Make It Stick: The Science of Successful Learning


Over the past several months, I have been on a mission. I am on the hunt for resources on how to help my students learn how to learn. As I was searching the Internet for ideas, I came across a highly recommended resource – a book entitled “Make It Stick: The Science of Successful Learning." After flipping through a few virtual pages, using the “Look Inside” feature on Amazon.com, I pressed the “Add to Cart” button and I am so glad that I did! Drawing on recent discoveries in cognitive psychology as well as other disciplines, Brown and crew offer numerous concrete strategies for becoming more productive learners – a coveted skill needed by students of all ages.

Brown and others begin with a chapter on how learning is misunderstood. One of the main tenets put forth in the book is that “learning is an acquired skill, and the most effective strategies are often counterintuitive (p. 2).” The remainder of the book is a rich exploration of learning practices that really work (based on numerous studies, replete with examples), while showing why other commonly-used practices are actually counterproductive. Below is a sampling of the “Don’ts” and “Dos” of productive learning put forth by Brown and others (2014), based on the latest research findings.

The Don’ts

Some of the most commonly used, yet least productive learning strategies are rereading the material (for example, textbooks, notes, articles, and other resources), underlining and highlighting, massed practice1 (that is, cramming), and blocked practice2. For example, though rereading textbooks is a very popular study strategy used by more than 80% of college students in some surveys, it is often “labor in vain.” “Rereading has three strikes against it. It is time consuming. It doesn’t result in durable memory. And it often involves a kind of unwitting self-deception, as growing familiarity with the text comes to feel like mastery of the content (p. 10).” Do not just reread material and highlight important concepts, because familiarity ≠ mastery!

The strongly-held belief in the effectiveness of massed practice to master a new skill is widely held by students, teachers, and coaches alike. This belief is mainly attributable to the fast gains that are often observed during the learning phase of massed practice. However, what is apparent from research studies is that these gains are transitory and quickly fade away. What is gained quickly is also lost quickly. In general, the most productive learning strategies, the ones that result in deeper and more durable learning, are effortful; whereas “learning that is easy is like writing in sand, here today and gone tomorrow (p. 3)." With productive learning strategies, it seems that the saying “no pain, no gain” once again rings true.

The Dos

Brown and others (2014) put forth eight key, research-based strategies for enhanced learning (Table 1). Though teachers can and should purposefully embed these strategies throughout their courses (for example, via activities, assignments, and assessments), for ultimate effectiveness, students must “take charge of their own learning” (p. 201) and implement these learning strategies themselves, whether the teacher promotes and reinforces them or not. Putting these learning strategies into practice is often more difficult, but has been shown to work. Short-term strategies that require more effort and that slow learning down, like space practice, interleave practice, and others (see Table 1), are known as desirable difficulties. The good news is that implementing these more effortful strategies “will more than compensate for their inconvenience by making learning stronger, more precise, and more enduring (p. 68).” Though one would need to read the book cover to cover to obtain the underlying details of each of these approaches (Table 1) and how to put them into practice to enhance learning, a couple of select themes to entice the reader are provided below.

The first theme is for teachers and is a controversial one — testing. The increased focus in recent years on standardized assessment “has turning testing into a lightening rod for frustration” (p. 19). But Brown and others (2014) call us to stop thinking of testing as a dipstick for measuring learning and assigning grades and start thinking of testing as a powerful tool for learning and durable retention. It’s a change in philosophy that will results in dramatic, positive consequences. Testing, in its most basic form, is active retrieval practice. One of the most striking research findings discussed in the book is the power of active retrieval to strengthen memory (literally via strengthening neural pathways) and interrupt forgetting. “The act of retrieving learning from memory has two profound benefits. One, it tells you what you know and don’t know, and therefore where to focus further study to improve the areas where you’re weak. Two, recalling what you have learned causes your brain to reconsolidate the memory, which strengthens its connections to what you already know and making it easier for you to recall in the future” (p. 20). For example, a research study in a middle school in Columbia, Ill., showed that material reviewed with low-stakes quizzes with feedback three times during the course was much better recalled a month later (students averaged 92%, an A-) compared to material that was reviewed three times, but not quizzed (students averaged 79%, a C+). These results are not an isolated case at the middle school level, but have been replicated a number of times at many levels. There is solid evidence that the “testing effect” (as it is known among psychologists)

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1 Massed practice is defined as “single-minded, rapid-fire repetition of something you’re trying to burn into memory, the “practice-practice-practice” of conventional wisdom (p. 3).”

2 Blocked practice is defined as “mastering all of one type of problem before progressing to practice another type (p. 207).”
The second theme is for students – studying for tests. Brown and others (2014) describe an all-too familiar scenario. A college professor answers a knock on her office door. It’s a first-year student in distress, asking to discuss his low grade on the first exam. The student attended all the lectures and took diligent notes on them. He read the text and highlighted all the critical passages. Why didn’t he do better on the exam? The problem is the student had used largely ineffective study strategies, ones that resulted in familiarity observed and learned and asking yourself questions about it. A combination of retrieval practice and elaboration.

2. Make reading a text or studying lecture notes active by periodically pausing to ask yourself questions, without looking for the answers, such as: What are the key ideas of today’s lecture? What terms or ideas are new to me? How would I define the terms in my own words? How do the ideas relate to what I already know? What does my life outside the classroom (that is, expanding to a larger context.)

3. Establish a self-quizzing study schedule that allows time to elapse between study sessions. The questions at the end of each chapter, as well as online resources, serve as starting points for developing self-quizzes. Some study activities – ones from the book as well as ones the student include: 1) using the set of key concepts in the back of each chapter to test himself on what he knows (and what he needs to work on); 2) defining the key terms from memory and use them in a paragraph to explain their meaning and application; 3) converting the main points in the text into a series of questions and then later trying to answer the questions from memory; 4) rephrasing the main ideas in his own words as he is reading; 5) relating what he is learning to what he already knows; and 6) searching for examples in addition to the ones provided in the text. To gain true mastery, students need to employ effortful study strategies that cause them to be deeply engaged with the course content, so much so that they themselves become content builders, not just memorizers of information from PowerPoint slides that are flashed before eyes during lecture. This engagement will also help students develop sound metacognitive skills, allowing them to judge what they know and what still needs more work.

As I read “Make It Stick,” I found myself jotting down numerous study activities – ones from the book as well as ones the book inspired – of what I could do in my classroom to help my
students learn better and what my students could do for themselves to learn better. Table 2 contains 10 items from the list I compiled, starting with an obvious, but often overlooked one – Explain to students how learning works and what strategies are most effective. I am confident that you will come up with many more ideas and that the learning of our students will deepen and become more durable because of it! Bottom line, learning how to learn is a critically important skill that we need to intentionally develop in our students. As emphasized by Brown and others (2014) in the opening paragraph of chapter 8 – “No matter what you may set your sights on doing or becoming, if you want to be a contender, it’s mastering the ability to learn that will get you in the game and keep you there” (p. 200).

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