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Vol. 2, No.1, April 2026

Profile of High School Students Problem Solving skills and the Implementation of PBL Model Assisted by Digital Books on Dynamic Fluid Material

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DOI : https://doi.org/10.63230/jitse.2.1.118

Sections Info

Article history:
Submitted: December 9, 2025
Final Revised: March 10, 2026
Accepted: March 10, 2026
Published: April 13, 2026

Keywords:
Digital Books;
Dynamic Fluids;
High School Physics;
Problem Based Learning;
Problem Solving Skills.

ABSTRACT

Objective: *This study aims to analyze the problem-solving skills profile of high school students on fluid dynamics material as a basis for developing and applying a digital book-assisted Problem-Based Learning (PBL) model.* ***Method***: *This preliminary study used a qualitative descriptive approach and was conducted at SMAN 1 Driyorejo, involving 102 grade XII students in the 2025/2026 academic year. Data were collected through problem-solving skill essay tests, student response questionnaires, and teacher interviews.* ***Results***: *The results showed that students' problem-solving skills were still in the low category, with 91 students in the low category, 11 students in the medium category, and no students in the high category. Analysis of the indicators showed that the Visualize the Problem aspect received the lowest score, while the Physics Description indicator had the highest average score. In addition, the results of the questionnaires and interviews showed that physics learning was still dominated by lecture methods and the use of conventional media.* ***Novelty***: *This study provides an empirical basis for the development of innovative learning through the application of Android-based digital books integrated with the PBL model to improve students' problem-solving skills in fluid dynamics material.*

INTRODUCTION

The 21st century is marked by rapid advances in science and technology, necessitating improvements in the quality of human resources through education (Mardhiyah, 2021). Education plays a crucial role in preparing a generation capable of facing the demands of modern development. Education is an activity undertaken consciously, planned, and responsibly to develop one's abilities (Bahri, 2021). Educational success is inseparable from the learning process at school. School education is a key pillar in achieving these goals because schools act as formal institutions that provide structured learning processes. Therefore, along with families and communities, schools are among the leading providers of education among all educational institutions (Makiyah et al., 2021). The primary goal of education is to shape a generation capable of adapting to technological developments, and this process relies on strengthening learning.

Learning is essentially an active interactive process between students, teachers, and learning resources in a well-planned learning environment. The learning process can shape students' perspectives, as it is heavily influenced by interactions with the learning environment, leading to adaptation to the changes they encounter (Widiyanto et al., 2020). One field of science that plays a crucial role in shaping students' logical and analytical perspectives is physics, as the process of learning its concepts is heavily influenced by students' interactions with the learning environment, thus encouraging adaptation to the various changes they face. Physics not only studies natural phenomena but also serves as the basis for the development of various modern technological innovations (Sidik & Kartika, 2020). However, in reality, physics learning in schools still