

The Effectiveness of a STEM-Based Physics Interactive Laboratory (I-LAB) Module for Form Four Physics Students.

- **Author(s):** Wan Nurul Huda Wan Ab Kadir ,Nurul Syafiqah Yap Abdullah ,Izan Roshawaty Mustapa
- **Abstract:** The STEM-Based Physics Interactive Laboratory (I-LAB) Module is a module which combines Science, Technology, Engineering and Mathematics (STEM) elements with Physics Theory and Practical Physics for Form Four physics students. This module also has elements of Problem Based Learning (PBL) and Feedback to enhance the active teaching and learning process. The study examines the effectiveness of the Form Four STEM-Based Physics Interactive Laboratory (I-LAB) Module to enhance Form Four physics students' achievements in Physics subject. A quantitative study was carried out using an experimental method. The instruments used were pretest and posttest for Form Four physics students' achievements in Physics subject. The sample of this study included 60 physics students divided into three groups: a Traditional Physics Laboratory (T-LAB); Form Four STEM-Based Physics Interactive Laboratory with explanation feedback (I-LABP); and Form Four STEM-Based Physics Interactive Laboratory with knowledge of results (ILABK). In this study, the T-LAB was the control group while I-LABP and I-LABK were the treatment groups. Each group had 20 participants. Statistical analysis in the form of One-Way ANOVA was used to compare the achievements of students in each group (T-LAB, I-LABP; I-LABK). The findings show that I-LABP had the highest mean score at 64.70, followed by I-LABK at 56.90 and T-Lab at 52.65. The findings from this study suggest that the STEM-Based Physics Interactive Laboratory (I-LAB) Module for Form Four Physics Students is suitable to enhance Form Four students' achievements in Physics. The development of the STEM-Based Physics Interactive Laboratory (I-LAB) Module has many implications for education. For students, the development of the I-LAB Module can attract students and facilitate student learning. For teachers, the I-LAB Module can be used as a teaching tool to replace existing practical books, in addition to help teachers carry out the teaching and learning process at the school.
- **Keywords:** Interactive Laboratory, STEM, T-LAB, I-LABP, I-LABK, experimental method