Spotlight on T&L at Channing: Retrieval Practice - The Principles

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This Spotlight is the fourth of five Issues that focuses on retrieval practice. In the previous Spotlight I argued that retrieval practice is a central element of Rosenshine's Principles of Instruction. This edition begins by looking at the advice that Tom Sherrington[1] has about retrieval practice. Kate Jones[2] argues that these should be considered as core principles and has (again) produced a very useful infographic

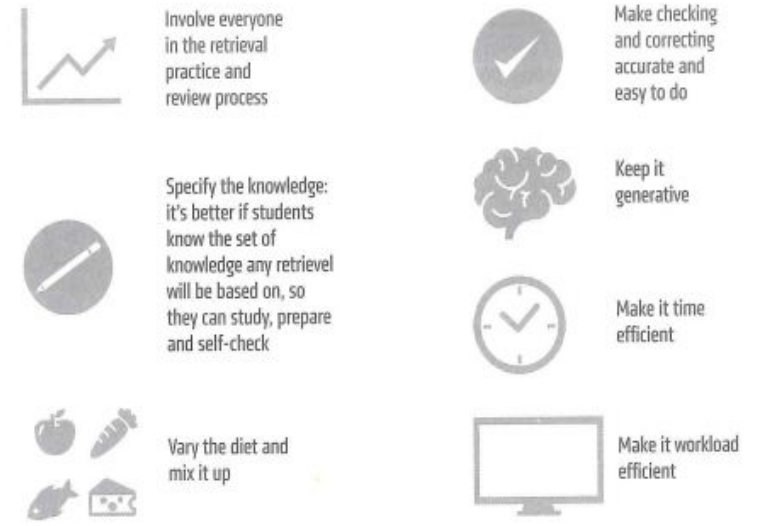

Figure 3 Retrieval practice principles, based on the work of Tom Sherrington

RETRIEVAL PRACTICE IMPLEMENTATION CHECKLIST

- ☐ Use retrieval practice as a learning strategy, not an assessment tool.
- ☐ Make retrieval practice low-stakes or no-stakes (i.e., not for a grade), to reduce anxiety and encourage trial-and-error.
- ☐ Provide retrieval practice frequently, as often as possible. Practice makes perfect!
- ☐ Provide retrieval practice after a lesson is complete, perhaps even a few days or weeks later. Space it out.
- ☐ Use a variety of strategies to implement frequent retrieval practice: clickers, index cards, bell work, quick writing prompts, etc.
- ☐ Use retrieval practice with a variety of students, subject areas (science, history, etc.), and grade levels.
- ☐ Encourage metacognition by giving students feedback.
- ☐ Reassure students that challenging learning (via retrieval practice) is a good thing!
- ☐ Examine your existing teaching strategies – do they focus on getting information "in" or "out" of students' minds? Are students being challenged, or is learning easy and "fluent?"
- ☐ Use a variety of question types: fact-based, conceptual, and higher order/transfer.

http://pdf.retrievalpractice.org/RetrievalPracticeGuide.pdf

1. **Involve everyone:** Good techniques involve all students checking their knowledge, not just a few and not just one at a time as you might do when questioning
2. **Make checking accurate and easy:** it should be possible for all students to find out what they got right and wrong, what they know well and where they have gaps. Every technique involves students testing their knowledge and then checking their work for accuracy and completeness
3. **Specify the knowledge:** Where appropriate, it's better if students know the set of knowledge any retrieval will be based on, so they can study, prepare and self-check. It must be possible for students to check their own answers which has implications for the way the knowledge requirements are laid out
4. **Keep it generative:** students need to explore their memory to check what they know and understand; this means removing cue-cards, prompts, scaffolds and cheat-sheets; it means closing the books and thinking for themselves
5. **Make it time efficient:** The idea of each technique is that they can be used repeatedly in an efficient manner without dominating whole lessons
6. **Make it workload efficient:** None of these methods involve the teacher checking the students' answers, creating unsustainable workload. A teacher might choose to check the occasional test but that's no use for routine practice

[1] https://teacherhead.com/2019/03/03/10-techniques-for-retrieval-practice/
[2] Kate Jones: Retrieval Practice: Research and Resources for every classroom

Is retrieval practice more effective than other revision strategies?

Table 1 Effectiveness of Techniques Reviewed

Technique	Extent and Conditions of Effectiveness
Practice testing	Very effective under a wide array of situations
Distributed practice	Very effective under a wide array of situations
Interleaved practice	Promising for math and concept learning, but needs more research
Elaborative interrogation	Promising, but needs more research
Self-explanation	Promising, but needs more research
Rereading	Distributed rereading can be helpful, but time could be better spent using another strategy
Highlighting and underlining	Not particularly helpful, but can be used as a first step toward further study
Summarization	Helpful only with training on how to summarize
Keyword mnemonic	Somewhat helpful for learning languages, but benefits are short-lived
Imagery for text	Benefits limited to imagery-friendly text, and needs more research

The answer to this is 'yes'. Dunlosky produced some excellent research were he reviewed the effectiveness of the most commonly used and popular revision techniques. This research is something we have come across this before. I have included his summary of results here, but the paper itself is very accessible.

" we rated two strategies - practice testing and distributed practice as the most effective because they can help students regardless of age, they can enhance learning and comprehension of a large range of materials, and most importantly they can boost student achievement"

One of the most important aspects to consider here, (if we are thinking about our students developing and improving their learning habits), is that the strategies that students find the most enjoyable and satisfying are often deemed as the least effective.

A word of caution. It is worth reflecting on some of the potential negative effects or downsides to retrieval practice. I have drawn these from Rob Coes[3] paper and Kate Jones'[4] book:

- Teachers might generate retrieval questions that focus solely on factual recall (these questions are easier to generate) rather than requiring any higher-order thinking
- Questions might be too easy and boost confidence without providing real challenge, which is likely to be a key ingredient for generating the kind of learning hoped for
- Teachers might allocate too much time to the quizzes, effectively losing the time they need to cover new material
- Building on this planning retrieval practice can be hard, in regards to scheduling how to space it
- If retrieval practice is too repetitive (same format every lesson), then students might disengage with learning
- If students view the retrieval as 'too low-stakes' they might not be worried about getting the answer wrong and therefore not invest in putting in the effort to get it right
- Retrieval practice is not a silver bullet - its is an effective strategy with many benefits

Next up:

- **Practical suggestions for implementing them in the classroom**
- **Ideas for how students should be using retrieval practice in their own learning**

[3] Does research on 'retrieval practice' translate into classroom practice?
[4] Kate Jones: Retrieval Practice: Research and Resources for every classroom