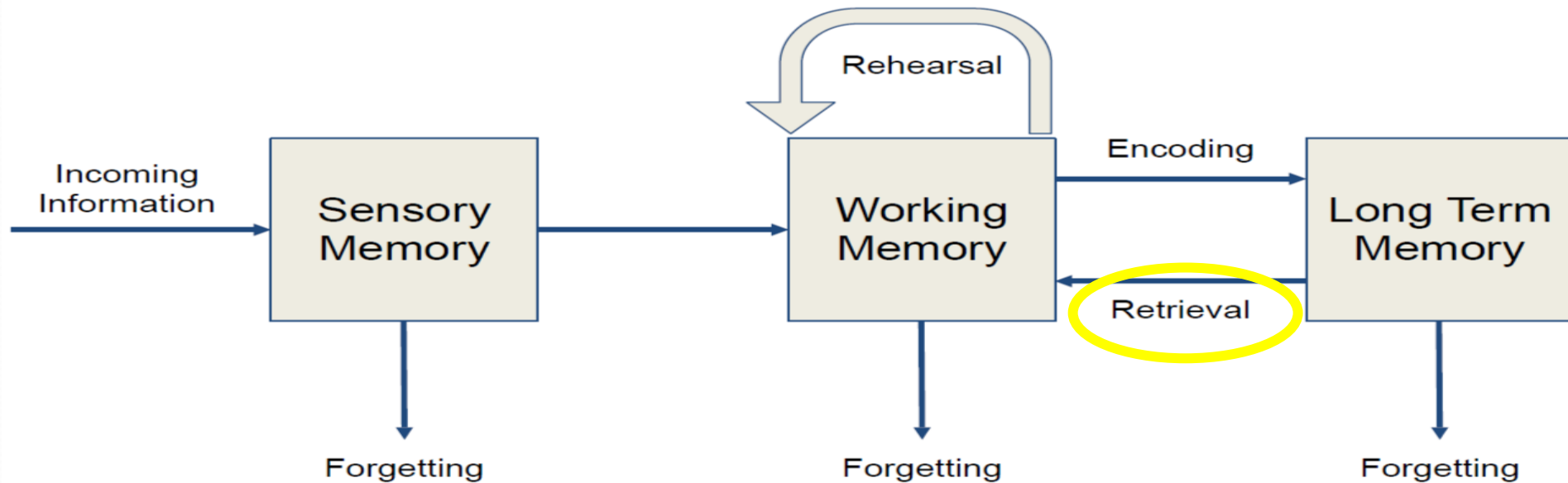




The science of learning

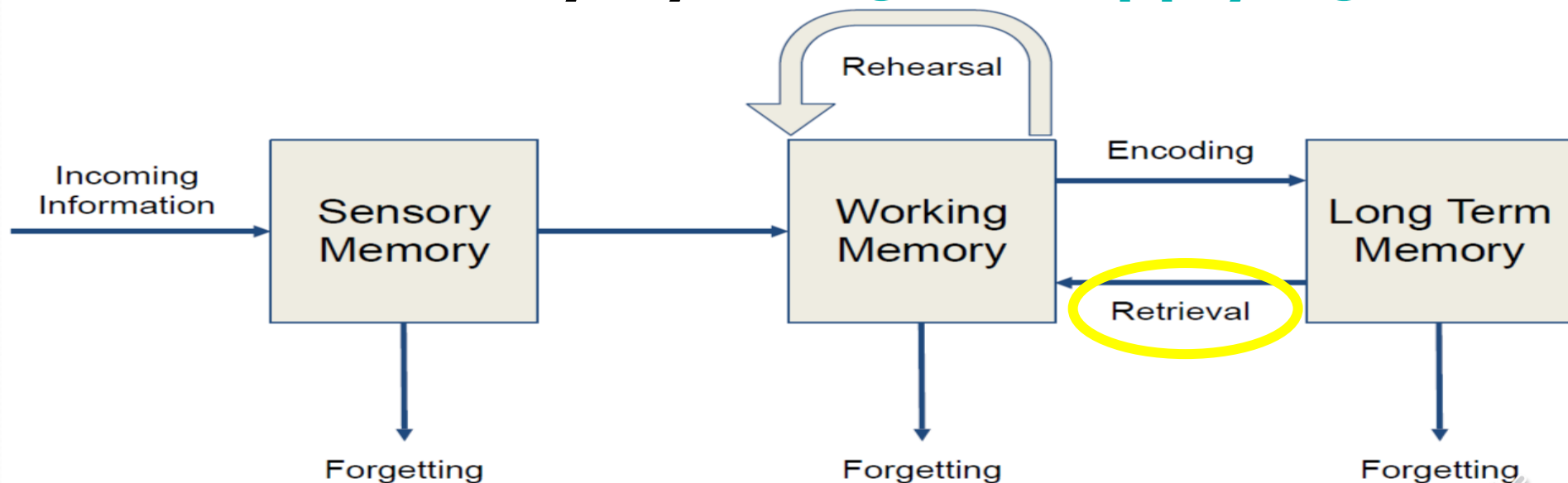
Part 1: Retrieval and Revision





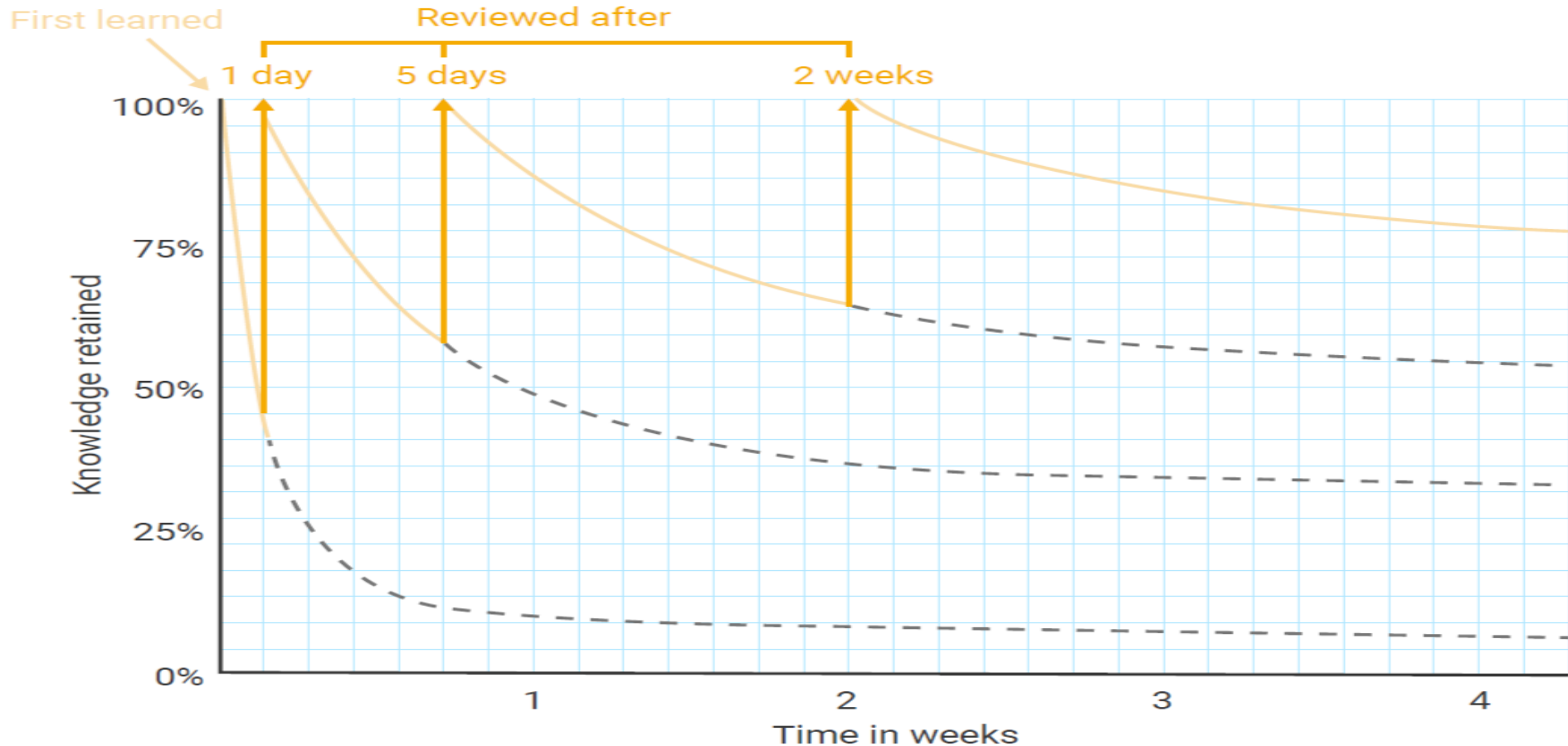
How we remember

Information is stored in your Working memory for 10-30 seconds, we need to transfer it to your long-term memory by **using** and **applying** it.





