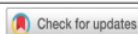




## Effectiveness of Contextual Phenomena-Based Learning to Improve Science Literacy

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DOI: <https://doi.org/10.53621/ijocer.v2i1.205>

### Sections Info

#### Article history:

Submitted: December 29, 2022

Final Revised: February 26, 2023

Accepted: March 14, 2023

Published: June 3, 2023

#### Keywords:

Contextual Phenomena Based Learning;  
Education;  
Scientific Literacy;  
Physics.



### ABSTRACT

**Objective:** This study aimed to determine the effectiveness of contextual phenomena-based learning to increase scientific literacy in three Basic Physics materials. **Method:** This research method descriptive and quantitative with the type of Pre-Experimental research. The subjects of this study were 27 students of Physics Education class A at Surabaya State University class of 2022. **Result:** The results of the data analysis showed that learning based on contextual phenomena to increase scientific literacy was an excellent category to apply. This is shown by implementing learning on the three materials with suitable criteria. Student activities for each material are in very good criteria. Moreover, the average N-gain value obtained through the Pre-test and Post test scores on the third material is in the high category. As well as the results of the average student response to the learning that is applied is also in the high category and gets a positive response from students. From the four results of data analysis, it can be interpreted that learning based on contextual phenomena effectively increases scientific literacy. **Novelty:** The application of contextual phenomena-based learning in the materials on Works and Energy, Momentum, and Fluids at the college level to improve scientific literacy

## INTRODUCTION

Technology, information, and communication sophistication in the 21st century are developing very fast and rapidly. This development requires a person to have several abilities to compete in the 21st century. Physics students who are prospective educators prepared to face the challenges of the world of education in the 21st century are no exception (Sartika et al., 2018). Physics student prospective educators must develop logical thinking, creative thinking, problem-solving skills, and critical thinking and master technology against the times (Mujajir, 2021). It is hoped that they will become human beings who are entirely literate in science and technology so that they can grow into human beings who have scientific literacy skills.

Scientific literacy is one of the skills needed in the 21st century among the 16 skills identified by the World Economic Forum (2015). According to PISA, Scientific literacy is how humans get to know the universe and are aware of some of the essential ways in which mathematics, technology, and science depend on one another. Scientific literacy is the ability to interact with various aspects of the world in a way consistent with the values underlying knowledge (Laugksch, 2017). Scientific literacy can also train students to have high sensitivity to themselves and the environment in dealing with daily problems, make decisions based on scientific knowledge, and provide simple recommendations (Yacoubian, 2017; Indana, 2018). Scientific literacy also makes a concrete contribution to the formation of life skills.

Scientific literacy measures three scientific competencies, which are described as follows. First, identify scientific issues (problems), namely recognizing possible

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