

The Possible Double-Edged Sword Effects of Online Learning on Academic Performance: A Quantitative Study of Preclinical Medical Students

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Abstract : Background: Since the SARS-CoV-2 virus became extensively disseminated throughout the world, online learning has become one of the most hotly debated topics in educational reform. While some studies have already shown the advantage of online learning, there are still questions concerning how online learning affects students' learning behavior and academic achievement when each student learns in a different way. Hence, we aimed to develop a guide for preclinical medical students to avoid drawbacks and get benefits from online learning that possibly a double-edged sword. Methods: We used a multiple-choice questionnaire to evaluate the learning behavior of second-year Thai medical students in the neuroscience course. All traditional face-to-face lecture classes were video-recorded and promptly posted to the online learning platform throughout this course. Students could pick and choose whatever classes they wanted to attend, and they may use online learning as often as they wished. Academic performance was evaluated as summative score, spot exam score and pre-post-test improvement. Results: More frequently students used online learning platform, the less they attended lecture classes ($P = 0.035$). High proactive online learners (High PO) who were irregular attendee (IrA) had significantly lower summative scores ($P = 0.026$), spot exam score ($P = 0.012$) and pre-post-test improvement ($P = 0.036$). In the meanwhile, conditional attendees (CoA) who only attended classes with attendance check had significantly higher summative score ($P = 0.025$) and spot exam score ($P = 0.001$) if they were in the High PO group. Conclusions: The benefit and drawbacks edges of using an online learning platform were demonstrated in our research. Based on this double-edged sword effect, we believe that online learning is a valuable learning strategy, but students must carefully plan their study schedule to gain the "benefit edge" meanwhile avoiding its "drawback edge".

Keywords : academic performance, assessment, attendance, online learning, preclinical medical students

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