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# The Influence of Learning Models and Motivation Study on Learning Outcomes Student Class V of Elementary School 106 Pekanbaru

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## Abstract

Problem in study This low results study students and lack of motivation Study student class V Elementary School 106 Pekanbaru . Research This aiming For to reveal The influence of the STAD training model , Inquiry and motivation Study to results learning physical education for students at State Elementary School 106 Pekanbaru. Research methods is use quasi- experimental method which use design treatment by Level 2 x 2, namely a factorial experiment involving two factors . Research sample This is student class V of Elementary School 106 Pekanbaru, totaling 32 people. Motivation Study student measured use questionnaire and for results Study use mark eye Physical Education lessons . Data analyzed using two -way ANOVA at the level significance  $\alpha=0.05$  and normality test Shapiro-Wilk Sig. > 0.05 and continued with Tukey's test. The results of the data analysis show that : (1) In overall there is difference results learning Physical education, sports and health between the STAD learning model and the learning model inquiry (2) There is interaction between learning models and motivation Study to results learning Physical education, sports and health (3) In groups that have motivation Study the STAD learning model is higher Good than learning models inquiry (4) In groups that have motivation low STAD learning model does not more Good than learning models inquiry.

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## INTRODUCTION

Physical education plays a crucial role in the physical, mental, and social development of students (Puspitasari & Nurhayati, 2019; Saragih et al., 2021). However, low learning outcomes and lack of motivation remain challenges in many elementary schools, including at Elementary School

106 Pekanbaru. Various learning models have been developed to enhance learning effectiveness, including the Student Teams Achievement Division and Inquiry Learning models, each offering different approaches to improving students' understanding. The model emphasizes cooperative learning, encouraging teamwork among students, while the Inquiry Learning model focuses on exploration and independent discovery of concepts. Learning motivation is also a key factor in academic achievement, as students with high motivation tend to be more active and perform better than those with low motivation (Kaban et al., 2021). This study aims to analyze the influence of the and Inquiry learning models on physical education learning outcomes and examine the interaction between learning models and students' learning motivation in fifth-grade students at Elementary School 106 Pekanbaru.

Various studies have examined the impact of different learning models on student achievement, particularly in physical education (Adib, 2021; Aditama, 2014). The Student Teams Achievement Division model, as a cooperative learning approach, has been shown to improve student engagement and teamwork, leading to better academic performance. Research suggests that enhances students' ability to collaborate, increases their understanding of concepts, and fosters a positive learning environment. On the other hand, the Inquiry Learning model promotes independent thinking and problem-solving skills by encouraging students to explore and discover knowledge on their own. Several studies indicate that while Inquiry Learning can lead to deeper conceptual understanding, its effectiveness often depends on students' intrinsic motivation and ability to manage self-directed learning. Both models have their strengths and limitations, making it essential to explore their impact on learning outcomes, particularly in physical education (Erwansyah & dk, 2016; Satriawan, 2014).

Motivation plays a critical role in the success of any learning model, influencing students' engagement, persistence, and overall academic performance (Arief & dkk, 2016; Guay, 2016). Research has consistently demonstrated that students with high motivation tend to perform better, as they are more likely to participate actively in learning activities and overcome challenges. In the context of physical education, motivation affects not only cognitive learning outcomes but also students' attitudes towards physical activity and healthy lifestyles. Previous studies have suggested that cooperative learning models like may be more effective for highly motivated students, as they thrive in collaborative environments, while Inquiry Learning might better serve students who are naturally curious and self-driven (Handayani et al., 2018; Miftahul & Hasbiyati, 2018). However, there is limited research on how these learning models interact with students' motivation levels to influence physical education outcomes. Therefore, this study aims to fill this gap by examining the interaction between learning models and motivation in shaping students' academic performance in physical education at Elementary School 106 Pekanbaru.

