DEVELOPMENT OF PODS BASED ACTIVITIES TO IMPROVE STUDENTS' UNDERSTANDING OF BRIGHTNESS AND CURRENT CONCEPTIONS IN SIMPLE DC ELECTRIC CIRCUITS: A CASE STUDY OF FIRST YEAR MYANMAR UNDERGRADUATE STUDENTS

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ABSTRACT

This study presents the development of the Prediction-Observation-Discussion-Synthesis (PODS) learning cycle, the Brightness and Current Conceptual Evaluation (BCCE), and the results of the students' responses to the BCCE. The study composes of two phases; a pilot study and a case study. The participants of the pilot study were the first year 208 Thai and 50 Myanmar students in government universities in Thailand and Myanmar. The pilot study involves the exploration of the students' prior knowledge in the concepts of brightness of two light bulbs and current passing through two resistors by using BCCE. The case study involves the development of the effectiveness of the PODS based hands-on activities that proposed to develop the first year undergraduate students' conceptual understanding of the topic of simple DC electric circuits (in terms of brightness of two light bulbs and current passing through two resistors connected in both series and parallel circuits). The participants of the case study were 50 first year undergraduate Myanmar students. The study found that the average normalized gain in this study was found to be (<g> = 0.7). These results indicate that PODS learning cycle can help the students understand the concepts of simple DC electric circuits.

KEY WORDS: PODS/ BCCE/ SIMPLE DC ELECTRIC CIRCUITS/ BRIGHTNESS AND CURRENT/ AVERAGE NORMALIZED GAIN

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