Notes and highlights for

Retrieval Practice: Research & Resources for every classroom

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## Foreword

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## Arguably the act of ‘ practising remembering ’ is at the very core of what effective learning is about . The more we know , the more we can know . The more we know , the more we can understand . The more often we retrieve knowledge from our vast complex stores of memories in different ways – all those facts , words , ideas , concepts and experiences – the stronger those memories become and the more fluently we can recall them .

An introduction to retrieval practice

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### Retrieval practice refers to the act of recalling learned information from memory ( with no or little support ) and every time that information is retrieved , or an answer is generated , it changes that original memory to make it stronger .

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### Retrieval practice focuses on recalling information from memory as a powerful learning tool , not an assessment tool .

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### Testing itself is often used for assessment and judgment rather than as a way to further improve learning , although some tests are designed to do both .

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### Retrieval practice is also intended to be low - stakes or no - stakes

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### ‘ Procedural memory ’ refers to a type of long - term memory that we use on a daily basis , without consciously realising that we do , often known as autopilot .

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### As educators our role isn’t to simply transfer information to students ’ long - term memory , we also need to support them so that they can retrieve that information when required .

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### The key to retrieval practice is the retrieval from memory . It’s as simple as that .

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### create resources that are low effort , high impact .

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### The low effort does not refer to students ’ effort , but rather the time a teacher puts into creating and planning , as they are tasks or activities that are simple and easy to adapt and use .

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## An excellent resource is not a substitute or replacement for poor subject knowledge , but a resource can certainly compliment subject knowledge to create a meaningful and impactful learning environment .

Chapter 1: What does the research tell us?

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### Retrieval practice does support the recall of key facts and should be a part of any knowledge - rich curriculum but

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### We want students to be able to solve problems instead of memorising solutions and be able to make links , connections and provide rich explanations , rather than simply repeat facts , numbers , quotes or dates .

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### Retrieval practice aids later retention .

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### Testing identifies gaps in knowledge .

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### Retrieval practice can show students what they know ( what they are able to recall from memory ) and also what they aren’t able to recall so this can guide and prioritise their future studies .

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### Testing causes students to learn more from the next learning episode .

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### Testing produces better organisation of knowledge . This is very useful for learners . Testing can help students to connect and structure knowledge , making links and identifying patterns when they have to retrieve information .

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### Testing improves transfer of knowledge to new contexts .

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### Making links between new information and existing knowledge is a central aspect of learning .

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### Testing can facilitate retrieval of information that was not tested .

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### Testing improves metacognition monitoring

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### Testing prevents interference from prior material when learning new material .

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### Testing provides feedback to instructors . This point explains how retrieval practice can support and inform teachers in regards to what students know , understand and can recall .

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### Frequent testing encourages students to study .

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### retrieval practice can be used to close the vocabulary gap

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### Another obvious yet understated benefit of retrieval practice is how satisfying it is to answer a question correctly or recall information

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### retrieval practice will be more effective if teachers allow for some forgetting to take place before we ask students to try to retrieve that information . The forgetting increases the challenge and the level of challenge increases the effectiveness .

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### Rosenshine’s Principles of Instruction

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### Start the lesson with a short review of previous learning .

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### Present new material and information to students in small and manageable steps .

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### Ask a large number of questions ,

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### Provide students with models and worked examples to support problem solving .

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### Continue to guide student practice .

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### Continually check student understanding , addressing any misconceptions

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### Ensure students obtain a high success rate in the lesson . A success rate of 80 % shows that students are learning the material , and it also shows that the students are challenged34

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### Provide scaffolding for students with difficult tasks , ensuring depth and challenge for all .

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### Require , monitor and promote independent practice in the classroom .

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### Engage students in regular review ,

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### Retrieval practice is a central element of Rosenshine’s Principles of Instruction .

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### ‘ 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 . ’

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### Do Now or Starter activity

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### create and design retrieval activities that enable students to self - check and correct their answers in an accurate yet simple way , then that is ideal .

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### Rosenshine’s principles should not be turned into a checklist ; it should be used as a guide for professional learning ,

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### Sherrington does also make it very clear that teachers don’t need to be concerned about applying every principle , every lesson – that would clearly be unrealistic .

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### A majority of students repeatedly read their notes or textbook ( despite the limited benefits of this strategy ) , but relatively few engage in self - testing or retrieval practice while studying .

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### There is no challenge or very little mental effort required when highlighting notes in comparison to trying to retrieve information when answering questions .