Over time memories are lost if we don't use them.



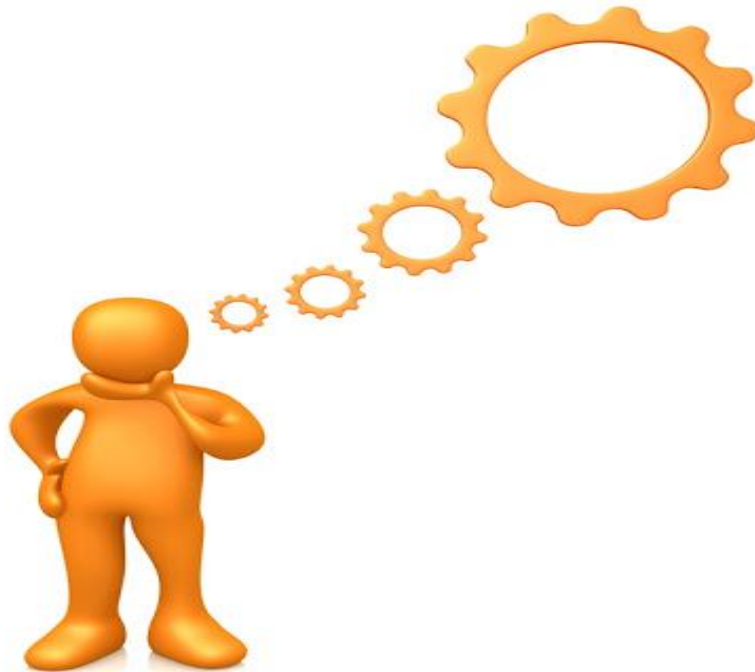
We can keep memories in our long-term memory if we practice **retrieving** them.





What can we do?

Retrieval practice is when you see what you can remember without any help.



6 REASONS THE TESTING EFFECT IS IMPORTANT

The power of tests, quizzes and retrieval

by @inner_drive | www.innerdrive.co.uk



Improved memory, retention and recall



Makes you a more confident learner



Reduces exam nerves



Enhanced memory during stressful situations



Helps you identify what you do and don't know



More effective revision





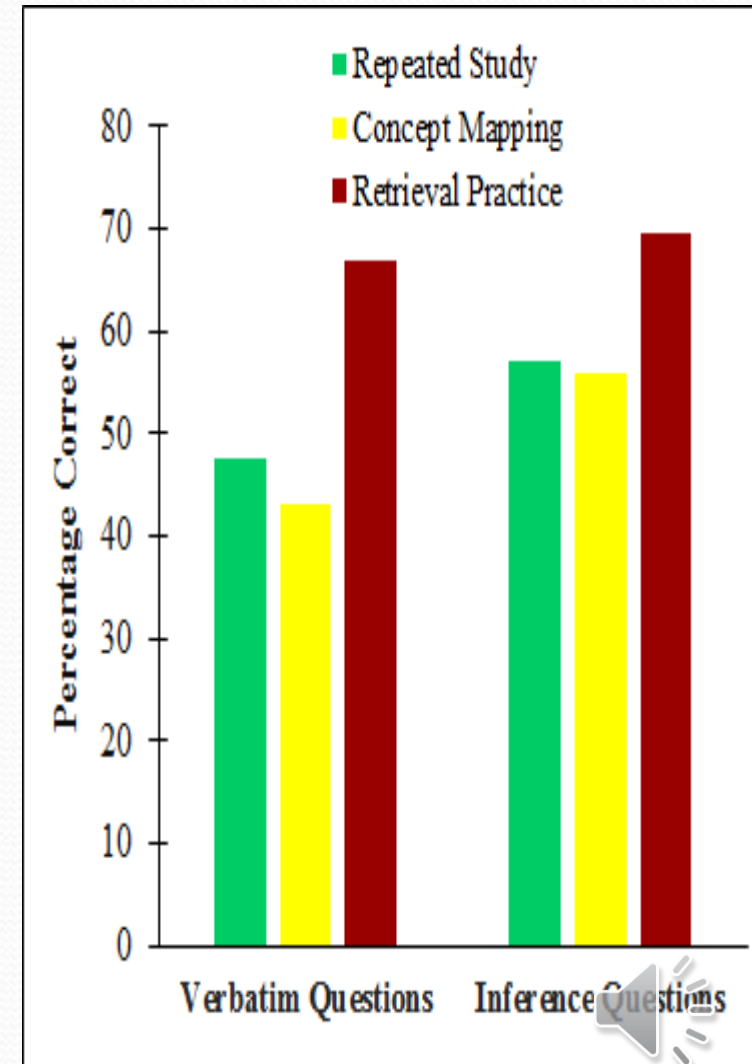
Retrieval: does it work?

