

Improving students' academic performance—there's an app for that

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A mobile learning app that uses game elements such as leaderboards and digital badges may have positive effects on student academic performance, engagement, and retention, according to a study published in the open access *International Journal of Educational Technology in Higher Education*. Researchers at Swinburne University of Technology, Australia developed a fully customizable app that allowed lecturers to push quizzes based on course content directly to their students' devices in order to motivate them, increase their competitiveness, and keep them engaged with the course.

The researchers found a positive correlation between performing well on app tasks and achieving higher academic grades. App users on average achieved marks that were 7.03% higher compared to students who chose not to use the app. When the app was first introduced in the 2nd semester of 2015, student retention improved by just over 12% compared with the previous semester.

Dr Ekaterina Pechenkina, the corresponding

author said: "Evidence-based research into [student engagement](#) tells us that well-engaged students are less likely to drop out. Our results imply that students are willing to use learning apps and that performing highly on the app may predict their future academic success."

Dr Pechenkina added: "Most studies into the use of mobile apps as learning tools in [higher education](#) primarily focus on apps designed to address one main aspect of the learning process, such as collaboration or motivation. We developed our app to achieve multiple goals, including improving engagement and measuring [academic performance](#). In order to do that, we designed the app to include multiple-choice quizzes, push notifications, digital leaderboards and badges."

To prompt students to test their knowledge of the concepts introduced during a course, the app delivered quizzes directly to the students' mobile devices. Push notifications alerted students each time a new quiz became available. Based on app engagement, various data was collected through the app's analytics function, such as the speed at which students responded to quiz prompts and the number of attempts it took them to get an answer right. For each correct answer, students were assigned points which were collected in a leaderboard.

Dr Pechenkina said: "At a time when students' demand for personalized education is growing, mobile apps could allow students to access course material whenever they choose. Game elements like leaderboards and digital badges generate feedback, allowing students to see how they are performing compared to their peers. Taking advantage of mobile app technologies in this way could help lecturers reach out to their students and keep them interested in the course content."

394 students were recruited to test the app. Students were all enrolled in the first-year

accounting or science units at Swinburne University in Semester 2, 2015. Lecturers tailored the content of the app to fit their specific course.

Dr Pechenkina said: "We were surprised to find that when analysed separately, the app's positive impact for the science cohort was significantly lower than for the accounting cohort, suggesting there are some interesting cohort-specific dynamics worth exploring further."

The authors point out that the initial success of the app may have been partly the result of a novelty effect, which could mean that the app's perceived usefulness may decline with longer-term use. The fact that students could choose to use the app may have led to sampling bias, as more conscientious students who were open to new experiences may have been more likely to be included in the experiment. The authors also caution that while they observed a positive correlation between students' scoring highly on the app and achieving higher academic grades, any causal relationship between the two needs further investigation.

More information: Ekaterina Pechenkina et al, Using a gamified mobile app to increase student engagement, retention and academic achievement, *International Journal of Educational Technology in Higher Education* (2017). [DOI: 10.1186/s41239-017-0069-7](https://doi.org/10.1186/s41239-017-0069-7)

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