SSLEQ-PHYSICS: A VALID SURVEY TO MEASURE STUDENT ENGAGEMENT IN SCIENCE LABORATORIES

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KEYWORDS: student engagement, undergraduate science, laboratories, survey validation

ABSTRACT

In science, experiments can often be used to engage students; some students engage with them, others don't. Though student engagement is important for student success (Fredricks, 2011; Sinatra et al., 2015), research considering undergraduate physics student engagement is limited. The aim of this presentation is to present the validation of a survey, SSLEQ (Science student laboratory engagement questionnaire), which measures students' cognitive, behavioural, and emotional engagement. The survey was developed and trialed within a broader research project focusing on developing a blended model to design experiments integrating inquiry skills, modelling, and technology, with the intention of enhancing student engagement (Kota, 2019). Questionnaires from the ASLE survey (Barrie et al., 2019) and AEQ-Physics Prac (Bhansali, Angstmann, & Sharma, 2020) were adapted. Furthermore, items to measure how experiment(s) were helpful in developing inquiry skills, using technology, and understanding modelling were added. The cognitive engagement items were about *motivators* underpinning students' learning, understanding of content and development of skills. The behavioural engagement items queried the *resources* provided for the lab programs, such as experimental notes and demonstrators' help. For emotional engagement, *emotions* explored positive and negative thoughts and feelings. Confirmatory factor analysis and descriptive statistics conducted with a sample of 304 first-year physics students confirm the reliability and internal validity of the survey for the purposes of this study. The validated survey, which measures three types of engagement, is a tool that academics in other contexts can use to assess and positively influence student engagement in laboratory courses.

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Proceedings of the Australian Conference on Science and Mathematics Education, The University of Western Australia, 28-30 September 2022, page 43, ISSN 2653-0481