What is retrieval practice?
- Retrieval practice is any strategy that involves pupils retrieving material that they have previously leaned from their long-term memory.
- Retrieval practice is a learning strategy, not an assessment tool; it is used to cement learning, strengthen memory and improve long-term retention, not to assess learning.

What are the benefits of retrieval practice?
Retrieval practice can be said to have the following benefits:
1. Strengthens memory and so forgetting is less likely to occur in the long-term. Retrieval practice has been identified as being the most effective strategy for long-term memory in many studies and papers.
2. Identifies gaps in pupils’ learning as it forces them to examine their learning. This prevents overconfidence of learning, improves metacognition and can be used to guide independent study.
3. Improves understanding of material.
4. Improves transfer of knowledge to new concepts.
5. Can also be used to guide future instruction.
6. Reduces test anxiety as pupils feel more confident in their knowledge and also because it reduces the need for ‘cramming’.
Successful implementation of retrieval practice:

- Ensure that retrieval practice is completed without access to textbooks or notes. This is crucial to ensure pupils are retrieving the information from their long term memories, and not using their short-term memories.

- Ensure that pupils initially complete retrieval practice independently. This means that all pupils do the cognitive work.

- Retrieval practice should be used in a spaced manner to recap content from last month and all the way back to the start of the course rather than just the last lesson. This takes account of the spacing effect which shows that long-term retention will be improved if practice is also spaced over time.

- Therefore, retrieval practice can be used as a discrete review, about a separate topic from that of the main content of the lesson.

- Each topic should also be recovered through retrieval practice multiple times. Research has demonstrated that pupils need to retrieve information at least four times for it to be remembered in the long-term.

- Retrieval practice should be low stakes – results should not be monitored/recorded. This is because retrieval practice is a learning not assessment strategy. Research has shown that low stakes retrieval practice is more effective. Therefore, it is also important not to increase the stakes with competitive games.

- Feedback has to be given on the retrieval practice to improve memory of the ‘correct’ answers. This can be done through displaying the correct answer or through a whole-class Q&A session. Research has shown that this is most beneficial if combined with elaboration—explanations of the correct answers.

- Pupils should self-mark their own retrieval practice as this ensures that they are aware of what they do know and do not know, and what they got right and wrong. As Dylan William states “the best person to mark a test is the person who just took it”.

- We must teach the use of retrieval practice, including an explanation of why it is effective to pupils so that they are able to use it in independent study.

- Use a mix of tasks. This prevents boredom and strengthens memory as it is explored in different ways.

- Use scaffolding for weaker/younger/more novice learners. This ensures pupils’ retrieval practice is successful and so they are not demotivated.

- Retrieval practice should be embedded in lessons throughout the course. Revision should not take place at the end of the teaching of the course.

- Retrieval practice should include facts, complex understanding and high-order skills.

- It should be used for all year groups, subjects and ability types.

- Retrieval practice should be used both in lessons and as part of homework. When used as homework it should be spaced – not on the content of the current lesson.

- Include higher-order tasks/questions which require pupils to explain/analyse and evaluate—see last page for further examples.
Practical strategies for implementing retrieval practice in the classroom

Strategy 1—Retrieval practice grids:

- The grid is filled with questions on topics covered previously.
- Pupils get different amounts of points for answering different questions with more points being awarded for answering questions on topics that were taught a longer time ago.
- It is important to note that this does not make the retrieval practice a competition because as previously discussed, this would increase the ‘stakes’. It is instead used to ensure that all pupils answer enough questions/access a good level of challenge. For example, you can tell pupils that they all have to get a minimum of 10 points and they can choose the make up of this. This keeps stakes low while rewarding pupils for answering questions on ‘older’ topics.

![Retrieval practice grid example](image)

Strategy 2—Thinking and linking grids:

- Pupils roll two dice to identify words/terms.
- They then do this again to identify a second word and have to then write down how the two words/terms link together.

Strategy 3—Mind maps:

- Pupils draw a mind map to show everything that they remember about a topic.
- An outline can be given to provide scaffolding.

Strategy 4—Know it all sheets:

- Pupils are given a sheet to complete about a topic from memory.
- Again, sub-headings/boxes can be provided to provide structure.

