

Frequent Tests Can Enhance College Learning, Study Finds



Marsha Miller

Students in James Pennebaker and Samuel Gosling's psychology class at the University of Texas.

By BENEDICT CAREY
Published: November 20, 2013

Grading college students on quizzes given at the beginning of every class, rather than on midterms or a final exam, increases both attendance and overall performance, scientists reported Wednesday.

[The findings](#) — from an experiment in which 901 students in a popular introduction to psychology course at the [University of Texas](#) took their laptops to class and were quizzed online — demonstrate that the computers can act as an aid to teaching, not just a distraction.

Moreover, the study is the latest to show how tests can be used to enhance learning as well as measure it. The report, appearing in the journal [PLOS One](#), found that this “testing effect” was particularly strong in students from lower-income households.

Psychologists have known for almost a century that altering the timing of tests can affect performance. In the past decade, they have shown that taking a test — say, writing down all you can remember from a studied prose passage — can deepen the memory of that passage better than further study.

The new findings stand as a large-scale prototype for how such testing effects can be exploited in the digital era, experts said, though they cautioned that it was not yet clear how widely they could be applied.

“This study is important because it introduces a new method to implement frequent quizzing with feedback in large classrooms, which can be difficult to do,” said Jeffrey D Karpicke, a professor of psychology at Purdue, who was not involved in the study.

Log in to see what your friends are sharing on nytimes.com. [Log In With Facebook](#) [Privacy Policy](#) | [What's This?](#)

What's Popular Now

24,000-Year-Old Body Is Kin to Both Europeans and American Indians

How Doctors Die

FACEBOOK

TWITTER

GOOGLE+

SAVE

E-MAIL

SHARE

PRINT

REPRINTS



MOST E-MAILED

RECOMMENDED FOR YOU

18 articles viewed recently

goldscharf All Recommendations

1. [Online Courses Attract Degree Holders,](#)

MORE IN EDUCATION (2 OF 26 ARTICLES)

Campaign Seeks to Recruit Top Students to Become Teachers

[Read More »](#)

He added, "This is the first large study to show that classroom quizzing can help reduce achievement gaps" due to socioeconomic background.

On the first day of their Psych 301 course in fall 2011, James W. Pennebaker and Samuel D. Gosling — who have taught it jointly for years — instructed all 901 students to bring a laptop to class, if they had one (they all did).

The students then learned why: They would be taking a short quiz in each subsequent class on their computer. The quizzes would be short and personalized — seven questions that the entire class would answer, and one tailored to each student, usually a question from another quiz that he or she got wrong.

In place of a final exam, grades were based on cumulative quiz scores.

The questions "weren't impossible, as long as you did the reading and paid attention in class, but there were definitely some 'thinkers,'" Namita Pallo, 18, who recently took the course in the quiz format, said by email. "The harder part for me was always when old questions you had missed previously came back."

Most students hated it at first, Dr. Pennebaker said.

"Sam and I usually get really high course evaluations" from the students, he said; "these were the lowest ever."

Dr. Gosling offered one explanation. "For the first few weeks, every time their friends went out drinking, they couldn't go; they had yet another test the next day." Their co-author was Jason D. Ferrell, also at Texas.

By the end of the course, however, the class had outperformed a previous Psych 301 class of 935 students that used midterm exams — scoring 10 percent higher on a subset of 17 questions that appeared on both classes' tests. The quizzed group also got slightly higher grades, the study found.

The grade improvements were sharpest among students from lower-income backgrounds — those from poor-quality schools "who were always smartest in class," Dr. Gosling said.

"Then they get here and, when they fail the first midterm, they think it's a fluke," he went on. "By the time they've failed the second one, it's too late. The hole's too deep. The quizzes make it impossible to maintain that state of denial."

By forcing the students to stay current in the reading and pay attention in class, the quizzes also taught them a fundamental lesson about how to study, the authors said.

They also cut down on another kind of denial — that most hallowed of college traditions, cutting class.

In the middle of the semester, attendance usually averages about 60 percent, Dr. Pennebaker said, adding: "In this quiz class it was 90 percent. If you know you've got a quiz, you have to show up."

A version of this article appears in print on November 21, 2013, on page A18 of the New York edition with the headline: Frequent Tests Can Enhance College Learning, Study Finds.

SAVE E-MAIL SHARE

Get Free E-mail Alerts on These Topics

Tests and Examinations

Colleges and Universities

University of Texas

Pennebaker, James W

Ads by Google

what's th

Go to Your Recommendations »
What's This? | Don't Show

Ad Choices
Pepper



J.C. Penney's loss is bigger than expected.

ALSO IN BUSINESS »

Tracking the JPMorgan investigations
The unemployment rate at full employment: How low can you go?

nytimes.com

BUSINESS



The New York Times
The new Times experience
designed for Android™

Download Now ▶

Ads by Google

what's this?

3.25%+ APR Fixed Mortgage

No (ZERO) Closing Cost Refinancing.

Low APR Mortgage Available!

CashCallMortgage.com

MORE IN EDUCATION (2 OF 26 ARTICLES)

Campaign Seeks to Recruit Top Students to Become Teachers

Read More »

[23andMe: Genetic Testing](#)

Learn Valuable Health & Ancestry
Information. Buy Now - Only \$99.
23andme.com/GeneticMapping

INSIDE NYTIMES.COM

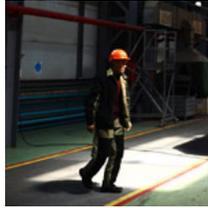


HOME & GARDEN »



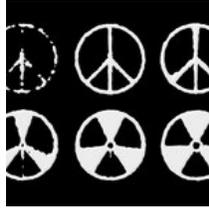
Landscape Architect
Defends His Garden

BUSINESS »



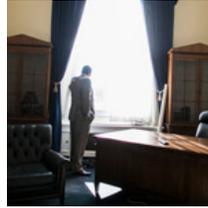
Kazakhstan's Bet on Rail

OPINION »



Op-Ed: How Bush Let Iran
Go Nuclear

U.S. »



Mr. McAllister Arrives in
Washington

OPINION »

**Op-Ed: The
Truth About
Tornadoes**
Global warming is real.
But it is not causing
more twisters.

FASHION & STYLE »



What's He Really Like?
Check the Lulu App

© 2013 The New York Times Company | [Site Map](#) | [Privacy](#) | [Your Ad Choices](#) | [Advertise](#) | [Terms of Sale](#) | [Terms of Service](#) | [Work With Us](#) | [RSS](#) | [Help](#) | [Contact Us](#) | [Site Feedback](#)

MORE IN EDUCATION (2 OF 26 ARTICLES)

**Campaign Seeks to Recruit Top
Students to Become Teachers**

[Read More »](#)