunjaya, 2021). Its application has been shown to significantly enhance student engagement (Insani et al., 2026), while fostering cooperative attitudes within the classroom (Lavenda et al., 2025). Nevertheless, existing research predominantly focuses on the general efficacy of the model. As a result, the association between variations in student learning preferences and cognitive learning outcomes under the implementation of TSTS remains under-explored. This research gap underpins the present study, which aims to analyze the implementation of the TSTS cooperative learning model in Pancasila Education and examine the association between student learning preferences and cognitive outcomes among Grade XI students at SMAN 1 Banyuwangi.

METHODS

This study employed a quantitative approach with a non-experimental associative design (Sugiyono, 2021). This design was specifically selected to analyze the association and the strength of the relationship between the implementation of the Two Stay Two Stray (TSTS)

cooperative learning model, student learning preferences, and cognitive achievement in Pancasila Education among Grade XI students at SMAN 1 Banyuwangi. The research population comprised all Grade XI students at SMAN 1 Banyuwangi in the current academic year, distributed across eight parallel classes totaling 261 students. Sample selection was carried out using a purposive sampling technique based on specific inclusion criteria: choosing classes with the lowest Minimum Mastery Criterion (KKM) completion rates based on preliminary documentation data, while demonstrating homogeneity in baseline score averages. Consequently, a representative sample of 72 students was derived (Arikunto, 2019; Sugiyono, 2021).

The data collection process integrated three primary techniques: questionnaires, structured observation, and learning outcome test documentation (Ghozali, 2018). The questionnaire was constructed using a rating scale previously tested for validity and reliability to measure student perceptions regarding the execution of TSTS syntax and to map their learning modality preferences—such as tendencies toward group versus independent learning and practical-kinesthetic understanding styles (Azwar, 2013). Direct observations were conducted using structured observation sheets to record interaction dynamics, student engagement, and adherence to procedural workflows during the *stay* and *stray* rotation phases. Meanwhile, cognitive test documentation provided secondary quantitative data in the form of pre-test and post-test scores in Pancasila Education.

For categorical inferential analysis, the cognitive learning outcome variable was operationalized into a dichotomous scale based on the school's KKM mastery threshold: categorized as "mastered" if students achieved a score equal to or exceeding 80 (≥ 80), and "not mastered" for scores below 80 (< 80) (Sudijono, 1998). The categorical data across the variables were subsequently analyzed using non-parametric statistics via the Pearson Chi-Square test (χ^2) to test hypotheses regarding the existence of statistically significant relationships among these nominal/ordinal scale variables (Field, 2018). The Chi-Square formula was calculated using the equation:

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

where O_i represents the observed frequency and E_i represents the expected frequency. To complement and clarify the primary analysis, the Contingency Coefficient (C) test was additionally applied to measure the strength of association or degree of relationship between these categorical variables, using the formula:

$$C = \sqrt{\frac{\chi^2}{\chi^2 + N}}$$

where C represents the contingency coefficient value, χ^2 is the obtained Chi-Square value, and N is the total sample size ($N = 72$). All inferential statistical data processing was executed using IBM SPSS Statistics software to ensure computational precision and hypothesis testing conclusions at a significance level of $\alpha = 0.05$.

RESULTS AND DISCUSSION

Learning Achievement and Analysis of the TSTS Intervention

The implementation of the Two Stay Two Stray (TSTS) cooperative learning model in Pancasila Education for Grade XI students at SMAN 1 Banyuwangi demonstrated significant quantitative and qualitative improvements in cognitive learning achievement. Prior to the TSTS-based intervention, the baseline condition of students' learning outcomes was concerning; the class mean score was only 76, with a minimum score of 62, a median of 77, and a mode of 78. These baseline data confirmed that the majority of students had not yet reached the Minimum Mastery Criterion (KKM) established by the school, which was 80. This non-mastery stemmed from the prevalence of conventional, one-way (teacher-centered) instructional methods, leaving students largely passive and leading them to perceive Pancasila Education as an abstract, rote-memorization subject. However, following the systematic implementation of the TSTS model, a substantial leap in academic performance was observed. The overall class average rose significantly to 90, with the median and mode both reaching 92. The most critical shift was evident in the lower bound, where the minimum score increased from 62 to 85, alongside an increase in the maximum score from 82 to 97. Table 1 presents a comparative summary of student achievement before and after the TSTS intervention.

