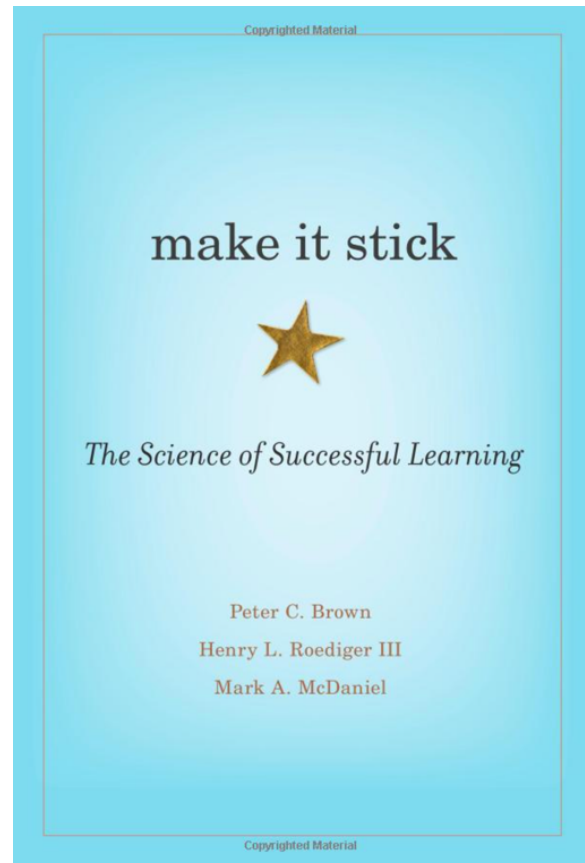


Citation:

Brown, P. C., Roediger, H. L. III, & McDaniel, M. A. (2014). *Make it stick: The science of successful learning*. Belknap Press of Harvard University Press.

Abstract (Inside front cover):

To most of us, learning something "the hard way" implies wasted time and effort. Good teaching, we believe, should be creatively tailored to the different learning styles of students and should use strategies that make learning easier. *Make It Stick* turns fashionable ideas like these on their head. Drawing on recent discoveries in cognitive psychology and other disciplines, the authors offer concrete techniques for becoming more productive learners. Memory plays a central role in our ability to carry out complex cognitive tasks, such as applying knowledge to problems never before encountered and drawing inferences from facts already known. New insights into how memory is encoded, consolidated, and later retrieved have led to a better understanding of how we learn. Grappling with the impediments that make learning challenging leads both to more complex mastery and to better retention of what was learned. Many common study habits and practice - routines turn out to be counterproductive. Underlining and highlighting, rereading, cramming, and single-minded repetition of new skills create the illusion of mastery, but gains - fade quickly. More complex and durable learning comes from self-testing, introducing certain difficulties in practice, waiting to re-study new material until a little forgetting has set in, and interleaving the practice of one skill or topic with another. Speaking most urgently to students, teachers, trainers, and athletes, *Make It Stick* will appeal to all those interested in the challenge of lifelong learning and self-improvement.

**My Two Cents:**

This is a book worth owning, worth studying, worth marking up and reviewing frequently. *Make it Stick* is a brilliant book worth owning. Ample research-informed claims are explained and used to clearly demonstrate how educators can make learning stick....and isn't that what we all want? Framed in cognitive neuroscience—also known as the Science of Learning and Development (SoLD) Brown, Roediger and McDaniel give us ways of thinking about thinking and learning that are not intuitive or necessarily desirable to implement. We need to trust the science. For example, we may know that cramming for a test is inferior to spacing out our retrieval practice, but we do it anyway because cramming tends to produce the immediate results we want on a test. The same applies to interleaving, mistake making and slow and seemingly sluggish progress....we often opt for ease, but *Make It Stick* shows us that effortful learning, interleaving and trial and error are better for us.

A Few Noteworthy quotes:

(All emphasis shown is in the original)

“If learners spread out their study of a topic, returning to it periodically over time, they remember it better. Similarly, if they interleave the study of different topics they learn each better than if they had studied them one at a time in sequence.” (p. x)

“What you tell yourself about your ability plays a part in shaping the ways you learn and perform – how hard you apply yourself, for example, or your tolerance for risk-taking and your willingness to persevere in the face of difficulty.” (p. 140)

“Learning is deeper and more durable when it’s *effortful*.” (p. 3)

“The more effortful the retrieval, the stronger the benefit.” (p.19)

“Trying to solve a problem *before being taught the solution* leads to better learning, even when errors are made in the attempt.” (emphasis in the original, p. 4)

“People who learn to *extract the key ideas from new material and organize them into a mental model* and connect that model to prior knowledge show an advantage in learning complex mastery.” (p. 6)

“Mastery in any field, from cooking to chess to brain surgery, is a gradual accretion of knowledge, conceptual understanding, judgement and skill. These are the fruits of variety in the practice of new skills, and of striving, reflection, and mental rehearsal. Memorizing facts is like stocking a construction site with supplies to put up a house.” (p.18)

“Unsuccessful attempts to solve a problem encourage deep processing of the answer when it is later supplied, creating fertile ground for its encoding, in a way that simply reading the answer cannot. It’s better to solve a problem than to memorize a solution.” (p. 88)

“Clear learning objectives prior to each class, coupled with daily quizzing and active problem solving with feedback, keep students focused, awake, and working hard.” (p. 235)

“If you use self-quizzing as your primary study strategy and space out your study session so that a little forgetting has happened since your last practice, you will work harder to reconstruct what you already studied. This effort to reconstruct the learning makes the important ideas more salient and memorable and connects them more securely to other knowledge and to more recent learning. It’s a powerful learning strategy”. (p. 205)

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