

ASSOCIATION BETWEEN THE STAD COOPERATIVE LEARNING MODEL AND STUDENTS' INTERPERSONAL INTELLIGENCE IN ISLAMIC RELIGIOUS EDUCATION

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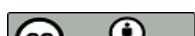
Abstract

This study examined the relationship between the Student Teams Achievement Division (STAD) cooperative learning model and students' interpersonal intelligence in Islamic Religious Education. The study applied a quantitative correlational design involving 70 seventh-grade students at a public junior high school in Indonesia. Data were collected using Likert-scale questionnaires measuring the implementation of the STAD cooperative learning model and students' interpersonal intelligence. The instruments were tested for validity and reliability prior to data collection. Data analysis was carried out using descriptive statistics, normality testing, and simple linear regression through SPSS 22. The findings indicated that both the implementation of the STAD cooperative learning model and students' interpersonal intelligence were categorized at high levels. Regression analysis demonstrated a significant positive relationship between the STAD cooperative learning model and students' interpersonal intelligence ($p < .05$), with the model explaining 51.4% of the variance in interpersonal intelligence scores ($R^2 = .514$; $R = .717$). These results indicate that cooperative learning practices accentuating collaboration, communication, and peer interaction are associated with stronger interpersonal competencies among students in Islamic Religious Education contexts.

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Introduction

Education is a principal process for developing students' cognitive, emotional, social, and moral competencies. Contemporary schooling not only emphasizes academic achievement but also prioritizes the development of social and interpersonal skills needed in collaborative learning environments and in social life. The effectiveness of the learning process is strongly influenced by the instructional strategies teachers use. Appropriate learning models could improve students' engagement, communication, and interaction during classroom activities, consequently supporting both academic and social development (Slavin, 1980; Li & Li, 2022; Tadesse et al., 2024).

One instructional approach widely implemented to promote active learning and joint effort is the Student Teams Achievement Division (STAD) cooperative learning model. STAD is a cooperative learning strategy developed within the cooperative learning framework, in which students work in heterogeneous groups to achieve shared learning goals (Yang, 2021; Ghufron, 2023; Mukuka & Tatira, 2024). This model emphasizes positive interdependence, personal accountability, peer interaction, and group cooperation (Slavin, 1999). Through collaborative activities, students are encouraged to exchange ideas, support one another, and actively participate in collaborative problem-solving activities.

From a theoretical perspective, the STAD cooperative learning model may support the development of interpersonal intelligence through several classroom interaction strategies. Collaborative group activities motivate students to communicate actively, exchange perspectives, negotiate ideas, and work together to achieve shared learning goals. Heterogeneous group configurations also provide opportunities for students to develop empathy, social awareness, and reciprocal respect during learning interactions. These learning processes closely align with Gardner's theory of interpersonal intelligence, which emphasizes the ability to understand others, establish effective social relationships, and respond appropriately in social situations.

The implementation of cooperative learning is closely related to the development of interpersonal intelligence. According to the Multiple Intelligences Theory proposed by Howard Gardner, interpersonal intelligence refers to the ability to understand others' emotions, motivations, and perspectives, as well as the ability to establish effective social relationships (Gardner & Hatch, 1989). Students with strong interpersonal intelligence tend to demonstrate better communication skills, empathy, teamwork, and social adaptability (McNulty & Politis, 2023; Ma et al., 2025). In classroom contexts, these competencies are essential because learning activities increasingly need collaboration, discussion, and interaction among students.

However, several educational studies have indicated that students' interpersonal intelligence remains relatively low. Many students struggle to communicate effectively, collaborate in groups, respect others' opinions, and convey empathy during classroom conversations (Lubis et al., 2019). Previous studies have demonstrated that interpersonal intelligence contributes substantially to students' prosocial behavior, collaborative learning, and academic achievement

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(Kusumaningrum, 2019; Pitri et al., 2024). In addition, interpersonal competence has been identified as an important factor influencing students' communication skills and social adaptability within learning environments (Merlin & Soubramanian, 2024). Cooperative learning approaches have also been reported to support the development of interpersonal intelligence and learning motivation among students (El-Yunusi et al., 2022; Bećirović, 2023; Arihi et al., 2024).

Preliminary observations performed at a public junior high school in Siak Hulu, Indonesia, also revealed several indicators of low interpersonal skills among students. Some students demonstrated limited participation in classroom discussions, weak cooperation during group activities, low confidence in expressing opinions, and insufficient respect for peers' perspectives. Several students also exhibited passive and individualistic tendencies during learning activities, which negatively affected collaborative learning. The results indicate the need for learning models that can encourage communication, interaction, cooperation, and social participation among students (Khansa et al., 2024).

