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Profile of E-STATPHYS Assisted PBL Model on Static Fluid Material to Improve Problem-Solving Skills of High School Students

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ABSTRACT

Objective: *This study aims to analyze the problem-solving skills of high school students as a basis for considering the application of the Problem Based Learning (PBL) model assisted by the E-STATPHYS digital book on static fluid material.* ***Method:*** *This study used a qualitative descriptive method with 105 grade XI students at SMA Negeri 1 Kedungpring as subjects. Data collection techniques included a preliminary survey in the form of a problem-solving skills test, student response questionnaires, and interviews with physics teachers. Data were analyzed to identify the level of students problem-solving skills.* ***Results:*** *The results showed that 98 students were in the low problem-solving skills category, 7 students were in the medium category, and there were no students in the high category. These findings indicate that students problem-solving skills on static fluid material still need to be significantly improved.* ***Novelty:*** *The novelty of this study lies in the use of the results of the initial analysis of problem-solving skills as a basis for the development and application of the Problem Based Learning model assisted by the E-STATPHYS digital book, which is specifically designed to support physics learning on static fluid material and facilitate the improvement of students problem-solving skills.*

INTRODUCTION

Education is a vital part of human life because it plays a role in developing individual potential through planned guidance, teaching, and training. Education aims to help students develop thinking skills, creativity, and the skills needed to face life's challenges (Trianto, 2010; Khorchani et al., 2019; Yelavarthi, 2022). The learning process will be able to develop quality human resources if teachers are able to choose appropriate strategies, approaches, and learning models according to the characteristics of the material and learning objectives (Pratiwi et al., 2020; Fakhrini et al., 2024; Lestari et al., 2024; Maula et al., 2025). In this regard, teachers have a central role in facilitating active learning that can optimize the full potential of students.

With the rapid development of information and communication technology, learning at both school and university levels is required to continuously innovate to remain relevant to the demands of 21st-century competencies (Anwar et al., 2022; Riskasari et al., 2022; Kumar, 2023; Prihantini et al., 2023; Budiarto et al., 2024). One important competency that must be developed in physics learning is problem-solving skills. In static fluid topics, such as hydrostatic pressure, buoyancy, Archimedes' principle, and Pascal's principle, students are not simply required to memorize formulas; they must also be able to analyze physical phenomena and apply concepts appropriately in various new situations (Rizal et al., 2020). The development of these problem-solving skills aligns with one of the Sustainable Development Goals (SDGs) issues, namely quality education,