Does it Matter with Physical classes in Blended Learning or without in Full Online Learning for Undergraduate Programming Course in the Pandemic Situation?

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- **Abstract:** Due to the COVID-19 pandemic outbreak, all institutions of higher learning in Malaysia have shifted to online learning to ensure that teaching and learning (T&L) are continued despite the movement control order (MCO) imposed by the government. Universiti Malaysia Sarawak embraced a fully online T&L approach for all courses including programming courses at the Faculty of Computer Science and Information Technology. This ad-hoc shift to online T&L had raised some concerns which normally require hands-on training. One of the concerns is whether students can do their tests well with the change of medium of instructions from having physical classes to fully online without any physical class. Before the MCO, a blend of physical lectures and labs with online activities were conducted and followed by an online test (Test 1). During MCO, in order to accommodate fully online T&L approach, recorded lecture videos, live video teaching and online forum for discussions were the main medium of instructions replacing physical classes. For the duration of the online T&L, two more online tests (Test 2 and Test 3) were given to the students. The students' performance for Test 1 was then compared to their performance in Test 2 and 3. Our investigation showed that there was no significant change in the students' performance in the tests regardless of whether their medium of instruction is with or without physical classes. This provides an indication that the ad-hoc online T&L approach assisted students' learning during the pandemic.

- Keywords: Movement control order, ad-hoc online, pandemic