The STAD cooperative learning model is considered a relevant pedagogical alternative to address these issues because it actively involves students in collaborative group activities (Agwu & Nmadu, 2023; Yang et al., 2024; Güngör et al., 2026). Previous studies have shown that cooperative learning can improve academic achievement, social interaction, and student motivation (Slavin, 1980). Nevertheless, several important gaps remain in the existing literature. First, most previous studies on the STAD cooperative learning model have primarily focused on cognitive learning outcomes, such as academic achievement, motivation, and critical thinking skills, while paying relatively little attention to students' interpersonal intelligence as a primary outcome variable.

Second, studies examining cooperative learning and interpersonal intelligence within Islamic Religious Education contexts remain scarce, particularly at the junior secondary school level in Indonesia.

Third, although cooperative learning theory emphasizes social interaction and peer collaboration, empirical evidence on how STAD-related classroom interaction is associated with students' interpersonal competencies remains limited. Attending to these gaps is important because Islamic Religious Education not only emphasizes cognitive understanding of religious concepts but also develops empathy, cooperation, social responsibility, and positive interpersonal behavior among students (Maulana et al., 2023).

Therefore, this study intends to examine the association of the STAD cooperative learning model on students' interpersonal intelligence in Islamic Religious Education classes at a junior high school in Indonesia. The findings of this study are expected to contribute to the development of cooperative learning practices and yield empirical evidence regarding the role of STAD in improving students' interpersonal intelligence.

Research Method

This study applied a quantitative correlational research design to examine the relationship between the Student Teams Achievement Division (STAD) cooperative

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learning model and students' interpersonal intelligenc in Islamic Religious Education classes. Quantitative correlational research is commonly used to identify relationships and predictive influences between variables through quantitative statistical analysis (Creswell & Creswell, 2018; Damerji & Salimi, 2021; Lim, 2025). The predictor variable in this study was the STAD cooperative learning model, while the dependent variable was students' interpersonal intelligence.

The research was conducted at a public junior high school in Siak Hulu District, Kampar Regency, Riau Province, Indonesia, from January to April 2026. The population consisted of 70 seventh-grade students distributed across three classes. Because the population was relatively small, this study used a saturated sampling technique, in which all members of the population were included as research participants (Etikan & Bala, 2017; Lakens, 2022; Tight, 2024). The sample size of 70 participants was considered adequate for simple linear regression analysis involving one predictor variable (Austin & Steyerberg, 2015). According to statistical recommendations for behavioral and educational research, the minimum sample requirement for regression analysis can be achieved with relatively small to moderate sample sizes when the model contains a limited number of predictors (Jenkins & Quintana-Ascencio, 2020; Lakens, 2022).

Data were collected using questionnaires and documentation techniques. The questionnaire instrument was designed based on indicators of the STAD cooperative learning model and interpersonal intelligence and employed a five-point Likert scale ranging from strongly disagree to strongly agree (Joshi et al., 2015). Documentation was used to support the primary data, including school profiles and institutional records relevant to the research context.

Instrument validity was tested using Pearson product-moment correlation analysis through SPSS version 22. The results indicated that 23 of the 25 items measuring the STAD cooperative learning model were valid, while all items measuring interpersonal intelligence met the validity criteria. Reliability testing was carried out using Cronbach's alpha, with the STAD variable yielding a coefficient of .988 and the interpersonal intelligence variable yielding a coefficient of .989, indicating excellent internal consistency (Taber, 2018).

Data analysis involved descriptive and inferential statistical techniques. Prior to hypothesis testing, data normality was examined using the One-Sample Kolmogorov-Smirnov test. Hypothesis testing was subsequently performed using simple linear regression analysis to determine the association of the STAD cooperative learning model on students' interpersonal intelligence.

Prior to data collection, permission to conduct the study was obtained from the school administration. Students participated voluntarily, and the confidentiality of participants' responses was maintained throughout the research process. The collected data were used solely for academic research.

Results and Discussion

A. *Descriptive Analysis*

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Descriptive statistical analysis was conducted to examine the implementation level of the Student Teams Achievement Division (STAD) cooperative learning model and students' interpersonal intelligence in Islamic Religious Education classes. The analysis was based on questionnaire responses obtained from 70 seventh-grade students. Descriptive analysis is important in quantitative educational research because it provides an overview of respondents' perceptions and the distribution of research variables before inferential statistical testing is conducted (Hair et al., 2019).

The results showed that students demonstrated positive perceptions toward the implementation of the STAD cooperative learning model. Most respondents selected the "agree" and "strongly agree" categories on questionnaire items related to collaborative learning activities, group interaction, communication, and participation during classroom instruction. The total score for the STAD cooperative learning model variable was 1,610, corresponding to 84.62%, showing a high level of implementation for the STAD model (Anggraini et al., 2024).

