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Influence of polling technologies on student engagement: An analysis of student motivation, academic performance, and brainwave data

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Abstract

This study compared clicker technology against mobile polling and the Just-in-Time Teaching (JiTT) strategy to investigate how these methods may differently affect students' anxiety, self-efficacy, engagement, academic performance, and attention and relaxation as indicated by brainwave activity. The study utilized a quasi-experimental research design. To assess the differences between the effects of clickers and mobile polling, the study collected data from two courses at a large research university in Taiwan in which 69 students used either clickers or mobile polling. The results showed that mobile polling along with the JiTT strategy and in-class polls reduce graduate students' anxiety, improve student outcomes in an environment comprising both graduate and undergraduate students, and increase students' attention during polling. However, brainwave data revealed that during the polling activities, students' attention in the clicker and mobile polling groups respectively increased and decreased. Students nowadays do not find smartphones a novelty; however, incorporating them into class is still a potentially effective way to increase student attention and provide a direct way for instructors to observe the learning effects of lectures and improve their teaching approach on that basis.

Keywords: improving classroom teaching, interactive learning environments, teaching/learning strategies

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