Table 1. Summary of Student Cognitive Learning Achievement

NO	Category	Max	Min	Mean	Median	Modus
1	Score Before TSTS Model Implementation	82	62	76	77	78
2	Score After TSTS Model Implementation	97	85	90	92	92

The success of this shift in learning outcomes is closely tied to the alignment between the TSTS model syntax and the learning preference profiles of Grade XI students at SMAN 1 Banyuwangi. Based on questionnaire mapping across 72 respondents, the majority of students exhibited a dominant preference for group learning, accounting for 44 students (61.1%), compared to 26 students (36.1%) who preferred independent or individual learning, and 2 students (2.8%) who favored a combination of both (see Table 2).

Table 2. Distribution of Student Learning Modality Preferences

NO	Learning Modality	Frequency (n)	Percentage (%)
1	Group	44	61,1%
2	Individual	26	36,1%
3	Combination of Group and Individual	2	2,8%
Total		72	100,0%

Meanwhile, regarding learning style preferences for understanding instructional material, the highest proportion of students was concentrated in the practical-kinesthetic method, or direct hands-on practice ($n = 26$; 36.1%), followed by visual observation ($n = 22$; 30.6%). Conversely, purely passive modalities such as reading were selected by only one student (1.4%). The remaining preferences were distributed among listening modalities (16.7%), a combination of listening, observing, and practicing (4.2%), and other multi-sensory variations, as detailed in Table 3. These descriptive data demonstrate that the rigid, low-interaction teaching strategies previously employed directly conflicted with students' actual learning needs, which strongly favor active and collaborative dynamics.

Table 3. Distribution of Student Learning Style Preferences for Material Comprehension

NO	Category of Comprehension Preference	Frequency (n)	Percentage (%)
1	Practicing (Kinesthetic)	26	36,1%
2	Observing (Visual)	22	30,6%
3	Listening (Auditory)	12	16,7%
4	Listening, Observing, and Practicing	3	4,2%
5	Listening and Practicing	2	2,8%
6	Listening and Observing	2	2,8%
7	Listening, Reading, Observing, and Practicing	2	2,8%
8	Reading	1	1,4%
9	Listening, Reading, and Observing	1	1,4%
10	Listening, Observing, and Practicing (Variation 2)	1	1,4%
Total		72	100,0%

The precise implementation of TSTS syntax in the classroom successfully accommodated these learning modality needs through six structured stages. The first stage commenced with the formation of four-member heterogeneous groups, combining students with diverse academic ability levels and learning preferences. The second stage involved the delivery of Pancasila Education material—such as core concepts regarding civic rights and obligations—wherein each group was assigned a specific sub-topic for discussion. The third stage comprised the critical role-assignment phase, designating two students to *stay* in the home group and two students to act as visitors (*stray*). During the fourth stage, the *straying* rotation phase, visiting students traveled to other groups to gather information and take notes, while the *staying* members actively explained their group's findings to visiting peers. The fifth stage was reporting and reconstruction, during which the *straying* members returned to their home groups to share new insights and consolidate them alongside the *staying* members. The final stage concluded with individual cognitive evaluations and group recognition.

To quantitatively confirm the significance of the relationship among these variables, non-parametric inferential statistical tests were performed. The Pearson Chi-Square calculation yielded a test statistic of $\chi^2 = 18.241$ with degrees of freedom (df) = 1 and an Asymptotic Significance (p -value) of $p = 0.000$ (see Table 4). Because $p < 0.05$, the null hypothesis (H_0) was decisively rejected in favor of the alternative hypothesis (H_a), confirming a statistically significant relationship between the implementation of the TSTS model aligned with student learning preferences and cognitive outcome mastery in Pancasila Education.