Similarly, the descriptive results for students' interpersonal intelligence also showed positive outcomes. Students generally responded positively to indicators of empathy, cooperation, communication skills, and social interaction. The total score for the interpersonal intelligence variable was 1,750, corresponding to 83.81% and falling within the high category (Hakim et al., 2024). These outcomes indicate that students possessed relatively strong interpersonal competencies during the learning process (Hasanah & Candra, 2026). Table 1 presents the descriptive statistics of the research variables.

Table 1. Descriptive statistics of research variables

Variable	Total Score	Percentage (%)	Category
STAD Cooperative Learning Model	1,610	84.62	High
Students' Interpersonal Intelligence	1,750	83.81	High

The high implementation level of the STAD cooperative learning model indicates that cooperative learning activities were effectively carried out in the classroom (Anggraini et al., 2023). Students actively participated in group discussions, exchanged ideas with peers, and collaborated in completing learning tasks (Hasanah & Candra, 2026). According to cooperative learning theory, instructional models highlighting positive interdependence and peer interaction can greatly improve students' participation and joint engagement (Slavin, 2015). Previous studies have similarly reported that the STAD cooperative learning model makes a positive contribution to students' classroom interaction, learning motivation, and active participation (Arihi et al., 2024).

The findings also demonstrate that students' interpersonal intelligence developed positively during the implementation of cooperative learning activities (Amrullah & Suwarjo, 2018). Interpersonal intelligence involves the ability to communicate effectively, cooperate with others, demonstrate empathy, and build positive social relationships (Gardner & Hatch, 1989). Through collaborative learning environments, students are encouraged to express opinions, appreciate peers' perspectives, and work collectively toward shared learning goals. This condition

Association between the STAD cooperative learning model and students' interpersonal intelligence in Islamic religious education supports the development of interpersonal competencies within learning environments (Nurhayati et al., 2022).

The present findings are consistent with previous studies showing that cooperative learning strategies can improve students' social interaction and relational abilities. For example, Arihi et al. (2024) found that cooperative learning greatly enhanced students' interpersonal intelligence and learning motivation in higher education contexts. Similarly, Kusumaningrum (2019) reported that interpersonal intelligence was positively associated with prosocial behavior and coordinated engagement among students. Compared with previous findings, the current study shows relatively high levels of both STAD implementation and interpersonal intelligence, suggesting that cooperative learning practices in Islamic Religious Education can successfully support students' social and emotional development (Hakim et al., 2024).

In addition, the data substantiates the argument that Islamic Religious Education should not only focus on cognitive and religious knowledge acquisition but also emphasizes character development, empathy, cooperation, and social responsibility (Anggraini et al., 2024). The integration of cooperative learning approaches, such as STAD, therefore provides meaningful opportunities for students to develop interpersonal competencies together with academic learning outcomes.

B. Inferential Statistical Analysis

Inferential statistical analysis was conducted to examine the relationship between the Student Teams Achievement Division (STAD) cooperative learning model and students' interpersonal intelligence. Prior to regression analysis, the data met the assumptions of normality and linearity.

The regression analysis results presented a significant positive relationship between the STAD cooperative learning model and students' interpersonal intelligence. The ANOVA test indicated a p-value of $< .05$, which was below the statistical significance level of $.05$. This result suggests that greater implementation of the STAD cooperative learning model was associated with higher levels of students' interpersonal intelligence. Table 2 presents the results of the simple linear regression analysis.

Table 2. Results of simple linear regression analysis

Variable	R	R ²	Adjusted R ²	Coefficient (β)	Constant	Sig.
STAD Cooperative Learning Model → Interpersonal Intelligence	0.717	0.514	0.507	0.671	34.064	$< .05$

Note. N=70, $p < .05$.

The coefficient of assessment analysis showed an R² of $.514$, indicating that the STAD cooperative learning model explained 51.4% of the variance in students' interpersonal intelligence, with the remaining 48.6% influenced by other variables not examined in this study (Hasanah & Candra, 2026). According to Cohen (1988), an R² value above $.50$ shows a substantial explanatory association in educational and

behavioral research contexts. Furthermore, the correlation coefficient ($R = .717$) indicated a strong positive relationship between the STAD cooperative learning model and interpersonal intelligence.

The regression coefficient ($\beta = .671$) indicates that greater implementation of the STAD cooperative learning model was associated with higher students' interpersonal intelligence scores (Arihi et al., 2024). This result suggests that cooperative learning activities emphasizing communication, collaboration, and peer interaction positively contribute to students' interpersonal development (Webb et al., 2021).