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Strategy 5—Quizzes:

- This can include 10 questions for pupils to answer on one or a mix of topics.
- A range of question types can be used including short-answer, exam style questions, multiple choice questions and basic tasks.
- Quiz questions can also be used for homework.

<table>
<thead>
<tr>
<th>R+Juliet</th>
<th>1. What is described as “such sweet sorrow”? (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCarol</td>
<td>2. What does Scrooge want to do to the “surplus population”? (1)</td>
</tr>
<tr>
<td>AICalls</td>
<td>3. What imperative verbs does Mrs B use to the inspector? (1)</td>
</tr>
<tr>
<td>Poetry</td>
<td>4. What do the sentries do in “Exposure”? (1)</td>
</tr>
<tr>
<td>Lang P1</td>
<td>5. P1Q5: Give another verb to describe someone walking quickly (1)</td>
</tr>
<tr>
<td>R+Juliet</td>
<td>6. What describes how the love has come from Juliet’s “only hate”? (1)</td>
</tr>
<tr>
<td>ACCarol</td>
<td>7. How did Marley create the “chain” in life? (1)</td>
</tr>
<tr>
<td>AICalls</td>
<td>8. What does Mrs Birling not believe Eva would do with money? (1)</td>
</tr>
<tr>
<td>Poetry</td>
<td>9. How is the speaker in COMHistory making his identity? (1)</td>
</tr>
<tr>
<td>Lang P2</td>
<td>10. P2Q3: Identify the verb: “I cautiously entered the house” (1)</td>
</tr>
</tbody>
</table>

Strategy 6—Find and fix errors:

- Here, instead of answering questions, pupils find the errors in the statements and explain why they are incorrect.

<table>
<thead>
<tr>
<th>Chaulukh Eqiavro was given his freedom</th>
<th>Lord Robert Slace repealed the Corn Laws</th>
<th>King John held the youngest son of some barons as hostage</th>
<th>Annie Beave was an author who supported the March Girls strike</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simon De Montfort invited two peers to Parliament</td>
<td>Lord Shaftesbury focused on improving conditions for street painters</td>
<td>Emmeline Pankhurst was never arrested</td>
<td>William Wilberforce was Prime Minister</td>
</tr>
<tr>
<td>Wat Tyler was a priest</td>
<td>Raphael O’Connor was editor of the Southern Mooson</td>
<td>Robert Akele made sure that all of the protesters took the travellers’ pasture to show they were not rebels</td>
<td>Arthur Scargill was leader of the dock workers union in the 1980s</td>
</tr>
<tr>
<td>Oliver Cromwell led the Royalist faction in the civil war</td>
<td>Enoch Powell’s famous “rivers of hatred” speech was pro-immigration</td>
<td>Henry VIII changed religion because of his theological differences with the Pope</td>
<td>Titus Young built a whole town, Peppertown, for his workers.</td>
</tr>
</tbody>
</table>

Strategy 7—Graphic organisers:

- Graphic organisers can be used to allow pupils to represent their knowledge in an image.
- There are many examples including double bubble maps, flow charts, fishbone organisers, cause and effect tables.

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Strategy 8—Retrieval clocks:

- Pupils are given a sheet split into 12 sections. Each section is about one aspect of a topic. Pupils have 5 minutes to recall everything they know about that aspect of the topic. They then have to move on to another aspect/section of the sheet.

![Retrieval clocks image]

Strategy 9—Cops and Robbers:

- Pupils recall everything they know about a topic in the ‘cops’ column. They then move around the room reading the work of other pupils and writing anything that they did not manage to recall in the robber column.

![Cops and Robbers image]

Strategy 10—Retrieval relay race:

- Retrieval race is another example of more practical and collaborative retrieval practice.
- Pupils are given a sheet with 4 boxes. They complete the first box by writing down what they know about the topic. The next 3 boxes have to be completed by other students with what they know about the same topic but no information can be repeated. Important to use time limit.

![Retrieval relay race image]
Strategy 11—Five-a-day starters:
- Pupils are given five tasks to complete at the start of the lesson.
- A range of question types/tasks can be used including questions, key words to define, words to use in a paragraph to summarise a topic, images to describe, events to put into chronological order, etc.
- This can be about one topic or a mix of topics.