Table 4. Chi-Square Test Results

Test Type	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4.192 ^a	1	.041
Continuity Correction ^b	3.237	1	.072
Likelihood Ratio	4.179	1	.041
Fisher's Exact Test			
Linear-by-Linear Association	4.134	1	.042
N of Valid Cases	72		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.88.

b. Computed only for a 2x2 table.

Sumber: Olah Data Peneliti (2025)

To measure the strength of association between these categorical variables, a Contingency Coefficient test was performed, with the results presented in Table 5. Using the

formula $C = \sqrt{\frac{\chi^2}{\chi^2 + N}}$, the empirical value obtained from the study ($\chi^2 = 18.241$) and the total sample size ($N = 72$) were substituted into the equation:

$$C = \sqrt{\frac{4,192}{4,192 + 72}} = \sqrt{\frac{4,192}{76,192}} = \sqrt{0,055018} \approx 0,235$$

This manual calculation yields a Contingency Coefficient of $C = 0.450$ with a significance level of $p = 0.000$, aligning precisely with the statistical software output. Given that the theoretical maximum upper bound ($C_{\max}$) for a 2×2 crosstabulation table is $C_{\max} = \sqrt{\frac{2-1}{2}} = \sqrt{0.5} \approx 0.707$, the observed value of $C = 0.450$ indicates a moderate and practically meaningful strength of association within the context of classroom pedagogical variables.

Table 5. Symmetric Measures Output (Contingency Coefficient)

Nominal by Nominal	Value	Approximate Significance
Contingency Coefficient	.235	.041
N of Valid Cases	72	

Table 5 confirms that the Contingency Coefficient test produced a value of $C = 0.450$ ($p = 0.000$). In categorical data analysis involving a 2×2 table, the theoretical upper bound for the coefficient is $C_{\max} \approx 0.707$. Consequently, a value of $C = 0.450$ represents a moderate strength of association, demonstrating that the alignment between TSTS syntax, learning preferences, and cognitive mastery possesses substantial empirical and practical relevance in classroom instruction.

The Role of TSTS in Converting Diverse Learning Modalities

1. Conceptual Foundations and Interactive TSTS Syntax

The empirical findings of this study provide substantive reinforcement for the theoretical foundation of Social Constructivism developed by Lev Vygotsky, particularly through two closely interrelated core concepts: the Zone of Proximal Development (ZPD) and scaffolding (Vygotsky & Cole, 1978). Within the Vygotskian framework, the ZPD is defined as the distance between a student's actual developmental level (independent problem-solving capacity) and their potential developmental level (problem-solving under adult guidance or in collaboration with more capable peers). TSTS operationalizes the ZPD through a highly structured mechanism: when acting as *staying* members, students are positioned as "more capable peers" who provide scaffolding to visiting classmates. The process of re-explaining instructional material, addressing queries, and offering concrete examples constitutes verbal scaffolding, enabling lower-performing peers to attain a higher level of conceptual understanding than they could achieve independently (Daniels, 2001; Wood et al., 1976).

Conversely, when students assume the role of *straying* members, they do not merely receive information passively; rather, they engage in verifying, comparing, and synthesizing data gathered across various groups. This activity fosters internalization (Vygotsky & Cole, 1978)—the transformational process of converting interpersonal knowledge (acquired via social interaction) into intrapersonal knowledge (cognitively retained individually). Furthermore, the rotational sequence of the *stay-stray* roles establishes intersubjectivity—a

shared understanding constructed through peer dialogue and the negotiation of meaning. This theoretical mechanism elucidates the uniform increase in cognitive learning outcomes, notably among low-achieving students whose minimum score surged from 62 to 85.

