

## **Enhancing physics engagement among school students through virtual Laboratory inquiry**

### **ABSTRACT**

Physics is recognized as one of the most difficult topics, which has resulted in a lack of enthusiasm and engagement among secondary students. Therefore, this study aims to (i) identify the difficulties encountered by students in learning Physics, (ii) determine the significant difference in students' performance in Force and Motion in Physics when using virtual laboratories based on gender, and (iii) identify the significant difference in students' performance in Force and Motion in Physics when using a virtual laboratory based on urban and suburban settings. Quasi-experimental research was employed to investigate students' difficulties in Force and Motion, with the research objective being to identify students' perception of computer simulation. The questionnaire was distributed via Google Forms to 40 respondents from secondary school students from Selangor, Malaysia. The findings of this study demonstrated that students encountered the expected problems and provided positive feedback after utilizing the virtual laboratory for learning Physics, indicating the effectiveness of computer simulation in Physics education. The data also revealed that gender did not influence interest in learning Physics, and rural areas showed no significant differences in student performance during the learning sessions. Furthermore, students provided positive feedback and agreed that the virtual laboratory teaching methods offer numerous advantages over traditional methods for teaching and learning Physics.