The positive relationship identified in this study may be explained by the collaborative characteristics embedded within the STAD cooperative learning model. During cooperative learning activities, students are required to interact intensively with peers, exchange ideas, provide feedback, and participate in collaborative problem-solving processes. These social interactions may strengthen students' communication abilities, empathy, cooperation skills, and social responsiveness, which are central components of interpersonal intelligence (Adawiyah et al., 2025). Furthermore, heterogeneous group configurations in STAD learning environments may encourage students to appreciate diverse viewpoints and develop greater social adaptability during classroom interactions (Gomez & Lazer, 2019).

The findings of this study are consistent with previous research demonstrating that cooperative learning approaches significantly improve students' social interaction and interpersonal competencies. Arihi et al. (2024) reported that cooperative learning contributed constructively to students' interpersonal intelligence and learning motivation, with cooperative learning interventions explaining approximately 47% of the variance in interpersonal competency outcomes. Similarly, Kusumaningrum (2019) found that interpersonal intelligence considerably influenced students' prosocial behavior and coordinated engagement, reporting a moderate-to-strong positive relationship between interpersonal competence and social participation.

Compared with previous studies, the current research demonstrated a substantial explanatory contribution ($R^2 = .514$), indicating that the STAD cooperative learning model may prove especially effective in Islamic Religious Education circumstances where collaborative values, empathy, communication, and social responsibility are strongly emphasized. This evidence supports the cooperative learning theory proposed by Robert E. Slavin, which argues that structured group interaction improves both academic achievement and social development through positive interdependence and active peer engagement.

The results likewise reinforce Howard Gardner's theoretical perspective, which emphasizes that interpersonal intelligence develops through social interaction, cooperation, and communication. Therefore, implementing the STAD cooperative learning model provides meaningful opportunities for students to strengthen interpersonal competencies through active participation in classroom learning activities.

In the context of Islamic Religious Education, the implementation of cooperative learning also conforms to educational values, highlighting social harmony, mutual respect, cooperation, and joint responsibility (Adawiyah et al., 2025). Islamic learning principles encourage students to develop positive relationships,

Association between the STAD cooperative learning model and students' interpersonal intelligence in Islamic religious education empathy, and ethical interaction with others (Setiawati & Achadi, 2024). Therefore, cooperative learning approaches such as STAD may provide pedagogical opportunities to integrate academic learning objectives with students' social and moral development.

Limitations

This study has several limitations that should be considered when interpreting the findings. First, the study involved a relatively small sample from a single junior high school, which may limit the generalizability of the results to broader educational contexts. Second, the study used a correlational research design; therefore, causal conclusions regarding the relationship between the STAD cooperative learning model and interpersonal intelligence cannot be fully established. Third, the data were collected using self-report questionnaires, which may be influenced by social desirability bias and students' subjective perceptions. Future studies should involve larger, more diverse samples, employ experimental or prospective designs, and incorporate additional variables related to students' interpersonal development.

Conclusion

This study demonstrated that the implementation of the Student Teams Achievement Division (STAD) cooperative learning model and students' interpersonal intelligence were both categorized at high levels in Islamic Religious Education learning activities. The statistical analysis additionally showed a significant positive relationship between the STAD cooperative learning model and students' interpersonal intelligence, indicating that cooperative learning practices emphasizing communication, collaboration, and peer interaction are associated with stronger interpersonal competencies.

The outcomes contribute to the conceptual understanding of cooperative learning by highlighting the association between STAD-based collaborative interaction and the development of interpersonal intelligence in Islamic Religious Education contexts. In practice, the study suggests that cooperative learning approaches may serve as effective instructional alternatives for promoting students' social interaction, empathy, teamwork, and communication skills alongside academic learning objectives. Future studies are encouraged to employ broader samples and more rigorous research designs to further examine the relationship between cooperative learning and interpersonal development.

Recommendations

Based on the findings of this study, teachers are recommended to implement the Student Teams Achievement Division (STAD) cooperative learning model more consistently in Islamic Religious Education classes and other instructional environments. The use of cooperative learning strategies can support the development of students' interpersonal intelligence by increasing classroom interaction, communication, collaboration, empathy, and active participation in the learning

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process. Schools are also expected to provide institutional support through teacher training programs and learning resources, which facilitate the effective implementation of cooperative learning approaches.

For future researchers, it is recommended to expand the scope of research by including larger samples, diverse educational levels, and broader geographical settings to improve the generalizability of findings. Future studies may also examine additional variables influencing interpersonal intelligence, such as learning motivation, emotional intelligence, classroom climate, and family background. Furthermore, the use of mixed-method or experimental research designs is recommended to obtain more comprehensive perspectives on the effectiveness of cooperative learning models in developing students' social and interpersonal competencies.

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