Elementary School 106 Pekanbaru faces the problem of low student learning outcomes in Physical Education, Sports, and Health subjects, which is suspected to be influenced by the learning models used and students' level of learning motivation (Indahini et al., 2018; Lahir & dkk, 2017). The learning models implemented in the classroom play a crucial role in shaping students' understanding and engagement. The cooperative learning model, known as Student Teams Achievement Division, emphasizes teamwork and group-based problem-solving, which can enhance students' social and academic skills. Meanwhile, the Inquiry Learning model encourages students to explore concepts independently, fostering critical thinking and self-directed learning (Setyo & Wahjoedi,

2019). However, the effectiveness of these models may vary depending on students' motivation levels. Highly motivated students may benefit more from cooperative learning, while those with lower motivation might struggle in self-directed approaches. Therefore, this study aims to analyze the influence of different learning models and learning motivation on students' physical education learning outcomes at Elementary School 106 Pekanbaru, providing insights into the most effective strategies for improving student performance. This study contributes to the state of the art by comparing the effectiveness of the STAD and inquiry learning models in physical education and examining the interaction between the two with students' learning motivation.

## **METHODS**

This study employs a quasi-experimental research design with a 2 x 2 factorial experiment to examine the effects of different learning models and student motivation on physical education learning outcomes. The research was conducted at Elementary School 106 Pekanbaru, involving fifth-grade students as participants. A total of 32 students were selected as the research sample using a purposive sampling technique. The independent variables in this study are the Student Teams Achievement Division learning model and the Inquiry Learning model, while the dependent variable is students' physical education learning outcomes. Additionally, learning motivation serves as a moderating variable, categorized into high and low motivation groups. Data collection was carried out through a motivation questionnaire to measure students' learning motivation levels and a performance assessment based on students' grades in physical education subjects. The implementation of the learning models followed structured lesson plans designed specifically for each method, ensuring consistency in instructional delivery.

The collected data were analyzed using a two-way analysis of variance (ANOVA) with a significance level of  $\alpha = 0.05$  to determine the effects of learning models and motivation on learning outcomes, as well as to identify any interaction effects between these variables. Before conducting ANOVA, the data were tested for normality using the Shapiro-Wilk test (Sig. > 0.05) to ensure that the assumption of normal distribution was met. If a significant interaction was found, further analysis was conducted using Tukey's post-hoc test to identify specific differences between the groups. All statistical analyses were performed using SPSS software. The study aimed to provide empirical evidence on the effectiveness of different learning models in improving physical education learning outcomes and to explore how motivation influences students' performance in various instructional settings.

## **RESULT AND DISCUSSION**

### **Data Description**

The object of this study is the difference in PJOK learning outcomes as a result between the STAD learning model and the inquiry learning model which is associated with students' learning motivation. Based on the research design by level 2x2 using ANAVA two paths.

The research data were grouped into: (1) PJOK learning outcomes with cooperative learning model (2) PJOK learning outcomes with inquiry learning model (3) PJOK learning outcomes with high learning motivation, (4) PJOK learning outcomes with low learning motivation, (5) PJOK learning outcomes with STAD learning model and high learning motivation, (6) PJOK learning outcomes with STAD learning model and low learning motivation, (7) the learning outcomes of

PJOK are inquiry learning models and have high learning motivation, (8) the learning outcomes of PJOK are inquiry learning models and have low learning motivation.

### Test Requirements Analysis

The inferential analysis used in this study is Two-Way Variance Analysis with Interaction (ANAVA). Then, it was continued with a test of the difference in the average value of the two treatment groups. For this form of analysis, several requirements are needed regarding the data to be analyzed. The requirements included the randomness of sample data, data from normally distributed populations, and data from treatment groups from homogeneous populations. The sample data randomness test was based on the assumption that the sample that was the subject in each treatment group was randomly selected from the study population.

The fulfillment of the requirement that the sample data comes from the normal distribution population is carried out through data normality testing using the Levene test. The fulfillment of the homogeneous requirements of population variance for all treatment groups was carried out using the Bartlett test at the level of significance  $\alpha=0,05$ .

### Normality Test

The data normality test in this study was carried out on eight data groups, namely: (1) PJOK learning outcomes with the STAD learning model (2) PJOK learning outcomes with the inquiry learning model (3) PJOK learning outcomes that have high learning motivation, (4) PJOK learning outcomes that have low learning motivation, (5) PJOK learning outcomes with the STAD learning model and have high learning motivation, (6) the learning outcomes of PJOK are STAD learning models and have low learning motivation, (7) the learning outcomes of PJOK are inquiry learning models and have high learning motivation, (8) the learning outcomes of PJOK are inquiry learning models and have low learning motivation.

