



**DETERMINANTS OF PHYSICAL EDUCATION, SPORTS, AND HEALTH (PJOK)
LEARNING OUTCOMES: AN ANALYSIS OF TEACHER PERFORMANCE, LEARNING
MODELS, AND EVALUATION SYSTEMS**

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ABSTRACT

This study aims to analyze the partial and simultaneous effects of Physical Education, Sports, and Health (PJOK) teacher performance, learning models, and learning evaluation systems on the PJOK learning outcomes of elementary school students. This quantitative research was conducted utilizing a total sampling technique, which involved a sample of 43 public elementary school PJOK teachers in Geyer District, Grobogan Regency. Data were collected through validated questionnaires and the odd semester learning outcomes scores of fifth-grade students for the 2025/2026 academic year. The data were statistically analyzed using multiple linear regression tests, t-tests, F-tests, and coefficient of determination analysis. The results of the study showed that: (1) teacher performance has a positive and significant effect on learning outcomes, evidenced by a calculated t-value of 6.104 (greater than the t-table of 2.022) with a significance of 0.000; (2) learning models have a positive and significant effect on learning outcomes with a calculated t-value of 4.167 (greater than the t-table of 2.022) and significance of 0.000; (3) the learning evaluation system has a positive and significant effect on learning outcomes, showing a calculated t-value of 4.784 (greater than the t-table of 2.022) with significance of 0.000; and (4) simultaneously, the three variables significantly affect learning outcomes with a calculated F-value of 111.473 (significance 0.000). Furthermore, the coefficient of determination of 0.896 indicates that these variables explain 89.6 percent of the total learning variance.

Keywords: elementary school; evaluation system; learning models; PJOK learning outcomes; PJOK teacher performance

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INTRODUCTION

Education remains a fundamental necessity throughout human life, serving as an indispensable catalyst for an individual's qualitative growth and holistic development. At its core, education is designed to unlock and nurture inherent human potential; without deliberate cultivation, these innate abilities remain dormant and fail to yield tangible societal contributions. Consequently, it is imperative to equip individuals with a multifaceted skill set that encompasses conceptual understanding, moral responsibility, creativity, and practical competencies. Furthermore, as inherently social beings, human development is profoundly shaped by environmental interactions, and education acts as a harmonizing force that bridges personal aspirations with societal expectations (Estrada et al., 2019). Elevating the standard of education is a cornerstone for achieving sustainable national development, as knowledge forms the bedrock of all human endeavors. Echoing the philosophy of Ki Hajar Dewantara, education is fundamentally a conscious effort to guide the natural strengths of rational human beings toward the mastery of knowledge and virtue (Asep Wijaya et al., 2024). In this context, educators are tasked with molding a superior generation that excels across cognitive, affective, and psychomotor dimensions, ensuring that graduates are distinguished not only by their intellectual prowess but also by their noble character (Safitri et al., 2024).

Physical Education, Sports, and Health (PJOK) plays a pivotal role in this holistic developmental process. It empowers students to construct positive self-esteem through enhanced physical confidence, personal milestones, and leadership experiences. Moving beyond mere physical exertion, modern physical education paradigms emphasize its significant contribution to elevating academic standards, fostering lifelong healthy habits, and refining students' abilities to navigate physical risks and motor skills (Mustafa, 2022). The success of these PJOK objectives is deeply intertwined with the performance of the educators. PJOK teachers are required to execute instructional strategies effectively and manage classroom dynamics with high proficiency. However, current observations indicate that the pedagogical and professional competencies of many PJOK teachers are not yet optimal, particularly regarding curriculum adaptation and innovative instructional delivery (Winarni & Lismadiana, 2020). This gap directly compromises the quality of the learning process and subsequent student outcomes. Because professional teaching practices are positively correlated with academic achievement and the broader enhancement of human resources, systematic efforts to upgrade teacher performance are critical (Mena et al., 2016).