The Two Stay Two Stray (TSTS) cooperative learning model—popularized within collaborative learning literature by Anita Lie (2008) and expanded from Kagan's cooperative structure principles (Kagan, 1994)—possesses unique structural characteristics within its group rotation mechanism. The distinctiveness of TSTS compared to other cooperative models (such as STAD or Jigsaw) lies in its dual integration of role flexibility and physical mobility across the classroom setting. Whereas social interaction in STAD remains largely confined within home groups and Jigsaw relies heavily on "expert groups," TSTS offers a symmetrical workflow: two members remain as *staying* hosts while two members act as *straying* visitors (Huda, 2013; Lie, 2003). This equal 2:2 functional division enables two simultaneous knowledge streams—outward dissemination via the *staying* hosts and inward acquisition via the *straying* visitors—thereby establishing a dynamic information exchange cycle across the entire classroom ecosystem.

Viewed through the lens of Bloom's Revised Cognitive Taxonomy (Anderson & Krathwohl, 2001), the TSTS instructional syntax theoretically facilitates engagement across higher-order cognitive processing levels, progressing beyond lower-level skills (*remembering* and *understanding*) into complex domains (*applying*, *analyzing*, and *evaluating*). While serving as *staying* hosts, students are required to do more than recall facts; they must organize and articulate Pancasila Education concepts using their own phrasing, directly engaging cognitive processes of organizing and elaborating (*analyzing*). Simultaneously, *straying* visitors cross-examine and verify information gathered from external groups, representing cognitive operations of identifying discrepancies (*analyzing*) and assessing data validity (*evaluating*). This iterative cognitive interplay embedded within the *stay-stray* syntax provides a clear theoretical account of how the TSTS model drives the elevation of mean cognitive scores from basic factual understanding to deeper conceptual mastery (Anderson & Krathwohl, 2001).

2. Contextualization and Critical Synthesis with Prior Studies

The empirical findings of this study strongly confirm prior research documenting the effectiveness of the TSTS model across various educational contexts. Utami and Sari (2020), for instance, found that applying TSTS in Social Studies increased active student participation by 34% and deepened conceptual understanding through intensive cross-group discussion. Similarly, Nuryyati (2023) reported that TSTS effectively developed students' confidence in expressing opinions and critical thinking skills in Civic Education at the junior high school level, yielding an average score increase of 12 points. At the primary education level, Lavenda et al. (2025) demonstrated that TSTS not only improved cognitive learning outcomes but also contributed significantly to fostering cooperative attitudes and social empathy among peers. Insani et al. (2026) reinforced these findings with evidence that TSTS significantly boosted learning engagement in Islamic Religious Education, achieving an average participation score increase of 28%.

Nevertheless, this study provides a complementary contribution to existing literature. Most previous studies examined the application of the TSTS model in isolation against learning achievement without considering internal student variables such as learning preferences or

instructional modalities. Through non-parametric inferential statistical testing, this study demonstrates a statistically significant association between student learning preferences and cognitive achievement in Pancasila Education under the TSTS model. The presence of this relationship indicates that high cognitive mastery rates coincide with the high proportion of students who favor group learning modalities (61.1%) and practical-kinesthetic comprehension styles (36.1%). The TSTS syntax—which facilitates teamwork and hands-on practice through its *stay* and *stray* mechanisms—operates in alignment with the predominant learning preference profile of the classroom. Although this associative design does not aim to establish causal effects or mediation pathways, these findings offer preliminary empirical evidence regarding the importance of considering learning preference variables when evaluating the efficacy of cooperative learning strategies in schools.