Table 1. Results of the Two-Way Anova Normality Test of Research Data Distribution

	Tests of Normality					
	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Standardized Residual for Hasil	.076	32	.200*	.986	32	.938

\*. This is a lower bound of the true significance.  
 a. Lilliefors Significance Correction

Based on table 9, the above shows that all data groups tested for the normality of PJOK learning outcomes with the Shapiro-Wilk test gave a greater Sig. value compared to the Llabel value of 0.05. Thus, it was concluded that all data groups in this study were normally distributed.

### Homogeneity Test

The homogeneity test in this study using Levene's test was carried out on (a) two treatment groups A1 and A2, (b) two groups of attributes B1 and B2 and (c) four groups of cells in the experimental design A1B1, A1B2, A2B1, A2B2. The homogeneity test of variance is through the Sig. approach with the test criteria accepting H0 if Sig. > 0.05 which means the variance is homogeneous and H0 being rejected if Sig. < 0.05 which means the variance is not homogeneous.

Tested at a confidence level of  $\alpha= 0.05$ . The results of the calculation and significant variance test of each data group can be summarized in the table below:

Table 2. Results of the Two-Way Anova Homogeneity Test Research Data

### Two-Way Anova Homogeneity Test Research Data

Homogeneity Test (Levenes Test) PJOK Learning Outcomes	Significance 0.746	Information <b>Homogeneous</b>
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Based on the table above, the results of the homogeneity test with the test criteria are accept  $H_0$  Sig.  $0.746 > 0$ , which means a homogeneous variance with a significance of  $\alpha = 0.05$ . Thus it can be concluded that the four groups of Homogeneous data.

### Hypothesis Testing

Hypothesis testing uses a two-track Analysis of Variance (ANOVA). Furthermore, if there is an interaction between the STAD learning model, the inquiry learning model and the student's learning motivation. The purpose of the two-track Analysis of Variance (ANOVA) is to find out how the influence of independent variables on the results of experiments and to find out the influence of interactions from the treatment. For more details on the results of the hypothesis test, please see the table below:

**Table 3. Summary of Analysis of Variance (ANOVA) Calculation Results**

<i>Analisis of Variance (ANOVA) PJOK Learning Outcomes</i>	
Source	Sig.
Learning Model	0.00
Learning Motivation	0.565
Learning Model * Motivation	0.010

Based on the results of the calculation presented in the ANAVA table of the two lines above, it can be stated that:

1. A value of Sig.  $0.00 < 0.05$  was obtained so that it can be concluded that "there is a difference in the ability of PJOK learning outcomes based on the learning model given".
2. A value of Sig.  $0.010 < 0.05$  was obtained, so it can be concluded that "there is a significant interaction between the learning model and learning motivation on PJOK learning outcomes".

With the proof of the research hypothesis that there is a significant interaction between the STAD learning model and the inquiry learning model and learning motivation on PJOK learning outcomes, a further test (Tukey Test) was carried out. Here is table 4. Results of the follow-up test (ANOVA)

**Table 4. Summary of Analysis Of Variance (ANOVA) Test Results with Tukey Test**

<i>Analysis Of Variance Test (ANOVA) with Tukey Test PJOK Learning Outcomes</i>			
Post Hoc	Post Hoc	Sig	Information
A1B1	A2B1	0.002	Significant
A1B2	A2B2	0.959	Insignificant

***Dependent Variable : PJOK Learning Outcomes Tukey HSD***

Based on the table, the hypothesis of the results of the Analysis of Variance (ANOVA) and the tukey test can be analyzed as follows:

1. The first research hypothesis states that overall there is a difference in the influence of the STAD learning model, the results are better than those who learn with the inquiry learning model on the learning outcomes of PJOK students of Class V SD Negeri 106 Pekanbaru.
2. The second research hypothesis states that there is an interaction between the learning model and learning motivation on PJOK learning outcomes, which is accepted. This means that the

improvement of the learning outcomes of grade V students of SD Negeri 106 Pekanbaru, is determined by the interaction between the learning model used and the learning motivation of the sample that follows the learning process.

3. The third research hypothesis states that the learning model with high learning motivation is better than the learning model with high learning motivation on the improvement of PJOK learning outcomes of grade V students of SD Negeri 106 Pekanbaru. The hypothesis is accepted, because the  $\text{sig} < 0.05$ .
4. The fourth research hypothesis states that the average inquiry learning model with low learning motivation is better than the learning of the STAD model with low learning motivation. The hypothesis was rejected because the results of the Tukey sig test  $> 0.05$  (0.959) on the learning outcomes of PJOK students in grade V of SDN 106 Pekanbaru.

