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Scientific Literacy Skills Based on Local Wisdom and Pancasila Student Profile: Supporting Quality Education (SDG 4)

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DOI : <https://doi.org/10.63230/jocsis.3.2.197>

Sections Info

Article history:

Submitted: February 14, 2026

Final Revised: April 18, 2026

Accepted: June 2, 2026

First Available Online: July 5, 2026

Publication Date: September 27, 2027

Keywords:

Local Wisdom;

Physics Education;

Pancasila Student Profile;

Rasch Model;

Scientific Literacy;

Senior High School Students.

ABSTRACT

Objective: Scientific literacy is an essential competency for students in responding to rapid developments in science and technology. However, students' scientific literacy skills in Indonesia remain below international standards, indicating the need for contextual learning approaches. This study aims to analyze the scientific literacy profile of senior high school students based on local wisdom and the Pancasila Student Profile. This study contributes to achieving Sustainable Development Goal (SDG) 4 by supporting quality education through contextual and meaningful science learning. **Method:** A descriptive quantitative approach using a survey method. The participants consisted of 202 senior high school students from Balangan and Tabalong Regencies, South Kalimantan, Indonesia. Data were collected using a scientific literacy instrument consisting of 16 multiple-choice questions integrated with local wisdom and Pancasila Student Profile values. The collected data were analyzed using the Rasch Model with the assistance of the Winstep application to determine students' ability levels, item difficulty, and instrument reliability. **Results:** The results showed that students' scientific literacy skills were categorized as very high (8.91%), high (23.27%), sufficient (31.68%), low (28.71%), and very low (7.43%). The instrument demonstrated adequate reliability with a person reliability value of 0.69 and Cronbach's alpha value of 0.75. These findings indicate that most students have moderate scientific literacy abilities, but further improvement is required. **Novelty:** To provide a novel contribution by assessing physics scientific literacy using instruments integrated with local wisdom and the Pancasila Student Profile, providing a contextual approach to supporting quality science education aligned with SDG 4.

INTRODUCTION

Qualified and competent individuals who are able to compete globally in terms of knowledge, expertise, and skills represent essential human resources required in the 21st century (Abdullah, 2023). One of the fundamental abilities that students need to develop in responding to current technological advancements is scientific literacy. Scientific literacy includes several scientific competencies, including the ability to explain scientific phenomena, interpret scientific data and evidence, and evaluate and design scientific investigations (OECD, 2023).

Students' scientific literacy skills are commonly assessed through the Programme for International Student Assessment (PISA). This international assessment evaluates students' competencies in reading, mathematics, and science, with scientific literacy emphasizing students' ability to understand, interpret, and engage with science-related issues (OECD, 2023). According to OECD (2023), PISA was last conducted in 2022 and is implemented every three years to measure students' competencies in various domains. Indonesia has participated in PISA since 2000. In the scientific literacy domain, Indonesia ranked 66th out of 81 participating countries, achieving a score of 383, indicating that Indonesian students' scientific literacy performance remains below the international average (Nur'aini et al., 2021).