

ENGAGING STUDENTS' EXPERIENCES OF PRACTICAL ACTIVITIES WITH SIMULATION LAB DURING THE COVID-19 PANDEMIC: A SAMPLE WITH DIRECT CURRENT CIRCUITS

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Simulations are increasingly implemented as one of the teaching techniques in the Thailand educational system at all levels. It is a convenient way to support in-lab learning especially in the COVID-19 pandemic (Darrah et al., 2014). Physics lab helps students to understand the basic concepts and to relate the real phenomena to the experimental visualizations (Baltzis & Koukias, 2009). The purposes of the research we are presenting, aimed to implement the simulation for fundamental physics online lab during the COVID-19 pandemic and to enhance students' understanding in direct current circuits (Olypiou & Zacharia, 2011). The sample of this research consisted of 128 freshmen in the Faculty of Science and Technology who enrolled in fundamental physics courses in the Academic Year 2021. The research was carried out during the 1st semester to 2nd semester of 2021. The student participants conducted the direct current circuit via an online simulation laboratory. Students' understandings about direct current circuits were analyzed with a laboratory report and laboratory quiz (Kollöffel & Jong, 2013). The students had the average score 8.20/10.00 and most of the students (82.03%) can use the simulation to design and create a direct current circuit. A result of analyzed data clearly shows that the online simulation lab has a positive effect on students' understanding in direct current circuits in terms of students' lab skills, engaging in classroom activities, and motivation (Perkins et al., 2006). Simulation Lab serves as a suitable tool for direct current circuits in fundamental physics laboratories during the COVID-19 pandemic (Manunure, Delsérieys, & Castéra, 2019).

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