

“People commonly believe that if you expose yourself to something enough times— say, a textbook passage or a set of terms from an eighth grade biology class— you can burn it into memory. Not so.”

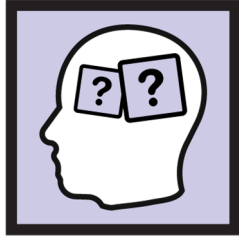
“The hours immersed in rereading can seem like due diligence, but the amount of study time is no measure of mastery.”

Rereading is a terrible study strategy. Mass repetition is an unproductive skill development strategy.

Why? They're too easy.

“The more you repeat in a single session, the more familiar it is and the less you struggle to remember it, therefore the less you learn. Learning that's easy is like writing in sand, here today and gone tomorrow.”

Here are three learning techniques (backed by peer-reviewed science) that *actually* increase information retention, skill acquisition, and lead to mastery.



Self-Quizzing

Pause an Audiobook every 30 minutes or put down a book every 15 minutes and ask yourself:

- What were the key ideas?
- Which of those ideas were new to me?
- How can I use these ideas in my life?

WARNING: It's hard to recall the details you've just read/heard!

According to empirical evidence, you forget roughly 70% of what you read and hear shortly after you learn it. Your minds are in a constant state of forgetting.

Self-quizzing forces you to use the limited information you recall to navigate your way back to the information you've forgotten. If learning is like exploring a new land, then self-quizzing is like retracing your steps back to a lake of knowledge. When you put in the effort to find a path back to the information you want to retain, you slow your rate of forgetting.

“The harder it is for you to recall new learning from memory, the greater the benefit of doing so... the effort of retrieving knowledge or skills strengthens its staying power.”



Interleaving

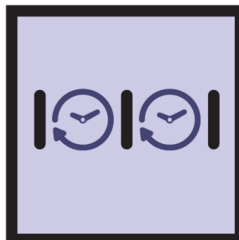
Instead of practicing one specific skill over and over, shift between three or more similar skills.

“A baseball player who practices batting by swinging at fifteen fastballs, then at fifteen curveballs, and then at fifteen changeups will perform better in practice than the player who (goes between the three pitch types in random order). But the player who asks for random pitches during practice builds his ability to decipher and respond to each pitch... and he becomes the better hitter.”

If you want to learn graphic design and master software programs Adobe Photoshop, Adobe Illustrator and Adobe After Effects, don't master one program at a time. Instead, get good at all three simultaneously.

Do Photoshop on Monday and Friday, Illustrator on Tuesday and Thursday, and After Effects on Wednesday and Saturday.

When learning to cook, don't master one meal at a time. Instead, master five similar meals at a time, and never cook the same meal twice in a row.



Spacing

“Lots of practice works, but only if it's spaced.”

Mass repetition relies heavily on short-term memory. Spaced repetition, however, requires you to use your long-term memory to recover the information you've partially forgotten.

“The increased effort required to retrieve the learning after a little forgetting has the effect of retriggering consolidation (brain's method of encoding information), further strengthening memory.”

If you only have two hours to practice a new skill this week, don't do all two hours in one day. Instead, practice for an hour today and an hour at the end of the week.

Why are self-quizzing, interleaving, and spacing effective learning techniques?

They're hard. The harder you work to retrieve information, the more likely that information will stick.

Effort = Retention