Parallel to teacher competence, the selection of appropriate PJOK learning models is instrumental in maximizing elementary students' academic success (Yuliawan et al., 2026). Evidence suggests that student-centered models prioritizing active participation yield significantly better learning outcomes compared to traditional, conventional approaches. These instructional models serve as conceptual frameworks encompassing specific teaching methods, grouped primarily into social interaction, information processing, personal-humanistic, and behavioral modification models (Albina et al., 2022). Furthermore, the effectiveness of these models must be measured through a robust evaluation system. In PJOK, assessments must transcend cognitive testing to equally evaluate affective and psychomotor domains, providing a comprehensive profile of student progress. Unfortunately, practical implementations in elementary schools often fall short, with teachers disproportionately favoring cognitive assessments—such as written exams—while neglecting the systematic evaluation of physical skills and attitudes (Ramadhan et al., 2025). A balanced integration of both formative evaluations (to provide continuous instructional feedback) and summative evaluations (to measure overall program efficacy) is essential to rectify this imbalance (Rahman & Nasryah, 2019).

In the contemporary educational landscape, particularly in the wake of rapid digital transformation, the urgency of effective PJOK instruction has never been more pronounced. Today's elementary school students are increasingly exposed to sedentary lifestyles driven by excessive screen time and digital entertainment, which pose severe risks to their long-term physical health and motor development. Consequently, the physical education classroom serves as a vital intervention space to counteract these modern health crises. However, addressing these challenges requires more than just routine physical exercises; it demands a synergistic educational ecosystem. A highly competent teacher cannot maximize student potential if restricted by outdated conventional learning models. Similarly, even the most innovative, activity-based learning models will fail to demonstrate their true value if the evaluation systems are inherently flawed or heavily skewed toward theoretical knowledge. Therefore, establishing a cohesive alignment between instructional delivery, pedagogical frameworks, and authentic assessment is paramount. This integration ensures that physical education transcends basic physical literacy, evolving into a comprehensive platform for character building, psychological resilience, and lifelong well-being. By addressing these intersecting elements, educational institutions can foster a more dynamic and responsive learning environment tailored to the needs of 21st-century learners.

Ultimately, comprehensive PJOK learning outcomes are the product of a multidimensional synergy among key educational components encompassing the educator's role as an interactive facilitator, strategic planner, and classroom manager, activity-oriented instructional methods, and the utilization of holistic, multi-domain assessments that yield constructive feedback for continuous student development. Driven by these premises, this study is conducted to empirically investigate and quantify the partial and simultaneous contributions of teacher performance, instructional models, and evaluation systems on the PJOK learning outcomes of elementary school students within Geyer District, Grobogan Regency.

METHOD

This study employs a quantitative correlational design utilizing a multiple linear regression approach. This design was deliberately selected because it is highly effective in measuring the degree of association and the predictive power between multiple independent variables and a single dependent variable. By using multiple

linear regression, the study can accurately isolate both the individual (partial) and combined (simultaneous) effects of the predictors on student achievement. The research was conducted in Geyer District, Grobogan Regency, and took place from May 19 to June 30, 2026. This specific timeframe was chosen to align with the conclusion of the academic semester, ensuring that final student evaluations were completed and documented.

The population for this study comprised all public elementary school PJOK (Physical Education, Sports, and Health) teachers within the Geyer District, totaling 43 individuals ($N = 43$). Because the population size is relatively small and manageable, this research utilized a total sampling technique (also known as census sampling). This approach includes the entire population as the sample, thereby eliminating sampling error and ensuring that the findings are highly representative of the specific demographic in this district. Primary data were collected using structured questionnaires that employed a Likert Scale to measure the independent variables: Teacher Performance (X1), Learning Models (X2), and the Evaluation System (X3). The Likert scale utilized a five-point grading system, ranging from "Strongly Disagree" to "Strongly Agree," which allows for a nuanced, quantitative measurement of the teachers' professional practices. Meanwhile, the dependent variable (Y) was measured using secondary data, specifically the documentation of students' final grades from the odd semester of class V for the 2025/2026 academic year. Additionally, supporting data were gathered through student perception questionnaires. This dual-approach provides methodological triangulation, ensuring that the teachers' self-reported data aligned accurately with the students' actual classroom experiences.

