



**THE MOST  
SUCCESSFUL  
STUDENTS ARE  
THOSE WHO TAKE  
CHARGE OF THEIR  
OWN LEARNING**



You are in total control over your learning and revision. This is really empowering, but it is also easy to feel lost or overwhelmed when you don't know where to start, what to do or how to study. These strategies, based on evidence, will help you take ownership over your studying and help you to become a more effective, successful learner!

## 1 PRACTICE RETRIEVING NEW LEARNING FROM MEMORY



### What does this mean?

Retrieval practice means self-quizzing. Retrieving knowledge and skill from memory should become your primary study strategy in place of rereading.

### How to use retrieval practice as a study strategy:

When you are reading a text or your notes, take a moment every so often to ask yourself questions like;

*what are the key ideas?*

*How do I define them?*

*What terms or ideas are new to me?*

*How do the ideas relate to what I already know?*



Many textbooks have study questions at the end of chapters. These are an excellent way of testing yourself. Creating your own questions and writing down the answers, is also a good way to study.



When you quiz yourself, check your answers to make sure your judgment of what you know and don't know is accurate.



Use quizzing to identify weak areas, then focus your studying to make them strong.

**Remember, the harder it is for you to recall new learning from your memory, the greater the benefit is for doing so. Making errors will not set you back, so long as you check your answers and correct your mistakes.**

### **Why retrieval practice is better than rereading**

After one or two reviews of a text, self-quizzing is far more powerful for learning than additional rereading. **Why?**



The familiarity with a text that is gained from just rereading creates an illusion of knowing. It misleads you in what you have learnt and gives a false impression that you will remember all of it. By contrast, quizzing yourself on the main ideas and the meanings behind the terms helps you to focus on the central concepts rather than all the details that are not important.



Quizzing provides a reliable measure of what you have learnt and what you haven't yet mastered.



Forgetting is human nature, but if you practice retrieving new information it secures it in the memory and helps you recall it in the future.



Regularly practising new knowledge and skills through self-quizzing strengthens your learning of it and your ability to connect it to what you already know.



Getting into the habit of regular retrieval practice puts an end to cramming and all-nighters.

### **How it feels:**

Self-quizzing can feel awkward and frustrating, especially when new learning is hard to recall. But what you don't sense when you're struggling to retrieve new information is the fact that every time you work hard to recall a memory, you are actually strengthening it! The effort of retrieving knowledge or skills strengthens its staying power and your ability to recall it in the future or during the exam. It is worth the struggle.



Take a break away from the work. Take a walk. Make a cup of tea. Sit and breathe for a few minutes. Then come back to it. Your brain will work its magic.

## 2

## SPACE OUT YOUR RETRIEVAL PRACTICE



### What does this mean?

Spaced practice means studying information more than once but leaving considerable time between practice sessions.

### How to use spaced practice as a study strategy:

Establish a timetable of self-quizzing that allows time to pass between study sessions. The big question is, "How much time?"



It really depends on the material you are learning. However, we recommend when learning new material from a text or lesson that you review this within a day of your first encounter. Then review it again a few days later, then a week later, then each month, until you are really confident with the material. Our **Recall and Review Clocks** will help provide you with a structure until you feel more certain about what works for you.



When you are feeling more confident of your mastery of certain material, quiz yourself once a month.



If you use flashcards, don't stop quizzing yourself on the cards you answer correctly a couple of times. Continue to shuffle them into the deck until they are all well mastered. Then set them aside into a pile that you look at monthly.

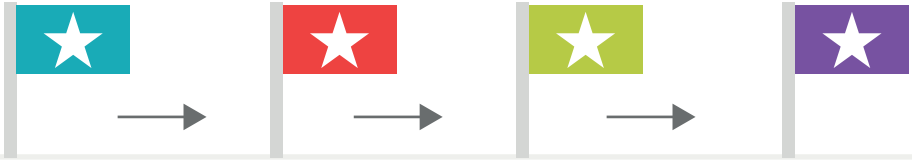


Over a term, as you quiz yourself on new information, also reach back to retrieve earlier material and ask yourself how that knowledge relates to what you are learning now.



