

This Spotlight is the third of five Issues that focuses on Retrieval Practice. Over this half term we are going to have a whole school focus on Retrieval Practice. *Please try to have discussions with your classes about what Retrieval Practice is, why it is so powerful and what it might look like in your lessons and when the students are reviewing your subject.*

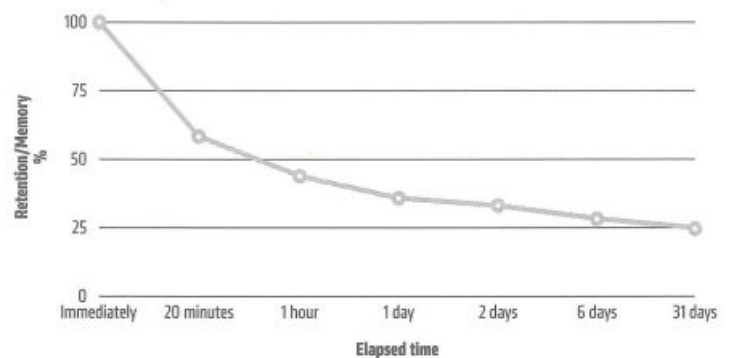
How long should we wait before testing students on previously covered material?

Kate Jones looks at the research behind this question in her excellent book¹. Here is my attempt to distill her key ideas:

- Retrieval practice will be more effective if teachers allow for some forgetting to take place before we ask students to try to retrieve information
- Forgetting increases the challenge and the level of challenge increases the effectiveness
- The research is not hugely clear about the optimum space of time between the encoding and retrieval stages. However what is clear is that; *'the closer you are to forgetting a piece of information (before it completely drops out of the brain) the more likely it is that you will benefit from revisiting it'*²
- We therefore need to use our professional judgement in addition to the knowledge and understanding that we should allow for some time to elapse to allow forgetting before retrieval practice takes place:
 - Don't revisit content too soon - retrieval practice is a strategy to retrieve information from long-term, not the short-term memory
 - Make sure you delve back into previous content (*'last week, last month, last year'*)
 - If you wait too long before revisiting material again, it may require relearning

Another useful idea is Ebbinghaus's *forgetting curve*. This shows how forgetting happens after the initial period of learning has taken place, occurring rapidly in the first instance then slowing down. Once information has been encoded, then the first 20 minutes after this are prone to forgetting. Within an hour the majority of that new information will be forgotten. The curve shows that after the first day, forgetting occurs at a slower pace. Implications of this are:

- When we check understanding during or at the end of a lesson, the information will likely still be in the student's short-term memory.
- If we wait too long to check, then that information can be forgotten, and will need to be re-learned again
- However if we wait for some forgetting to occur and then use retrieval practice, the strategy will strengthen the information to counteract the forgetting curve.
- Forgetting is an important stage in the learning process
- Careful planning and factoring in retrieval and *spaced learning*³ into lessons can interrupt the forgetting process and support long-term memory



The Channing T&L Journal Club has been reading Tom Sherrington's book *Rosenshine's Principles in Action*. The book and the original paper's ten principles offer much guidance and support about retrieval practice. Retrieval practice is a central element of *Rosenshine's Principles of Instruction* and is outlined over the page (Principles 1, 3, 6, 7, 9 & 10 are especially relevant). The original paper is worth a read. Tom has some excellent advice about this which we will look at in the next Spotlight.

¹ Kate Jones: *Retrieval Practice: Research and Resources for every classroom*

² The science of learning - 77 Studies That Every Teacher Should Know Busch and Watson

³ <https://www.learningscientists.org/spaced-practice>

THE PRINCIPLES OF INSTRUCTION

TAKEN FROM THE INTERNATIONAL ACADEMY OF EDUCATION

This poster is from the work of Barak Rosenshine who based these ten principles of instruction and suggested classroom practices on:

- research on how the brain acquires and uses new information
- research on the classroom practices of those teachers whose students show the highest gains
- findings from studies that taught learning strategies to students.

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01 DAILY REVIEW



Daily review is an important component of instruction. It helps strengthen the connections of the material learned. Automatic recall frees working memory for problem solving and creativity.

02 NEW MATERIAL IN SMALL STEPS



Our working memory is small, only handling a few bits of information at once. Avoid its overload — present new material in small steps and proceed only when first steps are mastered.

03 ASK QUESTIONS



The most successful teachers spend more than half the class time lecturing, demonstrating and asking questions. Questions allow the teacher to determine how well the material is learned.

04 PROVIDE MODELS



Students need cognitive support to help them learn how to solve problems. Modelling, worked examples and teacher thinking out loud help clarify the specific steps involved.

05 GUIDE STUDENT PRACTICE



Students need additional time to rephrase, elaborate and summarise new material in order to store it in their long-term memory. More successful teachers built in more time for this.

06 CHECK STUDENT UNDERSTANDING



Less successful teachers merely ask "Are there any questions?" No questions are taken to mean no problems. False. By contrast, more successful teachers check on all students.

07 OBTAIN HIGH SUCCESS RATE



A success rate of around 80% has been found to be optimal, showing students are learning and also being challenged. Better teachers taught in small steps followed by practice.

08 SCAFFOLDS FOR DIFFICULT TASKS



Scaffolds are temporary supports to assist learning. They can include modelling, teacher thinking aloud, cue cards and checklists. Scaffolds are part of cognitive apprenticeship.

09 INDEPENDENT PRACTICE



Independent practice produces 'overlearning' — a necessary process for new material to be recalled automatically. This ensures no overloading of students' working memory.

10 WEEKLY & MONTHLY REVIEW



The effort involved in recalling recently-learned material embeds it in long-term memory. And the more this happens, the easier it is to connect new material to such prior knowledge.

