Wray Herbert Become a fan
Author, 'On Second Thought: Outsmarting Your Mind's Hard-Wired Habits'

- Email

http://www.huffingtonpost.com/wray-herbert/multiple-choice-tests_b_1389135.html?ref=tw

Two Cheers for Multiple-Choice Tests!

Posted: 04/02/2012 5:49 pm EDT Updated: 06/02/2012 5:12 am EDT

The oldest geyser in Yellowstone National Park is:

a. Steamboat Geyser
b. Old Faithful
c. Castle Geyser
d. Daisy Geyser

We've all answered hundreds if not thousands of these multiple-choice questions over the years. We answer them to get our driver's licenses, and to get into good colleges and grad schools and professional schools. They're ubiquitous, yet everyone hates them. Educators dismiss them as simplistic, the enemy of complex learning. Students think they're unfair. And learning experts say they plain don't work.

To be clear, learning experts are questioning the value of these tests as learning tools. Perhaps the easy-to-grade exams are a necessary evil for assessments -- for things like driver's licenses and law-school admission. But psychological scientists who study memory and learning say that they can't be justified on a basic cognitive level as learning tools: years of research have shown that multiple-choice questions fail to trigger the memory retrieval that's known to solidify new learning. With multiple-choice tests, students only have to recognize the right answer, and simple recognition does not facilitate learning. Only digging through memory does that.

At least that's what critics of multiple-choices tests have been arguing for years. But now some new research is challenging that entrenched view. A team of scientists, headed up by Jeri Little of Washington University in St. Louis, decided to take another look at the much-maligned multiple-choice test, to see if at least some kinds of questions, if well constructed, might indeed trigger the crucial retrieval process, and thus promote memory and learning.

To test this, they asked students to read short essays on two topics: Yellowstone National Park and the planet Saturn. Then they took different kinds of practice tests, but all having to do with either Yellowstone or Saturn, but not both. Some answered multiple-choice questions like the one above, while others got the same questions in simple question form -- for example, "What is the oldest geyser in Yellowstone?" The students had plenty of time to search their memories while completing these practice tests.

Then, after a delay, they all took the "final exam" -- another recall test, to see what if anything they had learned. But here's the key to the experiment: all the students got the questions they had been tested on earlier, but they also got new questions that were closely related to the ones they had practiced. For example: "What's the tallest geyser in Yellowstone?" They also answered control questions, drawn from the essay that they had not been tested on. This was the crucial comparison: did students do better (or worse) on practice questions, and also on the related questions, than they did on the control questions?

The findings were provocative. Both types of practice tests improved performance on the final exam -- not surprisingly. But practicing on the multiple-choice test enhanced learning *more* than practicing on a recall test. What's more -- and this is the most striking finding -- practicing on recall tests actually impaired learning of the related material, while practicing on the multiple-choice test slightly enhanced recall of these related but novel items. In other words, the learning fostered by the multiple-choice tests was broader, including even material that they had not been tested on.

So it appears that multiple-choice practice does in fact trigger the memory retrieval process, and in that way enhances learning. But how and why? Little and her colleagues believe that it has everything to do with the way the questions and answers are constructed. As they describe in a forthcoming issue of the journal *Psychological Science*, the questions they used in the experiment had "competitive alternative answers." That is, the wrong answers were plausible enough that the students had to think about why the correct answer was correct -- and why the wrong answers were wrong. In coming to the (correct) conclusion that the oldest geyser in Yellowstone is Castle Geyser, for example, they might think something like this: "Well, Old Faithful is most familiar, but that doesn't mean it's the oldest. And I think I recall that Steamboat is the tallest, not the oldest." And so forth. It's this cognitive process, and the memory search that accompanies it, that leads to learning. This is important as a practical matter, too, because final exams often use questions that are different but related to practice questions.

So is this vindication for multiple-choice tests, after years in testing purgatory? Well, yes, at least "well-constructed" practice tests. But proper construction of questions and answers is not easy, the scientists note. Including wildly implausible answers to the oldest geyser question -- the Empire State Building, say -- may make students laugh, but it doesn't make them think. It takes work to come up with answers that are plausible yet fair. In that sense, the scientists concede, it may be true that multiple-choice tests are more often than not bad tests, but that may have more to do with the test writers, and with human nature, than with the test itself.

Follow Wray Herbert on Twitter: www.twitter.com/wrayherbert

More:

Multiple Choice Questions Advantages Multiple Choice Questions Disadvantages Multiple Choice Multiple Choice Advantages Multiple Choice Questions Multiple Choice Tests Multiple Choice Disadvantages