In this experiment students had to remember a piece of Science writing for a test a week later.

Green- students read the text a lot (repeated study)

Yellow- students read the text and used it make a concept map

Brown- students studied and then practised retrieving the text.

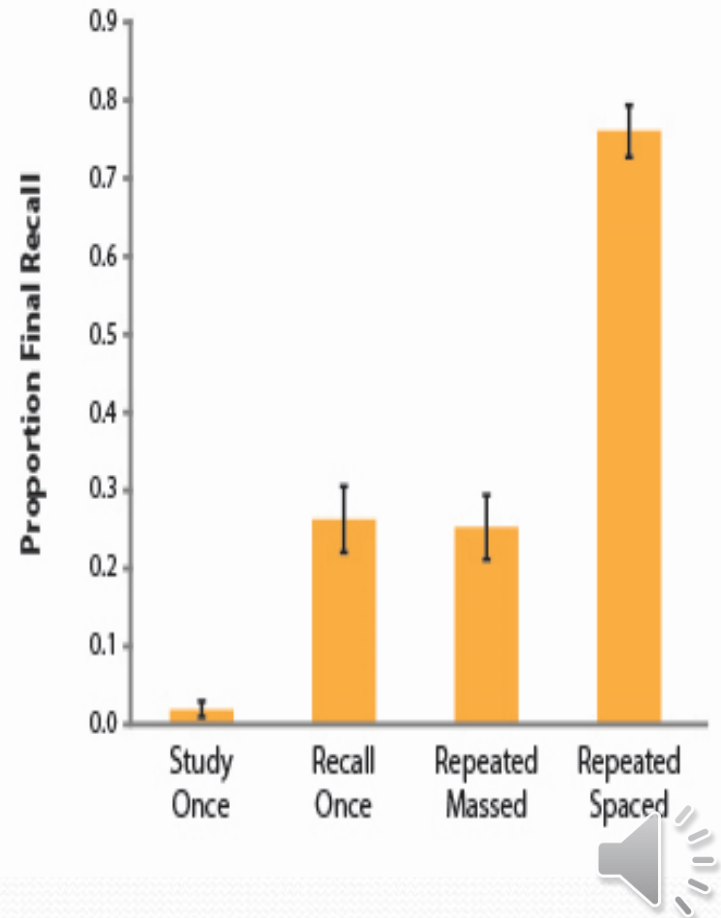




Retrieval: does it work?

In this experiment students learnt words in a different language for a test a week later.

- Bar 1 - no retrieval.
- Bar 2 - students who practiced retrieval until they could remember every word once.
- Bar 3 - students who practiced retrieval 3 times in a row.
- Bar 4 - students who practiced retrieval 3 times with gaps.





Retrieval at home

- **Use mnemonics** to remember steps
- **Draw** pictures as summaries
- **Re-write notes** from memory
- **Use questions on flash cards** to test yourself
- **Friends**; quiz each other, make it fun
- **Websites**; test yourself and play games
- **Make mind-maps**; colourful + short





Retrieval strategies

Retrieval roulette: <https://achemicalorthodoxy.wordpress.com/2018/08/18/retrieval-roulettes/>

An Excel spreadsheet of questions and answers that allows you to generate 5 random questions by inputting the relevant numbers. There are premade ones online or they can be adapted.

A 1-10

B 11-20

C 21-30

VIDEO EXPLAINING HOW TO USE THEM

<https://www.youtube.com/watch?v=q-41GySfa2Q&t=3s>

	Question from bank	Question	Answer
	20	6 Which objective lens should we start using?	Low power objective lens
		10 What is the function of a scale bar?	To allow us to calculate the actual size of the sample using $I=AM$
		1 How do we calculate the total magnification of a microscope?	Eyeiece lens x Objective lens magnifying power
		3 Define 'resolution'.	The ability to distinguish between two separate points that are very close together
Topic Questions		7 Which focus knob should be used during low and medium power magnification?	Coarse focus knob
		2 State the equation that links magnification, image size and actual size.	Image Size = Actual Size x Magnification





Retrieval strategies

Retrieval grids: <https://www.retrievalpractice.org/strategies/2018/9/28/retrieval-grids>

A grid of questions taken from different time intervals, with points awarded accordingly. Retrieval grids allow spacing of retrieval. Each box is colour coded for the time when students first learned or encoded the concept: concepts from the last lesson are in blue, last week in red, two weeks ago in green, etc.

