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Scientific literacy on the topic of light and optical instruments in the innovation of science teaching materials

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Abstract

This study aims to innovate science teaching materials based on scientific literacy on the topic of light and optical instruments. The research method used is research and development (R&D) through a modified four-D (4D) model. This research procedure includes three stages: define, design, and develop. The subjects in the study included 3 expert validators and 60 class VIII students with a population of 120 students and an age range of 13-15 years at the same level. The data obtained is quantitative in the form of product validation questionnaire scores and product feasibility values in the form of data on the effectiveness of product use. The validity testing results in science teaching materials based on scientific literacy on light and optical instruments obtained an average of 3.79 with a maximum value of 4. The validation of scientific literacy aspects results obtained an average of 3.71 with a maximum value of 4. The effectiveness of the developed teaching materials was also categorized as effective with an overall score ($z = -4.731$; $p\text{-value} = 0.000 < 0.05$) and based on three aspects of scientific literacy separately ($p\text{-value} = 0.000 < 0.05$). These results also recommend that the development of science teaching materials based on scientific literacy continues to be carried out to improve students' scientific literacy skills sustainably.

Keywords

science teaching materials; light and optical instruments; innovation; scientific literacy

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