These findings offer a fresh perspective that enriches cooperative learning theory, particularly concerning the contextual conditions that moderate instructional success. This study reinforces the postulate that in cooperative learning, "one size does not fit all," and that the success of a model depends heavily on the alignment between its structural design and students' psychological characteristics and needs (Johnson & Johnson, 2019; Slavin, 2012). Furthermore, this research identifies that the TSTS model, through its *stay-stray* rotation sequence, functions as a pedagogical bridge converting diverse learning preferences into equitable and uniform learning outcomes—a mechanism not previously reported explicitly in the literature. This theoretical contribution is significant because it demonstrates that instructional models need not oppose students' learning preferences; rather, they can be engineered to harness those preferences as driving catalysts for academic achievement.

3. Elaboration of Causal Mechanisms: Why TSTS Enhances Learning Outcomes

To understand why TSTS is effective, it is necessary to systematically unpack the internal learning mechanisms embedded within the instructional syntax. This study identifies four interconnected primary mechanisms:

First, the *peer tutoring* mechanism. When acting as *staying* hosts, students are compelled to organize and articulate their newly acquired knowledge. This process generates a robust retention effect, as re-explaining content to peers represents one of the most effective strategies for consolidating personal conceptual understanding (Chi, 2009; Roscoe & Chi, 2007). This effect was particularly pronounced among previously low-achieving students who demonstrated significant conceptual gains after experiencing the *stay* phase.

Second, the *cognitive conflict* and *conceptual change* mechanisms. During the *straying* phase, students encounter diverse perspectives and interpretations from external groups concerning the same material. Discrepancies or contradictions across group findings trigger cognitive conflict, forcing students to re-evaluate their prior understanding, synthesize competing viewpoints, and construct a more integrated cognitive framework (Piaget, 1985; Posner et al., 1982). This mechanism is uniquely relevant to Pancasila Education, which frequently engages multidimensional civic concepts.

Third, the *positive interdependence* mechanism. In TSTS, group success hinges upon individual accountability. *Staying* hosts are responsible for delivering precise and comprehensive explanations, while *straying* visitors are tasked with bringing back valuable insights to their home groups. This operational structure establishes collective responsibility,

fostering equitable participation while mitigating the *free-riding* phenomenon where passive members rely solely on peer effort (Johnson & Johnson, 2019).

Fourth, the *emotional engagement* and *anxiety reduction* mechanisms. Working within small-group structures mitigates the communication apprehension typically associated with whole-class public speaking. A supportive, small-scale peer environment allows reserved or low-confidence students to actively engage (Fredricks, Blumenfeld, & Paris, 2004). This shift was directly documented during observations: previously passive students actively engaged in dialogue and occasionally led discussions within their respective small groups.

4. Pedagogical Implications: Translating Principles into Practice

The empirical findings of this study yield operational pedagogical implications directly applicable to classroom practice. First, educators should consider students' learning preferences as informative baseline data when designing instructional activities without using them as the sole determinant for grouping or strategy selection. Preference mapping can be executed via brief diagnostic surveys or systematic observations. These diagnostic insights can then serve as a framework for assembling heterogeneous learning groups that balance students with group, independent, kinesthetic, and auditory learning tendencies.

Second, educators should construct structured Student Worksheets (*Lembar Kerja Peserta Didik* / LKPD) that provide clear procedural guidance across every stage of the TSTS syntax. An effective LKPD must incorporate: (a) explicit material exploration prompts for home groups, (b) key inquiry questions to guide *straying* visitors during rotations, and (c) a standardized template for synthesizing external findings. Well-designed instructional worksheets ensure that the TSTS syntax remains focused, productive, and resilient against off-task behavior.

Third, teachers must invest sufficient time in establishing collaborative norms and group conduct expectations. Students require clear orientation regarding their specific functional roles, intergroup visiting etiquette, and mutual respect for peer perspectives. The findings reveal that the success of TSTS depends not only on structural syntax but also on the social-emotional climate within the classroom. Teachers must act as active facilitators, monitoring group dynamics and intervening when participation imbalances or interpersonal conflicts arise.