Retrieval Practice Challenge Grid!

 What's your score? 

Who was Head of the Cheka in 1917?	Explain the term bourgeoisie.	Who was Anatoly Lunacharsky?	List four different enemies of the Cheka.
Describe Khrushchev's attitude towards religion.	Explain the term 'Proletkult'.	List three aims of the NEP.	What was the October 1917 Decree on Land?
Explain the term 'show trial'.	Who was Patriarch Tikhon?	What were the aims of agitprop?	Describe one strength and one weakness of War Communism.

Last lesson (1) **Last week (2)** **Two weeks ago (3)** **Further back! (4)**



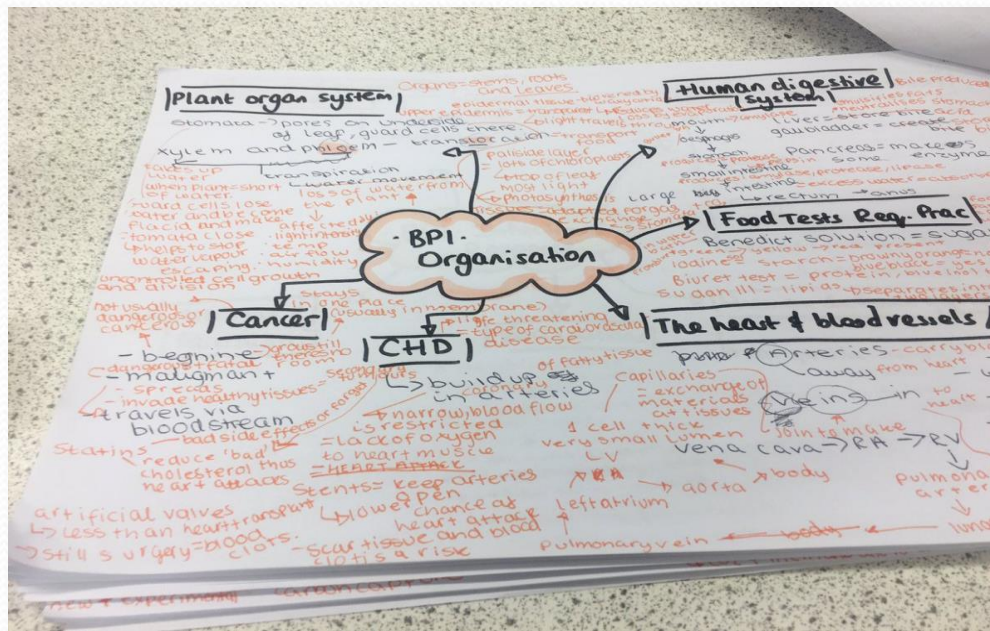


Retrieval strategies

Mind maps from memory (brain dumps)

Students write everything they can retrieve about a topic in one colour, this is called a brain dump.

They can then review the topic and add in what they missed in another colour OR swap with another student who adds in what they've missed in another colour.





Retrieval strategies: SENECA

1. Create an account as a parent
2. Click invite student in the top right
3. Once they click the link, you have joined the account
4. More information here:

<https://help.senecalearning.com/en/collections/1434432-parent-faqs#monitoring-my-child-s-progress>



