

How to Make It Stick

The application of scientific research to questions about learning and memory has been underway for over a century, and luckily for us, enormous progress has been made in just the last thirty years. Science attempts to mark a bright line between opinion and fact. Opinions are legion in the world. To be human is to hold an opinion on most everything. We are judgmental by nature and we judge our perceptions of reality to fit our own preconceived notions, beliefs, intuitions, and hopes. Science is the only way out of this self-referential pickle.

Make It Stick by Henry Roediger and his co-authors, Peter Brown and Mark McDaniel is perhaps the best public expression of scientific research about learning and memory so far. Clear and compelling, full of stories about pilots, entrepreneurs, and surgeons, it's currently the most understandable guide to a competent, successful, and satisfying life through learning that lasts. It shows how the study methods that most of us use are based on nothing more than ancient history, habit, and intuition. And it shows what actually works and explains why.

Here are the six best methods discussed in Make It Stick as expressed by Roediger and his co-authors.

RETRIEVAL PRACTICE (self-testing)

"Students whose strategies emphasize re-reading but not self-testing show overconfidence in their mastery. Students who have been tested instead have a double advantage over those who have not: they have a more accurate sense of what they know and don't know, and stronger learning that accrues from retrieval practice."

SPACING

"When retrieval practice is spaced, allowing some forgetting to occur between tests, it leads to stronger long-term retention."

INTERLEAVING

"During practice, the students who worked the problems clustered by type averaged 89 percent correct, compared to only 60 percent for those who worked the interleaved problems. But in the final test a week later, the students who had practiced solving problems clustered by type averaged only 20 percent correct, while the students whose practice was interleaved averaged 63 percent."

FEEDBACK

"Studies show that feedback strengthens retention more than testing alone does, and, interestingly, that briefly delaying the feedback produces better long-term learning than immediate feedback."

SETBACK & FAILURE

"The qualities of persistence and resiliency, where failure is seen as useful information, underlie successful innovation in every sphere and lie at the core of nearly all successful learning. Failure points to the need for redoubled effort and liberates us to try different approaches."

PRIMING

"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."
