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Enhancing Creative Thinking in High School Physics through Project-Based Learning Integrating Local Wisdom and STEAM for Quality Education

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ABSTRACT

Objective: *The main goal of this study is to examine the impact of applying a Project-Based Learning (PjBL) model, grounded in local wisdom and integrated with a STEAM approach, on improving students' creative thinking skills in high school physics education. This objective aligns with the Sustainable Development Goals (SDGs), especially those focused on quality education.* ***Method:*** *This research employs a literature review methodology utilizing qualitative descriptive methods. It analyzes various national and international journals related to project-based learning based on local wisdom, published within the last five years.* ***Results:*** *In the research, work and project-based learning becomes discovery significantly enhances students' understanding of physics concepts. The study demonstrates that PjBL fosters deeper learning, allowing students to develop not only their comprehension of physics but also essential skills such as problem-solving, creativity, and teamwork in real-world contexts. Moreover, integrating local wisdom within the PjBL framework increases students' interest in cultural preservation and enhances their scientific literacy through hands-on project activities.* ***Novelty:*** *The novelty of the research lies in the unique integration of local wisdom into the PjBL STEAM framework, an area that remains relatively underexplored in existing literature. By combining these elements, the study contributes to innovative teaching methodologies aimed at improving academic outcomes while promoting cultural awareness and appreciation among students. This approach offers a fresh perspective on aligning educational practices with global educational goals, all while fostering the creativity and critical thinking skills essential for the 21st century.*

INTRODUCTION

Learning activities must be designed to address specific needs, including those based on the characteristics of regional wealth, such as local culture and traditions. This requirement is affirmed in the Law of the Republic of Indonesia No. 20 of 2003 concerning the National Education System, particularly in Chapter X, Article 36, paragraph (1), letter (d), which states that schools are mandated to implement an education model grounded in the local potential found in each region (Law No. 20 of 2003 Article 36 paragraph 1). Local potential, often referred to as local wisdom, customs, or regional habits, plays a crucial role in shaping educational practices. Various methods can be employed to implement local wisdom-based education in schools, one of which is to apply a learning model that centers on student participation, such as Project-Based Learning (PjBL) (Syakur et al., 2020). PjBL is a student-centered learning model that emphasizes contextual learning and is specifically designed to address and solve complex problems (Priantari et al., 2020).

With the integration of a local wisdom approach into the PjBL framework, a more meaningful and relevant learning experience can be created with an impact that can be received by students in encouraging understanding and enriching students' culture and heritage. Based on the results from the Program for International Student Assessment (PISA), Indonesia's ranking is low, ranking 70th out of 78 countries surveyed in 2018

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