Fourth, assessment under the TSTS model should adopt an authentic, holistic approach that extends beyond final cognitive post-tests to incorporate process evaluation (e.g., participation observation, discussion quality, and teamwork metrics). This comprehensive evaluation framework aligns directly with current national curriculum standards (*Kurikulum Merdeka*), which emphasize formative assessment and the holistic development of student civic character.

Fifth, for school-level administration and policymakers, these results highlight the necessity of teacher professional development and ongoing coaching in implementing innovative cooperative learning strategies. Schools can institute *lesson study* initiatives or teacher learning communities dedicated to refining TSTS implementation across diverse subject domains, utilizing peer observation protocols to continually assess and enhance instructional practices.

5. Research Limitations and Future Directions

Despite the substantive contributions of this study, several methodological limitations must be acknowledged, serving as a foundation for future research agendas. *First*, the non-experimental associative design employed precludes the definitive establishment of causal relationships. Although a statistically significant association was observed between TSTS implementation, student learning preferences, and cognitive achievement, causality cannot be definitively claimed without controlling for confounding variables such as baseline student motivation, intellectual capacity, socio-economic background, and teacher instructional quality. Future studies should utilize true experimental designs with randomized controlled trials (RCTs) or quasi-experimental frameworks featuring matched control groups to isolate the specific causal impact of the TSTS model.

Second, the generalizability of these findings is constrained by the sample scope ($N = 72$) drawn exclusively from SMAN 1 Banyuwangi. While representative within this specific institutional setting, student cohorts across different geographic regions, institutional profiles, or educational levels may exhibit distinct learning preference distributions. Broad-scale research incorporating multi-site, cross-regional sampling is recommended to test the cross-contextual stability of these findings and enhance ecological validity.

Third, the measurement of learning outcomes was delimited solely to the cognitive domain. As a value-laden subject, Pancasila Education emphasizes not only cognitive mastery but also affective character development and psychomotor civic engagement skills. Future empirical work should evaluate the concurrent impact of TSTS on affective outcomes, such as civic character formation, tolerance, interpersonal communication, and collaborative competence.

Fourth, learning preferences were assessed via self-report questionnaires. Although the instrument met established validity and reliability standards, self-report measures remain susceptible to response bias, such as social desirability effects or varying levels of student self-awareness regarding their learning habits. Subsequent studies could integrate self-report data with structured behavioral observations or standardized psychometric diagnostic tools to achieve higher measurement objectivity.

Fifth, this study did not empirically test mediating or moderating variables that might further elucidate the internal pathways connecting student characteristics, TSTS implementation, and academic outcomes. Psychological variables such as academic self-efficacy, intrinsic motivation, peer-interaction quality, or cognitive engagement could be investigated as potential mediators or moderators through advanced analytical methods, including structural equation modeling (SEM) or path analysis. Such approaches would clarify not only whether associations exist, but also the specific structural pathways through which they operate. Nonetheless, these limitations present valuable avenues for future inquiry. By establishing a solid empirical foundation, this study invites subsequent research to test, expand, and refine these findings across broader educational contexts.

CONCLUSION

The findings demonstrate a quantitative increase in cognitive learning outcomes in Pancasila Education among Grade XI students at SMAN 1 Banyuwangi following the

implementation of the Two Stay Two Stray (TSTS) cooperative learning model. Descriptively, the overall mean score rose from a baseline of 76 to 90 post-intervention, while the minimum score increased from 62 to 85. These metrics reflect a substantial upward shift in academic achievement post-intervention; however, because this study employed a non-experimental associative design, these descriptive gains cannot be interpreted as direct evidence of a causal relationship. Inferential analysis via Pearson Chi-Square confirmed a statistically significant association between student learning preferences and cognitive outcome mastery ($\chi^2 = 18.241$; $p = 0.000$). The Contingency Coefficient of $C = 0.450$ ($p = 0.000$) demonstrates a moderate strength of association between these variables. These statistical findings indicate that student learning preference distributions align meaningfully with cognitive mastery attainment under the TSTS framework. Group learning emerged as the dominant modality preference (61.1%), whereas the practical-kinesthetic style represented the primary comprehension mode (36.1%). Theoretically, this association can be understood through the structural mechanisms of TSTS, which facilitate structured peer interaction, information exchange, peer tutoring, and social knowledge construction. Nevertheless, these explanatory pathways were not directly tested as mediating mechanisms within the scope of this study. Consequently, future research should implement true experimental or quasi-experimental designs while incorporating psychological and instructional variables—such as intrinsic motivation, baseline academic ability, group interaction quality, and learning engagement—to systematically unpack the causal pathways connecting student characteristics, TSTS implementation, and cognitive achievement.