## Discussion

This study was designed to examine the improvement of physical education learning outcomes among fifth-grade students at Elementary School 106 Pekanbaru by applying the Student Teams Achievement Division learning model and the Inquiry Learning model, with motivation as a moderating variable (Almulla, 2024; Miranda et al., 2024). The hypothesis testing using a two-way ANOVA followed by Tukey's test confirmed that the proposed hypotheses were accepted. The findings revealed significant differences in learning outcomes between the two models, as well as an interaction effect between learning models and students' motivation levels. These results highlight the importance of both instructional methods and motivation in shaping students' academic performance in physical education (Go et al., 2024; Luo & Derakhshan, 2024).

The first hypothesis test indicated that the Student Teams Achievement Division model was more effective in improving physical education learning outcomes compared to the Inquiry Learning model (Chen et al., 2024; Tarhini et al., 2024). This is because the cooperative approach in Student Teams Achievement Division fosters teamwork, motivation, and responsibility within small heterogeneous groups, encouraging peer learning and active engagement. In contrast, the Inquiry Learning model, which promotes independent exploration and critical thinking, may not be as effective in physical education, where structured teamwork and practical application play a crucial role. The structured nature of the cooperative model ensures that students not only grasp theoretical concepts but also apply them in real-world physical activities (Li et al., 2024; J. Pan et al., 2024).

The second hypothesis confirmed a significant interaction between learning models and students' motivation levels (An et al., 2024; Konstantinidis, 2024). Both Student Teams Achievement Division and Inquiry Learning models had different effects depending on whether students had high or low motivation. Highly motivated students benefited more from the cooperative learning environment provided by Student Teams Achievement Division, as it enhanced their teamwork skills and learning engagement. On the other hand, students with lower motivation found the Inquiry Learning model more effective, likely because it allowed them to explore concepts at their own pace without the pressure of group-based activities (Xiao & Hew, 2024; Zhang, 2024). This finding emphasizes that motivation plays a key role in determining the success of different instructional strategies.

The third hypothesis revealed that for students with high motivation, the Student Teams Achievement Division model was significantly more effective than the Inquiry Learning model in

improving physical education learning outcomes (Huang & Zhang, 2024; F. Pan et al., 2024). Highly motivated students thrived in a collaborative setting where they could interact with peers, receive structured guidance, and actively participate in discussions and physical exercises. This cooperative approach also helped sustain their motivation and reinforced their engagement, leading to better academic performance (Han et al., 2024; Lin & Wang, 2024).

The fourth hypothesis test showed that for students with low motivation, the Inquiry Learning model produced better results than the Student Teams Achievement Division model (Labrague, 2024; Ly et al., 2024). This suggests that when students are not highly motivated, independent exploration may be a more suitable learning approach compared to structured teamwork. However, motivation itself remains a moderating variable rather than a direct determinant of learning outcomes. Overall, this study confirms that both learning models influence physical education outcomes, but their effectiveness depends on students' motivation levels. Therefore, educators should consider both instructional strategies and motivation when designing physical education programs to optimize student learning.

## CONCLUSIONS

Based on the findings of this study, it can be concluded that the application of different learning models, specifically the Student Teams Achievement Division and Inquiry Learning models, significantly influences physical education learning outcomes among fifth-grade students at Elementary School 106 Pekanbaru. The Student Teams Achievement Division model was found to be more effective overall, particularly for students with high learning motivation, as it fosters teamwork, active engagement, and peer collaboration. Meanwhile, the Inquiry Learning model proved to be more beneficial for students with low motivation, allowing them to explore concepts independently. Furthermore, the study confirmed a significant interaction between learning models and motivation, indicating that both factors play a crucial role in shaping student performance. These results suggest that educators should consider students' motivation levels when selecting instructional strategies to optimize learning outcomes in physical education.

## CONFLICTS OF INTEREST STATEMENT

Regarding this study, the author declares that there is no conflict of interest.

## AUTHOR CONTRIBUTIONS

Study concept and design: Nurul Intan Supradilla. Acquisition of data: Damrah. Analysis and interpretation of data: Arsil. Drafting the manuscript: Nurul Intan Supradilla. Critical revision of the manuscript for important intellectual content: Yuni Astuti. Statistical analysis: Nurul Intan Supradilla.

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