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How testing improves memory

[Quizzes inspire keywords that spur recall](#)

By Marissa Cevallos

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Quick — learn these Swahili words: *wingu* means cloud, a *lulu* is a pearl and *zabibu* means grape.

Covering up the words and quizzing yourself is a better learning strategy than repeatedly reading the words, psychologists reported in the Oct. 15 *Science*. Self-testing strengthens the memory by creating keywords as clues for retrieving the word pairs later on.

Scholars have long known the value of self-quizzing: “Exercise in repeatedly recalling a thing strengthens the memory,” Aristotle wrote more than 2,000 years ago. But psychologists weren’t sure why.

A pair of researchers at Kent State University in Ohio hypothesized that when studying, say, a foreign language, students invent keywords to help trigger the right word. To remember that *wingu* is a cloud, for example, a student might use the word *wing* to think of a bird flying in the clouds.

The researchers asked 118 college students to study 48 pairs of Swahili and English words. Half of the students studied the words side by side, and half were quizzed by being shown one word and asked to recall its partner. In both groups, researchers asked what mediator — word, phrase or concept — the students used to link the words.

When the students were tested one week later, those who had taken the practice quizzes performed better than those who hadn’t. The grades were especially disparate if researchers asked the students to recall their mediators just before the exam. In that case, students who had been quizzed remembered their mediators 51 percent of the time. Students in the unquizzed group remembered their mediators only 34 percent of the time.

“Mediators are playing a role we didn’t realize was important before,” says Nate Kornell, a psychologist at Williams College in Williamstown, Mass., who was not involved in the research. “When we put tests and mediators together, they matter more, like a dynamic duo.”

Students are often lulled into a false sense of knowledge by staring at information. “The illusion is, you read something and think you’ll remember it. But if you don’t try to retrieve it, you don’t know if you know it,” says Mary Pyc, who was a cognitive psychology graduate student when she performed the research at Kent State University. Though psychologists recognize the value of self-testing, they say students often neglect it while preparing for exams. Students will underline or highlight facts they think are important, but before test time they only reread the marked information, cognitive psychologist

Henry Roediger from Washington University in St. Louis found when he asked undergraduates how they studied.

"They think they know it because they have read it so many times, but they haven't practiced the skill they'll need on the test, which is retrieval," he said.

Business people can use mediators to match names with new faces, says Roediger, by connecting the name with an identifying body feature. He uses mediators to learn the names of his students on the first day of school.

Now, exam time: How do you say *grape* in Swahili?

SUGGESTED READING :

B. Bower. Secrets of memory all-stars: Brain reflects superior recollection strategy. Science News. Vol. 163, January 4, 2003, p. 4. Available online to subscribers:

B. Bower. A tip of the tongue to the brain. Science News. Vol. 160, September 8, 2001, p. 155. Available online to subscribers:

CITATIONS & REFERENCES :

M. Pyc and K. Rawson. Why testing improves memory: Mediator effectiveness hypothesis. Science. Vol. 330, October 15, 2010, p. 335. doi: 10.1126/science.1191465.