The data collection involved distributing the questionnaires directly to the respective schools after securing the necessary administrative permits from the local education authority. Ethical considerations were strictly observed throughout the process; informed consent was obtained, and the anonymity and confidentiality of all participating teachers and students were fully guaranteed. Before conducting the primary data analysis, the instruments were rigorously tested for Validity and Reliability. Validity was tested (typically via Pearson Product-Moment correlation) to ensure each questionnaire item accurately measured the intended construct, while reliability (assessed via Cronbach's Alpha) confirmed the consistency of the instrument. To ensure the multiple linear regression model produced Best Linear Unbiased Estimators (BLUE), Classical Assumption Tests were conducted, which included checks for Normality, Linearity, Multicollinearity, and Heteroscedasticity. *Normality tests* ensure the residual data are normally distributed. *Linearity checks* confirm a direct linear relationship between the predictors and the outcome. *Multicollinearity assessments* (using Variance Inflation Factor and tolerance values) guarantee no high correlation exists among the independent variables. *Heteroscedasticity tests* ensure constant variance in the residuals across observations. Once the assumptions were satisfied, hypothesis testing was statistically analyzed using the t-test (to determine partial effects), the F-test (to determine simultaneous effects), and the Coefficient of Determination (R^2). The R^2 analysis was specifically used to calculate the exact percentage of the variance in student learning outcomes that could be explained by the three independent variables combined.

RESULT

Data Quality and Classical Assumption Testing

Prior to conducting the primary regression analysis, the dataset was rigorously evaluated for quality and adherence to standard statistical prerequisites. All items within the questionnaire were confirmed to be valid, demonstrating a calculated r-value greater than 0.301. Furthermore, the instruments proved highly reliable, yielding Cronbach's Alpha scores well above the acceptable 0.70 threshold (Teacher Performance X1 = 0.781; Learning Models X2 = 0.753; Evaluation System X3 = 0.764). The variables exhibited high average scores, indicating strong baseline metrics: X1 = 85.86, X2 = 85.46, X3 = 85.58, and Learning Outcomes (Y) = 84.67. The data successfully satisfied all requirements for multiple linear regression analysis. The dataset was normally distributed (Kolmogorov-Smirnov Sig. 0.200 > 0.05), and linearity was firmly established, with Deviation from Linearity significance values exceeding 0.05 across all variables (X1 = 0.066; X2 = 0.105; X3 = 0.431). Multicollinearity was not present, evidenced by Tolerance values above 0.10 and Variance Inflation Factor (VIF) values below 10.00 for every independent variable. Finally, the Glejser test confirmed the absence of heteroscedasticity, showing significance values well above 0.05 (X1 = 0.639; X2 = 0.395; X3 = 0.638).

Partial Effects Analysis (t-Test)

Utilizing a t-test with 39 degrees of freedom ($df = 39$) against a standard t-table value of 2.022, the individual impacts of each predictor variable were assessed. The statistical analysis revealed a calculated t-value of 6.104, significantly exceeding the 2.022 threshold ($\text{Sig.} = 0.000 < 0.05$). This strongly demonstrates that elevated teacher performance directly correlates with improved student learning outcomes. When educators possess strong mastery of physical movements and maintain highly structured classroom management, they cultivate a secure and motivating environment for students to engage in physical activities. These findings align with Wardany and Rigianti (2023), who assert that superior teacher performance significantly enhances educational quality and student achievement. Additionally, Nova et al. (2026) validate that principal-led performance evaluations accurately capture an educator's competence in delivering physical education, justifying their use in this study. A teacher's capacity to systematically design, execute, and evaluate lessons remains the cornerstone of effective PJOK instruction (M. A. Batubara et al., 2024). Beyond structural management, a teacher's emotional intelligence and visible enthusiasm play a critical role in bridging the gap for students who may struggle with physical confidence. By demonstrating empathy and adaptability, high-performing teachers transform physical education from a high-pressure athletic test into a nurturing space for personal growth, thereby reducing student anxiety and organically increasing their willingness to participate.

The application of instructional models demonstrated a significant positive effect, showing a calculated t-value of $4.167 > 2.022$ ($\text{Sig.} = 0.000 < 0.05$). Implementing varied and interactive learning models effectively prevents student fatigue and boredom. By demanding active physical and mental engagement, these models optimize the acquisition of complex motor skills. This conclusion is strongly supported by Firdaus et al. (2025), who found that Problem-Based Learning (PBL) in PJOK boosts student outcomes, and Yuliawan et al. (2025), who demonstrated that the consistent use of cooperative learning enhances the cognitive, affective, and psychomotor domains. Selecting an appropriate pedagogical model is crucial to instructional success. Arifin (2023) further highlights that Direct Instruction effectively enhances both teacher performance and student learning in specific mechanical tasks, such as basketball. This contemporary shift away from rigid, drill-based traditional teaching toward dynamic models such as gamification and peer-led learning empowers students to take ownership of their physical education. When students collaborate to solve movement challenges together, they develop crucial critical thinking and communication skills, making the physical activity much more engaging and intellectually stimulating.