Join class

Login

Sign up



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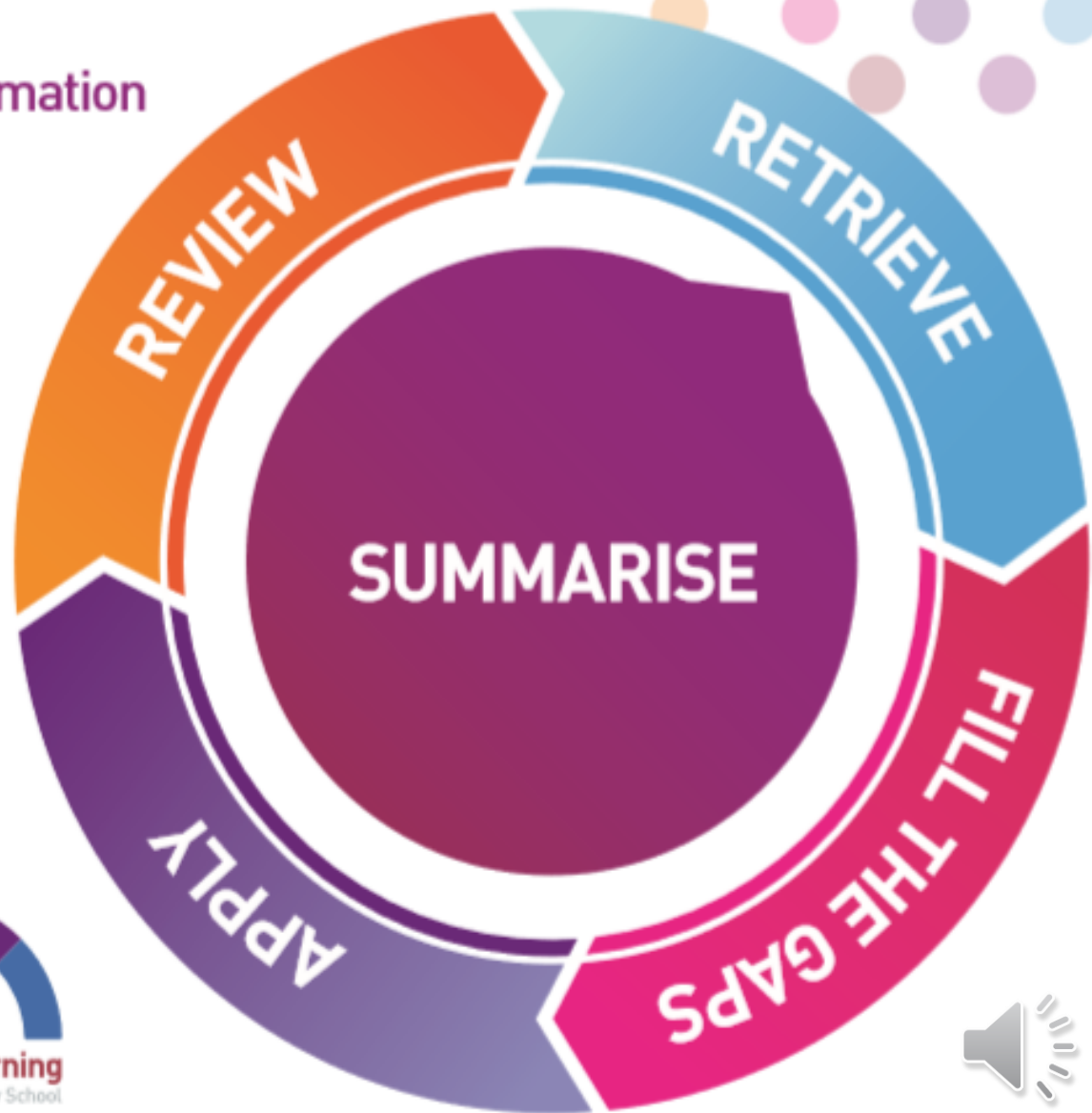
9 Ways to use retrieval practice

by @inner_drive | www.innerdrive.co.uk



Revision Cycle

1. **SUMMARISE:** shorten information
2. **RETRIEVE:** find out what you know
3. **FILL THE GAPS:** look at what you don't remember
4. **APPLY:** practice using the information
5. **REVIEW:** reflect on how you have done and repeat





Retrieval further reading or viewing

1. Overview www.cultofpedagogy.com/retrieval-practice/
2. A guide for students www.learningscientists.org/blog/2016/6/23-1
3. A set of activities with useful links teachertoolkit.co.uk/2019/04/23/retrieval-practice-for-revision/
4. 10 techniques for retrieval practice teacherhead.com/2019/03/03/10-techniques-for-retrieval-practice/
5. Retrieval roulettes updated with a video link to show parents how to use them. achemicalorthodoxy.wordpress.com/2018/08/18/retrieval-roulettes/
6. A way to use retrieval and include spacing and interleaving reflectingenglish.wordpress.com/2014/06/12/memory-platforms/
7. A review of the research educationendowmentfoundation.org.uk/news/does-research-on-retrieval-practice-translate-into-classroom-practice/
8. An entire module on retrieval practice cogscisci.wordpress.com/2019/07/23/module-retrieval-practice/
9. A list of further reading links ndhsblogspot.wordpress.com/memory-and-retrieval-links/
10. A webinar from Doodle www.doodlelearn.co.uk/retrieval-practice-webinar/





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AnkiDroid Open Source Team Education

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