



# Master the Ability to Learn

## 3 Keystone and Counterintuitive Study Strategies

- 01) Self-Quiz: Practice Retrieving New Learning from Memory
- 02) Space It Out: Practice Retrieving More than Once with a Delay
- 03) Mix it Up: Study More than One Thing at a Time

### *Self-Quiz*

Practice Retrieving New Learning from Memory

How to:

- Set aside time every week to quiz yourself
- While reading or studying periodically ask yourself questions without looking
- Use questions at the ends of the chapter

Why:

- Provides a reliable measure of what you've learned and what you haven't yet mastered
- Strengthens learning making it easier to recall later
- Puts an end to cramming and all-nighters

Feels:

- Awkward and frustrating compared to rereading
- Less productive than rereading, but in reality, is more effective
- The effort of recall strengthens its staying power

Tip:

- Recreate exam conditions. If you can't use it during the exam, don't use it while self-quizzing

### *Space it Out*

Practice Retrieving More than Once with a Delay

How to:

- Establish a schedule e.g., 1) new material revisit within a day or so 2) again a week later 3) give it a month
- Alternate between two or more topics – alternating requires you to continually refresh your mind

Why:

- Spacing out studying allows some forgetting to happen, requiring more effort to retrieve what you already studied
- The effort makes it more salient and memorable

Feels:

- Less productive than massed practice (aka cramming)
- Difficult because the material is rusty and harder to recall
- Actually, it's strengthening mastery and memory

Tip:

- Flashcards: don't stop quizzing yourself on the cards you answer correctly. Revisit them periodically.

## *Mix it Up*

Study More Than One thing at a Time

How:

- After a decent understanding of a problem type and its solution is developed, mix it up with different problem types
- Mix in different concepts, problems, chapters, subjects

Why:

- Improves ability to discriminate between types, identify unifying characteristics within a type and improves success on tests where you have to discern the kind of problem

Feels:

- More disruptive and counterproductive than blocked practice (aka mastering all of one type of problem before practicing another)

Tip:

- Try to make links between different ideas as you switch between them

## *Other Effective Study Strategies*

01) Elaboration:

- Relate the material to what you already know
- Explain it to somebody else in your own words
- Discover a metaphor or visual image for new material

02) Generation:

- Before reading a text try to explain the key ideas you expect to find and how you expect they will relate to your prior knowledge and then read to see if you are correct
- For math or science, try to solve problems before class

03) Reflection:

- Ask questions about what has been learned
- Learning paragraphs: reflect on what was learned last week and how it connects to life outside of class

04) Calibration:

- Use measures to determine what you know and what you can do (self-testing)
- Treat practice tests as tests, check your answers and focus your studying effort on the areas that you haven't mastered

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