

The effectiveness of the integrated STEM-PBL physics module on students' interest, sense-making, and effort

ABSTRACT

Issues like why students felt far from physics and did not choose physics as their prime learning option are familiar in education. This paper aims to study the effectiveness of the STEM-Project Based learning module in physics on students' personal interest and sensemaking and effort. This research used the quasi-experimental model, employing a two-group pre-survey-post-survey design. Quantitative data were collected using the Colorado Learning Attitude about Science Survey (CLASS) instrument at two selected schools in Sabah, Malaysia, and Seoul, Korea. The sample size was 88 Form 4 students in Malaysia and 66 second-year high school students in Korea who learned classical mechanics. The students were divided into two groups, respectively, i.e., the experimental group (Malaysia=44, Korea=33) and the control group (Malaysia=44, Korea=33). Participants in the experimental group were intervened with the integrated STEMPBL physics module, whilst participants in the control group learned physics through a conventional approach for eight weeks. Participants in both groups were then administered a pre-survey before and postsurvey after the intervention. This research showed that the integrated STEM-PBL physics module significantly improved students' personal interest, and sensemaking and effort after the intervention. The paper also highlighted the research's implications and suggestions