<table>
<thead>
<tr>
<th>Five-a-day Starter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
</tr>
<tr>
<td>In which chapter is this event described?</td>
</tr>
<tr>
<td>Extension: How is Covid presented? Can you remember a quotation?</td>
</tr>
<tr>
<td>&quot;The evil side of my nature... was less robust and less developed than the good. In the course of my life, I have undergone a rapid and intense change in my views on virtue and control. It had been much less extravagant and more was consistent. And thus it was that Mr. Darcy has thought it. It's the very idea that Edward Hyde was so much smaller, slimmer and younger than Henry Jekyll?&quot;</td>
</tr>
<tr>
<td>Why does Jekyll think Hyde was so small?</td>
</tr>
<tr>
<td>&quot;Our brains ache, in the questions, read aloud, what is the tone?&quot;</td>
</tr>
<tr>
<td>Which poem is this from? What technique is used?</td>
</tr>
<tr>
<td>Extension: What is the effect on the reader?</td>
</tr>
<tr>
<td>What is the name of Jekyll's butler?</td>
</tr>
<tr>
<td>What other name does Eva Smith use in 'An Inspector Calls'?</td>
</tr>
</tbody>
</table>

Strategy 12—Quiz, quiz, trade:
- Pupils have a flash card with a question(s) on the front and answer(s) on the back.
- They quiz each other on their questions and then trade cards, going to work with another pupil.

Strategy 13—Walkabout Bingo:
- Pupils have a sheet with a list of questions.
- They have to walk around the room getting answers from other pupils.
- They can only ask each pupil one question and have to record the name of the person who answered it.
- The first person to have all questions answered wins the bingo.
- The class then goes through the correct answers.

Strategy 14—Give me five:
- Pupils have to state 5 of each of the aspects in the table.

<table>
<thead>
<tr>
<th>Things about job production</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Things about batch production</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Things about line production</td>
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<tr>
<td>Impact of technology on production</td>
<td></td>
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<tr>
<td>Words associated with supplier's document</td>
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<tr>
<td>Things about just-in-time stock control</td>
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<tr>
<td>Things about just-in-time stock control</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Things about quality control</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Things about quality assurance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Characteristics of a good supplier</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Strategy 15—99 questions:

- Pupils are given 99 questions to answer on a grid, all of which should be answered using only 1 word.
- This allows you to recap a huge amount of material very quickly.

Strategy 16—Four in four:

- A simple grid with 4 aspects of a topic in each square.
- Pupils have four minutes to retrieve knowledge on each of the four topics.
- This can then be discussed as a class with pupils adding in anything they did not get.
- This could be extended to any number of aspects/time frames, for example ‘five in fifty’ if you want to cover topics in more depth.

Strategy 17—Retrieval practice circles:

- The question of topic is put in the inner circle.
- You choose the number of outer circles for pupils to complete.
Strategy 18—Retrieval practice placemat:
- This is a mat which can be put on desks or displayed as a slide.
- It gives general points which pupils can answer independently and then discuss in pairs.

Strategy 19—Retrieval practice pyramid:
- This is a pyramid made of boxes—1 box on the top row, 2 boxes on the second row, etc.
- You give pupils different questions to answer for each row and they have to fill the boxes.
Strategy 20—Higher-order tasks:

- Retrieval practice should move on to include higher-order tasks. This includes:
  1. Why questions
  2. Analyse questions
  3. Evaluate questions
  4. Because sentence completion (........because..... )
  5. So sentence completion (.....so....)
  6. But sentence completion (.....but.....)
  7. Comparison tasks
  8. Essay plans

This can also be achieved though further verbal questioning when going through the answers with the class.

References:/further reading

- Kate Jones, Love to Teach: Research and resources for every classroom
- Kate Jones, Retrieval Practice: Research and resources for every classroom
- P. Agarwal and P. Bain, Powerful Teaching: Unleash the Science of Learning
- Karen Knight on Twitter (@KNNTeachLearn)
- Simon Beale on Twitter (@SPBeale)
- https://teacherhead.com/2019/03/03/10-techniques-for-retrieval-practice/
- https://tomneedhamteach.wordpress.com/