

This Spotlight focuses on practical ideas for how to embed retrieval practice into your lessons. "What does this look like in my classroom" and "How can I apply the research and principles in my subject" All these ideas are from Tom Sherrington's blog! Examples and further details can be found in our [Retrieval Practice shared folder](#) in the T&L area on Staff Shared

1. Quick Fire Quiz: Teacher reads out the question or presents them via slides or an audio (eg in MFL). The questions can be spontaneously generated or prepared. Questions can be simple factual recall, mental maths or multiple choice. All students write down their answers. Teacher reveals the answers, one by one or all at once. Students check which they got right. Swapping answers to check is an option but it can be a fuff and takes away from the message that students need to be evaluating the depth of their own learning. If you've prepared this in advance, it is much more time efficient if students can see the answers all at once to check rather than wait for each to be read out.

2. Paper Quiz: Everyone gets a copy of the questions and writes down answers at their own pace within a time limit. This is much less teacher-directed. It frees the teacher up to circulate and spot common errors as they emerge. It allows for a wider range of question types and makes it easier to engage in with worded questions that can be hard to read from a slide. The checking process is much better done with pre-prepared answers rather than reading out answers one by one. Why? Because it is quicker, allows for more detail in the answers, it allows students to focus on things they got wrong and helps to build their capacity for self-assessment.

3. Silent Self-Quiz: In a test like this, students can generate answers and then check if they were right, silently and privately. They can repeat this multiple times. Any number of resources can be used – blanked diagrams, cue cards with answers on the back, maths questions with answers kept separately. This process keeps the outcome of the assessment with the student – the most important place! They learn what they know and don't know. You can then discuss common errors and problems. It saves a lot of time with asking questions and marking them – all of that is done mentally by the students.

4. Paired Quiz: Activating students as resources for one another. In order to maximise the extent of retrieval practice that goes on, it is fantastic to get students to quiz each other in pairs. One student has the material – questions, answers, cue cards, knowledge organiser, text – and asks the other student questions. "Test me" – it's a well-used technique and can be harnessed in lessons. Give a time limit and then get them to swap around. You get a room full of students checking their knowledge.

5. Self-Explanation: Beyond simple recall, ask students to explain something to themselves. You simply give students a few silent moments to complete a mental task. They have to generate a version of what they understand that they can either then self-check or write down or use to respond to further questions. However the process of mental rehearsal is important.. making this explicit helps to train those who don't do it spontaneously.

6. Demonstration and Performance: Of course LOTS of knowledge isn't simply quiz-able declarative knowledge. You can ask students to show what they know: a procedure; a technique; a routine. Have you learned it? Show me...Of course as a student shows what they can do to a teacher, they are showing themselves what they can do. This is important. Again, the intensity and frequency can be amplified by getting students to show each other in pairs rather than one-by-one with the teacher, as long as they have the tools to evaluate success. This is common in practical areas and performance areas – sport, music, art – but it also has a role in science, maths, English where the modelling process could be framed as 'teaching'.

7. Paired or individual elaborative-interrogation: A form of quizzing that can be done in pairs or as a silent private process, is elaborative interrogation. This is where students explore their schema by answering How and Why questions. Why does this happen? How does it work? Why does it work? Why did she say that? Why do you use that structure? Why is that the most important reason? How do you know? If you train students to use some of these question stems and give them resources that help them to verify the answers, this makes for a deep retrieval practice exercise

8: Tell the story; rehearse the explanation: Lots of knowledge forms a narrative structure – a series of events, a process, cause and effect. So, the retrieval practice can be formed as 'telling the story' to someone else who can play the role of verifier. Any explanation can then be improved and rehearsed. You can get better at telling a story in more detail. Tell the story of a water molecule as if follows the water cycle: (with or without key words provided)

9: Summarising: Useful recall process (is less precise in terms of checking) – because every summary can be different.

10. Map and Compare: This method is where you want to check students' capacity to make links. Ask them to make a memory map of the key aspects of a topic... eg: Reactions of Metals OR Themes in Hamlet OR Generating Electricity. These things can be much tighter sections of knowledge too: Types of radiation; the key events and figures in the Cuban Missile Crisis

MARGE: A Whole-Brain Learning Approach for Students and Teachers.²I have really found this document useful in furthering my understanding of retrieval: MARGE is an acronym for five essential principles of learning: MOTIVATE, ATTEND, RELATE, GENERATE, EVALUATE. It is available as a downloadable booklet. This booklet offers tips and techniques to improve student learning. Grounded in biological and psychological science, MARGE offers a whole-brain approach to understanding how students learn. Turn over for a summary

¹ <https://teacherhead.com/2019/03/03/10-techniques-for-retrieval-practice/>

² <https://shimamurapubs.wordpress.com/marge-a-whole-brain-learning-approach-for-students-and-teachers/>



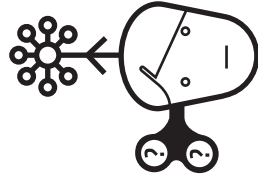
PROFESSOR ARTHUR SHIMAMURA'S

A WHOLE-BRAIN LEARNING APPROACH FOR STUDENTS AND TEACHERS

M

MOTIVATE

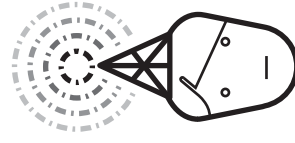
We need to be motivated to use energy to keep focused on the learning process. Designed well, motivation can be intrinsic to learning, for example, by generating curiosity, framing new material as a quest to answer big questions, organising ideas within a wider schema, story-telling and asking the 'aesthetic question': *"What do you think? How does it make you feel? Why is it good?"* *"The aesthetic question engages emotional brain circuits and forces us to attend to and organize our knowledge."*



A

ATTEND

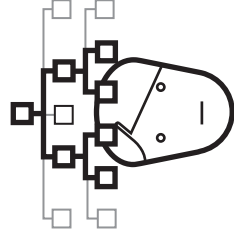
Academic learning is a 'top-down' activity whereby we consciously attend to the information needed to build our schema from all the stimuli we're exposed to. This is hard so 'mind wandering' is common and teachers need to expect it. Ideally students will consciously attend to the learning goals and consciously make connections – but sometimes an instructor needs grab attention, acting as their students' prefrontal cortex to direct their top-down processing.



R

RELATE

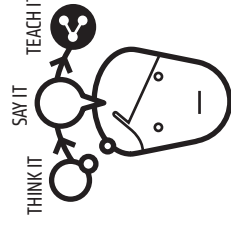
Shimamura offers numerous biological insights about how we store and connect information through memory consolidation. The practical strategies include deploying elaborative-interrogative questioning – asking how and why – using mental images, analogies, constructing concept maps as schematic representations of sets of connected ideas and training students to make notes organised in hierarchical structures.



G

GENERATE

Shimamura suggests: *"Think it, say it, teach it! These are the simplest things to do to improve your memory"*. He details multiple ways in which our memories are strengthened when we generate information from our memory, not simply restating it but using our own words. If we tell someone what we've learned we can improve our memory by 30-50%. Explained in terms of brain functions, Generate reinforces the widely known retrieval practice concept.



E

EVALUATE

This is the territory of metacognition with a nice metaphor of the prefrontal cortex acting as the conductor of the orchestra of brain functions. There's a problem with the illusion of knowing when we are familiar with information even when we cannot fully recollect it. We stop trying to learn more if we kid ourselves into thinking we already know it. Students should, therefore, be taught to check their understanding using spaced retrieval practice, generating information by explaining their learning to others as a form of self-test.

