Prevalence of academic dishonesty in timed online quizzes in introductory physics, and effectiveness of interventions to encourage academic honesty

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Due to the COVID-19 pandemic, many universities have had to transition to online instruction and use online forms of assessment. For large-enrollment introductory physics classes, this situation raises the question of how best to ensure academic honesty. Academic dishonesty can occur in a number of ways, and instructors may use a variety of strategies to address different ways of cheating. Short quizzes may help address the problem of students utilizing third party "tutoring" services to upload test question and receive solutions to them, and frequent, short quizzes have been argued to alleviate pressure on students to cheat, since such assessments are lower-stakes than traditional exams. However, short quizzes could still be vulnerable to students violating academic integrity by sharing information about such quizzes. Given the pervasive use of social media, smart phones, and other messaging services such as GroupMe, it is conceivable that sharing of information could represent a significant source of academic dishonesty that may largely be taking place unchecked. In this investigation, the prevalence of this kind of academic dishonesty in two large-enrollment introductory physics courses was explored by the use of planted "correct" answers which were immediately revealed to students after they completed taking their quiz. The frequency of use of the planted "correct" answer was then measured to determine a baseline level of students who were on the receiving end of unauthorized information sharing. Interventions to promote academic honesty were then administered and a subsequent quiz with a planted "correct" answer was used to measure the effectiveness of these interventions. Finally, the prevalence and ways in which students provide quiz information to other students was probed.