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Retrieval Practice:

What it is, Why it Works and How to Do It Better

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RETRIEVAL PRACTICE:

WHAT IT IS, WHY IT WORKS AND HOW TO DO IT BETTER

By InnerDrive

Retrieval Practice has consistently been found to be one of the most effective learning strategies in all of cognitive psychology research. Retrieval Practice is the deliberate act of recalling previously learned information from memory. Doing so reinforces the learnt material, as the effort involved in recalling information encourages deeper processing and strengthens the memory trace, ensuring that the knowledge remains accessible for future use.

WHY DOES RETRIEVAL PRACTICE HELP?

A considerable body of research underscores the effectiveness of Retrieval Practice. The primary benefit of Retrieval Practice is that it improves student memory. This is one of the most robust findings from the science of learning (Dunlosky et al., 2013; Roediger & Karpicke, 2006; Roediger & Butler, 2011) and has been found to be beneficial across a range of subjects and for both primary and post-primary students (Yang et al., 2021).

As well as accelerating learning, there are numerous secondary benefits of Retrieval Practice (Agarwal et al., 2014; Roediger et al., 2011; Smith et al., 2016; Witherby & Carpenter, 2022). This includes but is not limited to:

- ***Identifying gaps in knowledge*** - by exposing gaps in knowledge, it can help identify areas to target for future learning.
- ***Helping to make connections*** – this ensures that students do not just know isolated facts, but are forming large bodies of knowledge.
- ***Checking for misunderstandings*** - similar to identifying gaps in knowledge, Retrieval Practice helps us identify if students have misunderstood a certain concept.

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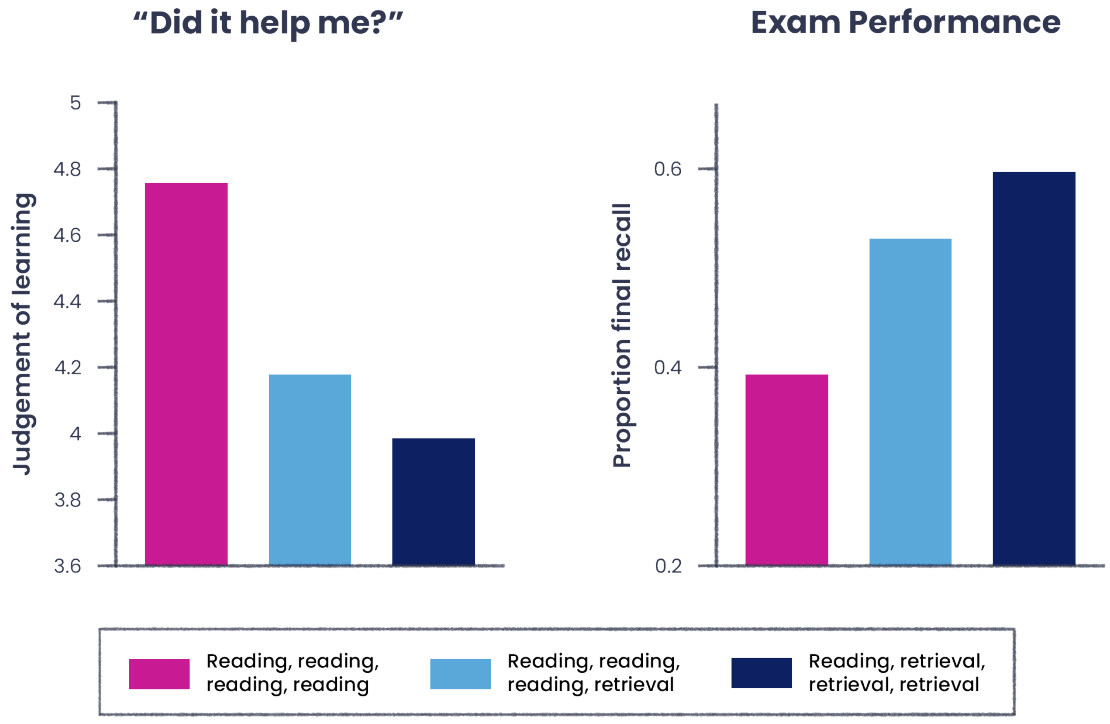
- ***Strengthening existing connections*** – the more Retrieval Practice sessions students do, the more impact it has. One round of Retrieval Practice is not enough.
- ***Making connections robust under pressure and stress*** – students who study using Retrieval Practice feel less anxious and are better able to recall key information under exam pressure.
- ***Making it easier to learn new things*** – this is often referred to as 'The Matthew Effect', which describes how the rich get richer – and the same is true for knowledge and memory. The more you know, the easier it is to learn new information, as you have more existing anchor points to hook this new information onto.