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### highlighting as it can be a great starting point for revision as long as a student goes back to the highlighted notes and actually does something with the highlighted information ,

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### Retrieval practice can reduce stress and increase confidence both in the classroom and when students undertake exams .

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### ‘ Start a discussion about how we use retrieval in everyday life

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### Emphasise that retrieval in the classroom is similar to retrieval outside the classroom .

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### Acknowledge that the process of retrieval can feel challenging .

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### Explain that , based on decades of research , retrieval practice helps students learn more and learn longer . This means that students may study outside of class less because they’re remembering more of what they learned during class . ’

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### retrieval practice isn’t just a teaching strategy ; it’s a powerful study strategy , too . ’

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### very beneficial for EAL learners . It provides lots of recall opportunities and repeated exposure to subject - specific terminology in a variety of different contexts .

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### Free recall quizzes will be more time consuming for the teacher to assess but the reason short answers are more beneficial than answering a multiple - choice question is that it simply requires more effort from the student .

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### research has suggested teachers should combine the two methods of recognition with multiple - choice quizzing and free recall . This is because multiple - choice quizzing often leads to greater retrieval success than short answer questions with free recall

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### Lessons could always begin with retrieval practice , but the type of quiz and activity could be rotated and changed on a regular basis .

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### We need students to understand that low or no stakes doesn’t equate to ‘ no effort ’ ,

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### www.retrievalpractice.org

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### starter types were designed to last for around 15 minutes of a 55 - minute lesson .

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## There is a well - known quote by Dylan Wiliam that is often shared at conferences and educational events : ‘ All teachers need to improve their practice – not because they are not good enough , but because they can be better . ’

Chapter 2: Retrieval practice in the classroom

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### ‘ knowledge drops ’ – simply refers to dumping as much information from the brain about a specific topic or unit ( long - term memory , no notes ) onto a piece of paper . This is a classic example of a low effort , high impact

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### I show a picture to the class – that could be a photo , illustration , map , portrait or diagram – and then ask students to recall information linked to that image .

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### List it ! Another simple free recall task . This involves asking students to list as much as they can in an allotted amount of time .

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### The aim of the challenge grid is to provide different questions that vary in the level of difficulty they pose . This resource works well if you have a mixed ability class , as there are questions that everyone should be able to access . The challenge grids are designed to challenge every individual in the classroom .

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### As students enter the classroom they select a random number from a jar / box / hat / tray ( or anything you have available in your classroom ) . It can be a raffle ticket or simply a piece of paper with a number written on . On the board a list of topics , questions or keywords will be projected next to a number . The students then have to carry out a brain dump , answer the question or provide a definition of the word next to the number . This is a short quick - fire task to promote retrieval and it adds a dimension of challenge as , unlike other activities , students don’t get to pick what they retrieve , instead they have to do so based on the number on the raffle ticket they selected .

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## Retrieval practice is a great way to start a lesson , but it can be used as a strategy at any point in the lesson and learning process .

Chapter 3: Retrieval practice and the science of learning

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### Retrieval is much more effective if it is repeated .

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### Retrieval and spaced practice can be a winning combination when it comes to long - term learning .

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### spaced practice , which can reduce stress and improve confidence with regular retrieval over a period of time .

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### allow students to spend a whole lesson on a retrieval grid and this worked really well – I wasn’t actually there in the lesson due to a planned absence

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### Paivio and his colleagues conducted an experiment that demonstrated how students were able to recall more word pairs when they were associated with concrete visual images .

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### The dual coding theory suggests combing both text and visuals as the two formats provide two methods to remember information .

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### This is explicitly linked to cognitive load theory and the idea that our working memory can only handle so much at a time . Reducing the text on a presentation and replacing it with headings and images does rely on teachers having strong subject knowledge , without heavy text to rely on , but this in itself is also a good thing .

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## De Bruyckere has explained the research showed that students who receive an explanation using both words and images remember more than the students who are taught the same content using just words or just images , 77

Chapter 4: Retrieval practice and revision strategies

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### thinking and linking grid was another way I adapted the original 6x6 learning grid and shows how retrieval practice can be used for making connections and exploring links and themes within a topic .

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### Dice might be needed

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### This is a very adaptable resource that does make students think hard and as Willingham has famously stated : ‘ Memory is the residue of thought ’ .

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Retrieval practice , like exercise , must be consistent , regular and the level of challenge should be appropriate with desirable difficulties .