Another way to space retrieval practice is to interleave the study of two or more topics so that alternating between them requires you to continually refresh your mind on each topic as you return to it.

**Remember, anything you want to remember must be periodically recalled from memory.**



### **Why is spaced practice better than studying solidly for long periods of time?**

Our instinct persuades us that dedicating stretches of time to a single-minded, repetitive revision session is essential to learning and mastery. It is easy to believe this as when we practice a thing over and over again we see our performance improving. But, and it is a big BUT, these gains are made through our short-term memory which quickly fades. What is the point of doing all this hard work when it is so easily forgotten, catching us in a toxic cycle of working hard/forgetting everything, causing more stress and anxiety?

Lots of practice works, but only if it is spaced.



If you use self-quizzing as your main study strategy and space out your study sessions so that a little forgetting has happened since your last practice, you will have to work harder to reconstruct what you studied. This effort to reconstruct the learnings makes the important ideas more memorable and connects them securely to what you already know. This means it goes into your long-term memory, which makes it a really powerful strategy.



#### **How it feels:**

Long, solid study sessions feel more productive than spaced practice but it is not. Spaced practice feels more difficult because you will have to work hard to recall the material. It may feel that you are never going to get on top of it, but in fact, the opposite is happening. As you reconstruct learning from long-term memory, as awkward as it may feel, you are strengthening your mastery as well as the memory.

**You've got this!**

### 3

## INTERLEAVE YOUR STUDYING



### What does this mean?

Alternating the study of two or more topics or even different problem types requires you to continually refresh your mind on each topic as you return to it. This helps you to space your practice making it a really good strategy.

### How to use interleaved practice as a study strategy:



Using maths as an example, when you are learning different mathematical formulas, then study more than one type at a time, so that you are alternating between different problems that call for different solutions.



Once you reach the point where you understand one problem type and its solution but your grasp is still basic, scatter this problem type throughout your practice so that you are alternately quizzing yourself on various problem types and retrieving the right solutions for each.



This goes for anything not just Maths - biology specimens, historical events, writing techniques - everything!



If you find yourself falling into single-minded, repetitive practice of a particular topic or skill, change it up! Mix in the practice of other subjects, other skills, constantly challenging your ability to recognise the problem type and selecting the right solution.

### Why is interleaved practice better?



A goal keeper who practices saving fifteen fast balls, fifteen curveballs, and then fifteen stutter-step kicks for penalties, will perform better in practice than the goalie who mixes it up. But the goalkeeper who asks for random shots at the goal builds his ability to identify and respond to each shot as it comes his way. It is more challenging but also realistic, and he will become the better goal keeper.

It is exactly the same with learning. Mixing up problem types and topics improves your ability to decipher, identify, and solve a variety of different things, making you a better learner.

Other fantastic study strategies;

## 4 ELABORATION



Elaboration is the process of finding additional layers of meaning in new material. For example, relating the material to what you already know, explaining it to somebody else in your own words, or explaining how it relates to your life outside of class.

A powerful form of elaboration is creating a metaphor or visual image for the new material such as, when you study the principles of conduction and heat transfer, imagine warming your hands around a cup of hot chocolate.

## 5 GENERATION



Generation is the attempt to answer a question or solve a problem before being shown the answer.

## 6 REFLECTION



Reflection is a combination of retrieval practice and elaboration that adds layers to learning and strengthening skills. After a class take a few minutes to reflect by asking yourself questions such as;

What went well?  
What could have gone better?  
What other knowledge or experiences does this remind me of?  
What strategies do I need to use next time?

## 7 CALIBRATION



Calibration is aligning your judgements of what you know and don't know with objective feedback so you avoid believing you know more than you really do!

## 8 MNEMONIC DEVICES



Mnemonics help you retrieve what you have learnt. There are lots of different ones from first letter trigger words like, Richard of York Gave Battle in Vain to remember the colours of the rainbow, to memory palaces and A-Maps.

**Remember, 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.**

**You can do it!**

# Learning Performance

Making learning easier