Evaluation systems yielded a calculated t-value of $4.784 > 2.022$ ($\text{Sig.} = 0.000 < 0.05$). Assessments that comprehensively integrate cognitive, affective, and psychomotor aspects deliver precise, actionable feedback. This comprehensive approach enables teachers to accurately map which students require remedial interventions or advanced enrichment. The data confirm that robust evaluation systems are pivotal to outcomes because they inform teachers about the instructional efficacy of their past lessons. This data becomes the foundation for subsequent educational decisions, whether that involves reinforcement, remediation, or modifying teaching strategies entirely. This is consistent with Kaloka and Kurniawan (2021), who argue that systematic evaluations highlight process quality and inform PJOK improvement strategies. Simatupang et al. (2024) reinforce that all three educational domains must be measured for true comprehensive assessment, while Batubara et al. (2023) note that continuous evaluation is not solely for grading, but serves as a vital reflective tool for pedagogical refinement. Transitioning from a purely outcome-focused assessment—such as measuring only who runs the fastest to a process-oriented evaluation ensures that effort, sportsmanship, and personal progress are recognized. This holistic assessment paradigm encourages lifelong fitness habits, as students feel valued for their individual improvements rather than being compared against arbitrary athletic standards.

Simultaneous Effect and Variable Contribution

The regression analysis produced an F-value of 111.473 with a significance level of $0.000 < 0.05$. This conclusively proves that Teacher Performance, Learning Models, and the Evaluation System collectively and significantly impact PJOK Learning Outcomes. The R^2 value was calculated to be 0.896. This indicates that an overwhelming 89.6% of the variance in student learning outcomes is simultaneously explained by these three predictors, leaving only 10.4% to be influenced by external factors outside the scope of this model. These findings are strongly corroborated by Zhang et al. (2024), whose systematic review concluded that maximizing physical education outcomes requires a harmonious integration of competent teaching, appropriate modeling, and effective instructional processes. These components are mutually reinforcing, operating together to create an optimal educational experience. Furthermore, Batubara et al. (2024) observed that highly competent PJOK teachers utilizing project-based models achieved exceptional success rates.

They emphasize that educators who can systematically plan, execute, and evaluate their lessons foster a highly effective environment that elevates student motivation, creativity, and collaborative skills. The profound synergy among these three variables cannot be overstated. A highly competent teacher using an innovative model will still falter if the evaluation system is fundamentally flawed, just as a perfect assessment rubric is useless if instructional delivery is poor. The cohesive alignment of planning, execution, and evaluation creates an educational ecosystem where students can truly thrive. Furthermore, the remaining 10.4% of unexplained variance presents an exciting avenue for future academic inquiry. Extraneous variables such as a student's socioeconomic background, daily nutritional intake, access to community sports facilities, and the level of parental involvement likely play subtle yet critical roles in shaping a child's holistic physical development.

CONCLUSION

The findings of this study conclusively demonstrate that, both partially and simultaneously, teacher performance, instructional models, and evaluation systems exert a positive and highly significant influence on the Physical Education, Sports, and Health (PJOK) learning outcomes of elementary school students. Among these interdependent variables, the implementation of a comprehensive evaluation system emerges as the primary determining factor that most heavily dictates the successful achievement of student learning outcomes. Beyond the statistical significance, these conclusions underscore a critical paradigm shift in modern physical education. Historically, PJOK has occasionally been relegated to the periphery of the academic curriculum, viewed merely as an unstructured period for physical exertion rather than a rigorous educational discipline. However, this research validates that when educators exhibit high professional competence and deploy dynamic, student-centered learning models, the subject transcends basic physical activity. It becomes a vital platform for holistic childhood development. The prominence of the evaluation system as the strongest predictor of success highlights a fundamental educational truth: what gets measured gets valued. When students recognize that their effort, teamwork, and incremental progress are being formally recognized through fair assessments, their intrinsic motivation to participate increases dramatically. Ultimately, the synergistic effect of these three components creates an educational ecosystem where students do not just learn the rules of a sport, but they develop essential life skills, psychological resilience, and a foundational appreciation for lifelong health and wellness.

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