RETRIEVAL PRACTICE IS BENEFICIAL FOR ALL AGES

One of the seminal studies in this area was conducted by Roediger and Karpicke (2006). They divided students into one of three groups. Some re-read a text four times before doing their final exam, some re-read the text three times and then completed a retrieval quiz before their final exam, whereas the others read the text passage and then completed three retrieval quizzes before their final exam. Fascinatingly, students rated the re-reading as more helpful and yet it led to lower performance when tested a week later.



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Karpicke and Roediger (2008) noted that students who repeatedly re-read texts may develop an "illusion of competence." They feel familiar with the material but often struggle to recall information when tested later. In contrast, Retrieval Practice requires active engagement, which not only reveals gaps in knowledge but also reinforces memory by making the recall process effortful. This effort is precisely what leads to more durable learning outcomes.

The above study focused on older students, whereas McDaniel et al. (2011) found that regular, low-stakes quizzes — a form of Retrieval Practice – boosted performance on final exams among 13-year-olds. Likewise, research in primary age students found it beneficial for primary students learning their times tables (Ophuis-Cox et al., 2023) and for their spellings too (Jones et al., 2016).

EXAMPLES OF RETRIEVAL PRACTICE IN ACTION

As Retrieval Practice involves generating an answer to a question, it can take many forms. These include, but are not limited to:

1. ***Quizzes*** – low-stakes quizzes which focus on recall as opposed to high-pressure assessments.
2. ***Brain Dumps*** – having students write down everything they can remember about a particular topic or part of the lesson, without referring to their notes.
3. ***Multiple Choice Questions*** – these can be quick to ask, quick to answer and quick to mark.
4. ***Verbal question and answer*** – not all Retrieval Practice needs to be written down. Conversational questions also count.
5. ***Flashcards*** – these are a great form of Retrieval Practice when students need to study independently.

TOP TIPS FOR IMPLEMENTING RETRIEVAL PRACTICE

Implementing Retrieval Practice effectively can transform the classroom environment and significantly boost student learning. Here are five top tips to maximise its benefits:

1. Space It Out Over Time

Incorporate Retrieval Practice regularly over an extended period rather than in one single session. The Spacing effect—reviewing information

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over intervals—has been shown to improve long-term retention (Cepeda et al., 2006). Spacing out practice sessions forces the brain to work harder to recall information, which strengthens memory retention.

2. Do It Regularly

Regularly engaging in Retrieval Practice helps, with the researchers of a recent large-scale review noting that "There is a positive relationship between the number of test repetitions and the classroom testing effect, indicating that the more occasions on which class content is quizzed, the larger the learning gains" (Yang et al., 2021).

3. Vary the Format

Because Retrieval Practice can be done in many different ways, it is good to use a range of formats to best suit the learning intentions. This means choosing when to do free-recall, short questions, multiple choice questions or brain dumps to best suit your subject and lesson.

4. Keep It Low-Stakes

Retrieval Practice should be framed as a learning tool rather than a high-pressure test. Retrieval Practice is not done to assess learning, but to accelerate it. Therefore, keeping the stakes low can help reduce anxiety and encourage students to participate without the fear of failure.

5. Give Feedback

Although Retrieval Practice without feedback is helpful for learning, accompanying it with timely and constructive feedback helps maximise the benefits (Naujoks-Schober et al., 2022). Butler and Roediger (2008) found that feedback following retrieval activities significantly enhances learning outcomes by ensuring that students learn from their errors.

FINAL THOUGHTS

Retrieval Practice is a robust and effective strategy for enhancing long-term retention and memory. By actively engaging learners in the recall process, it helps cement information into their long-term memory. A wealth of research highlights that it is beneficial for a large age range of students across numerous subjects.

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What it looks like in the classroom can vary, as it takes many forms. This offers teachers the flexibility and autonomy to make judgements on how best to apply to the age and stage of their students, as well as to the topics they are teaching. Doing it regularly in a low-stakes environment and accompanying it with feedback offers our best bet to utilise it effectively.

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ADDITIONAL RESOURCES: BLOGS & PODCASTS

The complete guide to understanding Retrieval Practice
https://innerdrive.co.uk/blog/understanding-retrieval-practice/

How to actually use Retrieval Practice
https://innerdrive.co.uk/blog/how-to-use-retrieval-practice/

Evidence suggests Retrieval Practice benefits all students – how?
https://innerdrive.co.uk/blog/retrieval-practice-benefits/

Retrieval Practice vs Other learning strategies
https://innerdrive.co.uk/blog/retrieval-practice-vs-learning-strategies/

Retrieval Practice, Schemas & Effective Questioning - with Bradley Busch. *Psychology in the Classroom* s.5 ep.5 https://podcasts.apple.com/us/podcast/retrieval-practice-schemas-effective-questioning-with/id1523865853?i=1000598561312

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