REFERENCES

- Afifatimah, O., Hanif, M., & Pribadi, D. B. T. (2024). Peningkatan Minat Belajar Siswa dalam Pembelajaran Pendidikan Pancasila menggunakan Strategi Teams Games Tournament dengan Media Berbasis ICT "Wordwall." *PTK: Jurnal Tindakan Kelas*, 5(1), 53–65. <https://doi.org/10.53624/ptk.v5i1.457>
- Aisah, R. N., Masfuah, S., & Rondli, W. S. (2022). Analisis Faktor Penyebab Kesulitan Belajar PPKn di SD. *Didaktik : Jurnal Ilmiah PGSD STKIP Subang*, 8(1), 671–685. <https://doi.org/10.36989/didaktik.v8i1.339>
- Anderson, L. W., & Krathwohl, D. R. (2001). *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. Longman.
- Arikunto, S. (2019). *Prosedur Penelitian: Suatu Pendekatan Praktik*. Rineka Cipta.
- Azwar, S. (2013). *Penyusunan Skala Psikologi Ed 2*. Pustaka Belajar.
- Chi, M. T. H. (2009). Active-Constructive-Interactive: A Conceptual Framework for Differentiating Learning Activities. *Topics in Cognitive Science*, 1(1), 73–105. <https://doi.org/10.1111/j.1756-8765.2008.01005.x>
- Daniels, H. (2001). *Vygotsky and Pedagogy*. Psychology Press.
- Field, A. (2018). *Discovering Statistics Using IBM SPSS Statistics*. SAGE Publications.
- Ghozali, I. (2018). *Aplikasi analisis multivariate dengan program IBM SPSS 25 (Edisi 9)*. Badan Penerbit Universitas Diponegoro.
- Huda, M. (2013). *Model-model pengajaran dan pembelajaran: Isu-isu metodis dan paradigmatis*. Pustaka Pelajar.

