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Guest Column: Applying Research on Learning: It's Never That Simple - by Dr. Marilla Svinicki, University of Texas

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This week’s column comes from Dr. Marilla Svinicki, a psychology professor at the University of Texas. Originally printed in the December 2014 issue, Volume 24, Number 1, of the National Teaching and Learning Forum, it was reprinted this week in Tomorrow’s Professor, the online newsletter from the Stanford Center for Teaching and Learning, a newsletter I heartily recommend for its timely articles and reviews of research on teaching and learning. Dr. Svinicki kindly gave me permission to reprint her short article, which follows:

In 2008, the Association of Psychological Sciences (the APS) and the American Psychological Association (APA) brought together a task force to build a bridge between the scientific study of how people learn and the educational practice of teachers. The task force created a list of twenty-five principles of learning that were based on solid research. The list was compiled by Graesser, Halpern, and Hakel in 2008 (Graesser, 2009). As a psychologist, I love the list, but it’s possible that people outside the field will either say, at best, "Well, that’s just common sense," or at worst, "Huh?" So I have decided to bring these ideas to you on an aperiodic basis to show how they really are meaningful for instruction, but not always simple to apply.

I’m starting with three principles that are especially worthwhile for helping students retain learning beyond the next exam. I’m quoting them from Graesser’s (2009) editorial:

1. **Spacing Effect.** Spaced schedules of studying and testing produce better long-term retention than a single study session or test.

2. **Generation Effect.** Learning is enhanced when learners produce answers compared to having them recognize answers.

3. **Feedback Effect.** Students benefit from feedback on their performance in a learning task, but the timing of the feedback depends on the task (206).

It sounds pretty simple. Students should study or practice with the material over time rather than a single cram session or a single exposure. We know that. But do they do it? And students get more out of active learning when it requires them to generate their own answer. We know that, too. And feedback is needed for learning to occur, but the feedback should be immediate—or should it? This is where the “it’s not that simple” title comes from. The difficulty is trying to combine these three research-based simple assertions into an instructional practice, but it’s not impossible.

Frequent practice would be good, but students are not likely to practice if left to their own devices. So, as teachers, should we be giving quizzes constantly in class? The assertion
"Now for the more difficult principle of learning: the need for feedback. With all those practice activities, can an instructor avoid being overwhelmed by the need to give feedback? We can if we stop thinking about feedback as always detailed and personalized. In fact, sometimes one of the activities done in or out of class can be to have students apply the instructor’s feedback rubric to their own work or the work of classmates. In those instances they learn twice."

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doesn’t specify that these practice sessions have to be tests. Activities that are low stakes but provide practice with the concepts are probably even more effective than quizzes and can provide the variety of applications. They even can promote the generalization of concepts to new situations when learners see them being used in a range of applications. And if they are designed in a way that requires the learners to articulate their own solutions rather than pick out the correct solutions, they’ll satisfy one of the other assertions listed above, the Generation Effect. So it’s two for one: the Spacing Effect and the Generation Effect both endorse active practice during class time. In addition, the Generation Effect recommends that the practice revolve around having students apply what they’ve learned by creating their own responses to situations, which by the way is supported by another of the 25 principles, the rule of Multiple Examples. That assertion is that “an understanding of an abstract concept improves with multiple and varied examples.”

I’m going to temper that endorsement just slightly to say that some of the practice time in class is worth practicing the type of questions that will be found on the exams. This will improve the way students prepare for the exams because they know what to expect, and when those expectations are met, students are more likely to feel they are being evaluated fairly. That type of practice also tends to reduce student anxiety before and during the exam, and research also shows that while a little anxiety is OK, too much is detrimental to learning and performance.

Now for the more difficult principle of learning: the need for feedback. With all those practice activities, can an instructor avoid being overwhelmed by the need to give feedback? We can if we stop thinking about feedback as always detailed and personalized. In fact, sometimes one of the activities done in or out of class can be to have students apply the instructor’s feedback rubric to their own work or the work of classmates. In those instances they learn twice. That reduces one possible source of too much work for the instructor and contributes to student learning. In addition, spending class time reviewing the activities with the class as a whole using good examples of the responses students make is a very good use of the instructor’s skills and knowledge. Also, if the responses being reviewed are low stakes, like students get credit for attempting to answer, not just for “correct” answers, their anxiety is reduced again and their focus shifts from “did I get it right?” to “how can I do this better?”

So there are ways of taking the various assertions about learning based on research and coordinating them into instructional options. I hope this little exercise in coordinating research has been informative and helpful. I’ll continue looking at the 25 principles and discussing how they apply in future columns. In the meantime, give it a try and see if it fits your situation. It’s not simple, but few things involving learning and teaching are.

Reference

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Winthrop’s Teaching and Learning Center offers a wide variety of sessions each year for faculty and staff, on teaching, technology, professional development, and personal development. From leading class discussion to mastering the Smart podium to tenure and promotion to cooking soufflés, the TLC tries to make sure that all faculty and staff receive the kinds of professional and personal development that will make them better teachers, administrators, and employees.

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Thought For the Week

“Heaven goes by favor. If it went by merit, you would stay out and your dog would go in.”

--Mark Twain