

The effectiveness of integrated STEM-PBL physics module on students' beliefs about physics and learning physics

ABSTRACT

The purpose of this study is to investigate the effectiveness of integrated STEM-PBL physics module on students' beliefs about physics and learning physics. Participants were from eighty-eight Form 4 students (Experimental Group = 44, Control Group = 44) who learn Form 4 physics in two secondary schools in Malaysia and sixty-six first-year high school students (Experimental Group = 33, Control Group = 33) who learn physics (Book 1) in two high schools in South Korea. Students in the experimental group were intervened with integrated STEM-PBL physics module and students in the control group learn physics through traditional instruction. Students' beliefs about physics and learning physics were measured with the Colorado Learning Attitudes about Science Survey (CLASS) before and after the intervention. Findings showed that integrated STEM-PBL physics module intervention resulted in a positive shift in beliefs about physics and learning physics and traditional approach showed no influence on students' beliefs about physics and learning physics. Suggestions are presented regarding the implementation of integrated STEM-PBL physics module in learning classical mechanics in secondary education.