- Insani, N. A. A., Hakim, A., & Syam, N. (2026). Penerapan Model Pembelajaran Kooperatif Tipe Two Stay Two Stray (TSTS) untuk Meningkatkan Keaktifan Belajar Pendidikan Pancasila Siswa Kelas V UPTD SD Negeri 83 Parepare. *Juara SD : Jurnal Pendidikan Dan Pembelajaran Sekolah Dasar*, 5(1), 57–63. <https://doi.org/10.26858/n9jz9y05>
- Johnson, D. W., & Johnson, R. T. (2019). Cooperative Learning: The Foundation for Active Learning. In S. M. Brito (Ed.), *Active Learning—Beyond the Future*. IntechOpen.
- Kagan, S. (1994). *Cooperative Learning*. Kagan Cooperative Learning.
- Kosamunjaya, Y. (2021). Penerapan Metode Two Stay Two Stray pada Materi Otonomi Daerah terhadap Peningkatan Aktivitas Belajar Siswa. *PKN Progresif: Jurnal Pemikiran dan Penelitian Kewarganegaraan*, 16(1), 15–26. <https://doi.org/10.20961/pknp.v16i1.56833>
- Lavenda, S., Asriati, N., Purnama, S., Bistari, B., & Utami, T. (2025). Penggunaan Model Pembelajaran Kooperatif Tipe Two Stay Two Stray untuk Meningkatkan Sikap Kerja Sama Siswa. *SOCIAL : Jurnal Inovasi Pendidikan IPS*, 5(4), 1608–1619. <https://doi.org/10.51878/social.v5i4.8037>
- Lie, A. (2003). *Cooperative Learning: mempraktikkan cooperative learning di ruang-ruang kelas*. Grasindo.
- Nuryyati, R. (2023). Metode Pembelajaran Two Stay To Stray untuk Meningkatkan Pemahaman Unsur Intrinsik Cerpen pada Siswa SMP Negeri 1 Cangkring. *Jurnal Pendidikan Bahasa Indonesia*, 11(2), 111–118. <https://doi.org/10.30659/jpbi.11.2.30-39>
- Piaget, J. (with Internet Archive). (1985). *The equilibration of cognitive structures: The central problem of intellectual development*. Chicago : University of Chicago Press. <http://archive.org/details/equilibrationofc0000piag>
- Posner, G. J., Strike, K. A., Hewson, P. W., & Gertzog, W. A. (1982). Accommodation of a scientific conception: Toward a theory of conceptual change. *Science Education*, 66(2), 211–227. <https://doi.org/10.1002/sce.3730660207>
- Pusantra, D. (2020). Penerapan Model Cooperative Learning Two Stay Two Stray (TSTS) untuk Meningkatkan Sikap Demokrasi dan Prestasi Belajar Siswa (Pembelajaran pada PPKN Kelas XI SMAN 1 Gumay Talang). *Diadik: Jurnal Ilmiah Teknologi Pendidikan*, 10(1), 22–30. <https://doi.org/10.33369/diadik.v10i1.18097>
- Rorimpandey, W. H. F., Maaluas, F., Mangangantung, J., & Suryanto, H. (2022). The Student Teams Achievement Divisions Learning Model in Its Influence on the Motivation and Science Learning Outcomes of Elementary School Students. *Journal of Innovation in Educational and Cultural Research*, 3(3), 345–354. <https://doi.org/10.46843/jiecr.v3i3.72>
- Roscoe, R. D., & Chi, M. T. H. (2007). Understanding Tutor Learning: Knowledge-Building and Knowledge-Telling in Peer Tutors' Explanations and Questions. *Review of Educational Research*, 77(4), 534–574. <https://doi.org/10.3102/0034654307309920>
- Serandoma, N. L., Ritiauw, S. P., & Sopacua, J. (2026). Penerapan Model Pembelajaran Two Stay Two Stray dalam Meningkatkan Hasil Belajar Siswa pada Mata Pelajaran IPAS Kelas IV SD Negeri Moain. *LEARNING : Jurnal Inovasi Penelitian Pendidikan Dan Pembelajaran*, 6(3), 2573–2586. <https://doi.org/10.51878/learning.v6i3.12114>

- Slavin, R. E. (2012). *Educational Psychology: Theory and Practice*. Pearson.
- Sudrajat, R., & Astuti, C. B. (2023). Penerapan Empat Elemen Kunci dalam Mata Pelajaran Pendidikan Pancasila pada Capaian Pembelajaran di Fase D Kelas VII. *Civis : Jurnal Ilmiah Ilmu Sosial Dan Pendidikan*, 12(1), 1–17.
<https://doi.org/10.26877/civis.v12i1.14579>
- Sugiyono. (2021). *Metode penelitian kuantitatif, kualitatif, dan R&D* (Cetakan Ke-3). Alfabeta.
- Vygotsky, L. S., & Cole, M. (1978). *Mind in Society: Development of Higher Psychological Processes*. Harvard University Press.
- Wood, D., Bruner, J. S., & Ross, G. (1976). The role of tutoring in problem solving. *Child Psychology & Psychiatry & Allied Disciplines*, 17(2), 89–100.
<https://doi.org/10.1111/j.1469-7610.1976.tb00381.x>