

If They Don't Remember, Can They Really Know?

Tips for using effective revision strategies
that strengthen students' retrieval capacity



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“But... I don't know how to revise...” Sound familiar? Of course it does. It's a common phrase we hear from our students when it comes to exam prep. It can also serve as a reminder that it is vital we consider not just the content of what we teach, but also how students learn this material. As Dr. John Dunlosky points out in his article 'Strengthening the student toolbox- study strategies to boost learning', teaching students how to study is just as important as teaching them the content. Exploring and demonstrating effective learning strategies with students is crucial if we are going to train them to move away from unhelpful practices like last minute 'cramming' sessions, caffeine-fueled all-nighters and the highlighting of everything on a worksheet or textbook meaning the re-reading of it almost in its entirety.

Unfortunately, there are no magic tricks I can teach pupils for retaining information for an exam (as much as I would love there to be). Learning is achieved through hard work and continuous effortful practice. However, there are some very useful techniques and tips I would encourage. Strengthening the retrieval capacity of our students is essential and if we manage to store information into long-term memory, we are able to retrieve it again and again and again.

Working with my own pupils as well as planning and delivering the student Brain Booster masterclass workshops I deliver for Veema Education has meant I have developed a deep interest in neuroscience and the science of learning. However, what I feel is sometimes missing from the research papers are simple, practical revision strategies we as teachers can adopt to enable our learners to maximise the impact of their revision. So what follows is a list of the ones that I have found to really effective:

Retrieval practice is one of the most effective ways of learning that leads to fluency. Trying to recall something from memory requires mental strain and effort, which is why low stake-testing rather than simply reading, highlighting and re-reading information is more effective. When reading text from a textbook or worksheet have pupils answer a series of questions to test their knowledge and understanding from memory. These can be questions that have been prepared earlier or questions that you get students to prepare themselves. Knowing that students are about to test each other can be a wonderful engagement tool! To take this a step further, include some more challenging and higher order thinking questions

that encourage them to think about how this new learning relates to previous information they have learnt in the past-whether this being yesterday's lesson or something from last term.

Graphic Organisers such as mind maps, spider maps, sequential thinking and Venn diagrams should be used as much as possible for students to show their thinking and understanding of key ideas and topics from memory. When learning, students need to be active and graphic organisers are a fantastic way of reconstructing information they have been exposed to whilst making useful links and connections to what they already know.

Flashcards are a common resource students use when revising but research tells us that around 30% of people do not use flashcards to self-test (Hartwig and Dunlosky, 2012). This this is real shame as there are great ways flashcards can be used to test knowledge and understanding and memory. For example, you can train students to create flashcards in the following way:

- Write a concept or key term at the front of the flashcard and at the back get students to write down their answer. This can then be checked with the original answer to see how well they have done. This is an effective way of self-quizzing how much you know and where the gaps might be.
- While reading information, highlight key words, concepts, theories and at the same time translate this information to a set of flashcards, which can then be used for self-testing purposes.

- Combine writing with a visual illustration. Students can then test themselves by explaining this in more detail at the back of the flashcard.

One thing I would say with flashcards (and I've told this to my students many a time) is be weary of totally dropping from the pack the ones that you feel you are confident with. You should aim to revisit material as often as you can especially in the build-up to exams.

Cornell Note taking. I love the Cornell note taking system and many of my GCSE and A-level students did too. This is an excellent way of getting students to think metacognitively (McCabe 2001), asking questions, noting key terms, and summarising the content being revised at the end of a lesson or during independent study. This method enables students to self-test what they have covered in the lesson as well as piece together previously learnt information. You can download a guide I produced last year of how to use this here and it's a definitely worth exploring with students.

Spacing out your learning and revisiting material as often as possible is so important for embedding. This is one reason why I feel we constantly need to expose students to information they have previously learnt either in the lesson or through homework, mixing up material from different units in class tests or assessments if they are going to hang onto the knowledge they gain.

The key here to effective revision is not the hours of cramming you do in the final few weeks or days before the exam but regular, focused, shorter sessions with regular brain breaks. Cedepa et al (2008) in their research on spacing effects in learning show that the optimal intervals for retaining information between study sessions for say one week should be between one or two days, six months three weeks and 1 year every four weeks. I often put it to my students as 'the little and often' approach. Daily low-stakes testing, weekly reviews and cumulative testing is so

important for helping students store information into long-term memory.

Past questions. Students need to practice different examination questions, over and over, well-spaced over time, rather than massed practice of the same problem type (and without looking at any notes). Also, the effect of exploring worked examples or exam answers, as well as writing their own, helps students process, practice and refine their revision to meet the parameters of exam success.

The reason many of the following techniques work so well is that they encourage learners to be active agents in their learning. They need to think hard about the information they are faced with. Learning that feels difficult embeds knowledge into memory better compared to learning that feels easy, which soon disappears—hence why we need to train students to avoid passive, superficial and time consuming techniques

Preparing students for exams is never easy, and if we are going to teach students to be independent learners than we really do need to give some further thought into guiding students on how to revise, rather than simply telling them they should do this or focusing merely on subject content.



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