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High school physics teachers' perceptions and attitudes towards thought experiments in Indonesia

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Abstract

Thought experiments have a crucial role in the discovery of physics theories. Yet, in order to properly use thought experiments in the classroom, teachers must have enough pedagogical knowledge and abilities. This study aims to explore the perceptions and attitudes of high school physics teachers toward thought experiments. In this study, we involved 30 physics teachers from different schools in both urban and rural schools. The data were collected through questionnaires and semi-structured interviews. The quantitative and qualitative analysis results demonstrate that physics teachers have a high awareness of the importance of thought experiments in physics learning, especially atomic theory and relativity, and perceive themselves to lack skills regarding the pedagogical aspects of thought experiments. Teachers also show positive attitudes and beliefs about teaching thought experiments. However, teachers still recognized the challenges of implementing thought experiments in the classroom. The teacher suggests that thought experiments be carried out collaboratively so that students can share ideas with each other. Furthermore, technology media such as virtual reality may be the ideal answer for assisting students in visualizing an imaginary environment when doing thought experiments in the classroom