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## Researcher finds that cramming damages long-term retention

If you cram for a test, you won't retain much information afterwards, according to a new study by a York University professor.

The study of over 1,350 individuals showed that material needs to be relearned at least a month after initial learning, in order to achieve maximum retention a year later.



"We've known for some time that multiple exposures are the key to long-term retention, but we haven't understood precisely how the process works until now," says York psychology **Professor Nicholas Cepeda (left)**, who authored the study. "This study provides a precise measure of the intervals between learning and relearning that produce the best long-term benefits."

Cepeda used online flashcard-style testing presented at varying intervals to subjects in the study, in the most comprehensive study of long-term retention to date. He found that we retain information on a sliding scale of relearning gap versus retention interval.

"Let's say you're studying for an exam that's three weeks away," Cepeda says. "To get the best possible score on that exam, you should review the information at a 20 percent interval, or several days after you initially learned it."

However, if you want to recall that same information several years from now, the optimal interval for review would be closer to five per cent. "You'd want to relearn it several months later," he says.



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Cepeda notes his findings are at odds with many conventional educational practices. "The findings imply that many educational practices are likely to be highly inefficient for promoting long-lasting memory," Cepeda says. "The compression of learning into a too-short period is very likely to produce misleadingly high levels of immediate mastery that will not survive the passage of substantial periods of time."



Cepeda also found that a too-short interval is much more detrimental to retention than a scenario in which the interval between learning and relearning is too long.

The study, "Spacing Effects in Learning: A Temporal Ridgeline of Optimal Retention", was completed in October 2007. Preliminary results appeared in the *Psychonomic Bulletin and Review* in April 2007.

*From YFile: York's daily online newsletter*

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