No cost or benefit from frequent online quizzes compared to traditional exams

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Introduction
Students not only cram for examinations, they often report that cramming is an effective means for achieving good exam scores (Taraban, Maki & Rynearson, 1999). Unfortunately, results from empirical studies (e.g., Rohrer & Pashler, 2007) suggest that a single study session is not optimal for long-term retention. Although the benefits of spaced studying are clear, encouraging it in the classroom is difficult. We propose that by having exams more frequently, students will necessarily modify their studying behavior. For instance, students who only study once before the exam would be compelled to study twice as often if twice as many exams were given.

There is evidence that frequent quizzing may be an effective learning experience. For instance, Landrum (2007) administered weekly in-class quizzes in place of traditional unit exams and found that students scored higher on the cumulative final than on the individual quizzes, suggesting a benefit for frequent testing. In addition, this benefit was greatest for the bottom third of the students.

Although frequent testing may improve long-term retention, there are potential drawbacks. The results of a survey conducted by Bacdayan (2004) suggest that instructors see the increased time required to administer quizzes as a primary disadvantage in their use. Online administration of quizzes could moderate this cost. Interestingly, instructors expressed little concern over student backlash (e.g., poor evaluations) in response to quizzes (Bacdayan, 2004) and students have reported a preference for frequent quizzing over traditional unit exams (e.g., Grover, Becker, & Davis, 1989; Landrum, 2007).

Method
Introductory psychology students (n = 139) were tested using traditional in-class exams (e.g., four chapters of content) and using twice as many online quizzes (e.g., two chapters of content) for half of the semester each. The same test-taking time limit was enforced in both conditions. Testing manipulation order was counterbalanced across two course sections taught by the same instructor. Two dependent measures, participant study time and comprehension exam score, were used to gauge the effects of the testing manipulation. Participants also completed a survey in which they reported the number of minutes spent studying for each exam or quiz and reported their testing preferences.

Results
Impact of the Testing Manipulation on Study Time
An independent samples t-test failed to reveal a significant difference between reported study time for online quizzed content (M = 129 minutes, SD = 98) and for in-class tested content (M = 108 minutes, SD = 93), t(91) = 1.078, p = .284.

Impact of the Testing Manipulation on Comprehension
At the end of the course, students completed a comprehensive exam; half of the questions tested online quizzed content, half tested in-class exam content. A paired samples t-test failed to reveal a significant difference between content assessed through online quizzes (M = .54, SD = .18) and in-class exams (M = .37, SD = .17), t(102) = 1.52, p = .131.

Student Preferences
74% of students preferred taking the online tests.
83% of students with self-reported, test anxiety preferred taking the online tests.
75% of students reported the in-class tests being more difficult than the online tests.

Discussion
Laboratory-based studies suggest that increasing the number of study sessions improves long-term comprehension. We hoped that by testing more frequently, students would study more and benefit from increased comprehension. However, the use of more frequent assessments did not affect study time or comprehension. Importantly though, use of online quizzes did not harm student comprehension.

Practical Implications
If online testing is as effective as in-class testing, instructors may be able to save time and resources, while making students happier, by replacing traditional in-class tests with online quizzes.

Saves Time
* online examinations do not require class time
* grading may be automatic

Saves Resources
* no paper and ink costs
* fewer administrative costs

Students are Happier
* preferred testing method
* grade is based on more data points

References