How We Learn



A Practical Guide for Parents

Memory and Cognitive Load explained…

As a staff we have been focusing on scientific research about memory and the 'testing/retrieval effect'. Taking an evidence-informed approach to our teaching and learning means that we can continue to develop our understanding and practice. In this booklet, we explain how our memory works and how we are using this research to improve our pupils' understanding of how they learn. We have also provided some practical tips so that you can apply these strategies, in partnership with the school, to help support your child's learning at home. We hope you find this useful.

Our working memory is fixed, limited and easily overloaded. Our long term memory is almost unlimited.

Cognitive load is the amount of information that the working memory can hold at any one time.

An analogy: it is like being in a hotel. The working memory is like being in the lobby where you don't spend a lot of time. The long term memory is like actually checking into the hotel, going up to your room and unpacking.

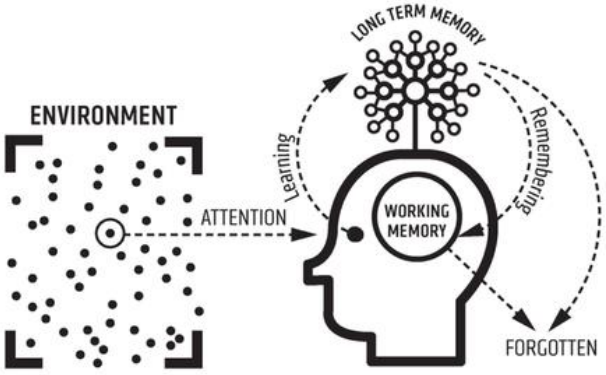
The working memory bottleneck

…fixed, limited and easily overloaded

Long-term memory storehouse

…almost unlimited

When we learn, some things 'stick' and go into the long term memory. When we want to remember something, we have to retrieve it from the long term memory. When we can't retrieve information from the working or long term memory, it is forgotten.



Six strategies that help…

The six strategies explained below will help to avoid overloading the working memory.

SPACED LEARNING

This is where you space out your child's learning over time - learning little and often & going back to topics.

RETRIEVAL PRACTICE

This is where your child practises bringing information to mind – retrieving from the long term memory.

ELABORATION

This is where you ask your child questions, encouraging them to explain and describe ideas with many details.

INTERLEAVING

This is where you encourage your child to switch between ideas; not focusing just on one topic e.g. x tables & division facts

CONCRETE EXAMPLES

This is where you encourage your child to use specific examples to understand abstract ideas e.g. pictures, diagrams, actual objects.

DUAL CODING

This is where you combine words and visuals; coming up with different ways to represent information visually e.g. cartoon strips, diagrams, timeline.

Retrieval Practice: an explanation

THE RETRIEVAL EFFECT

This is when we try to get information from our long term memory.

STRUGGLING IS IMPORTANT

The struggle of trying to retrieve information is what makes the memory stronger.

"**LEARNING** = a change in long term memory.
If nothing has changed, nothing has been learned."

6 x 8 = ?

48



DID YOU KNOW…?
Almost all information stored in the short term memory, that is not rehearsed, is lost within 18 to 30 seconds!

When we talk to the children about learning, and about Retrieval Practice particularly, we have used explanations like these…

"Your knowledge is really good at hiding. You have to learn how to play hide and seek really well."



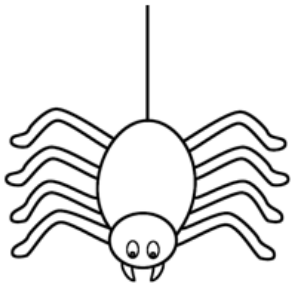
"It's not a test, it's hide and seek!"



Retrieval Practice: what it looks like in practice

Here are some examples that we might use in different subjects across the curriculum.

Mind Spider – write down 8 things you remember about ***. Write one near each of the spider's legs



Retrieval Practice: Think & Link

What can you recall about MLK?

What can you recall about Rosa Parks?

Explain how MLK and Rosa Parks are connected.

'Know it all' sheet

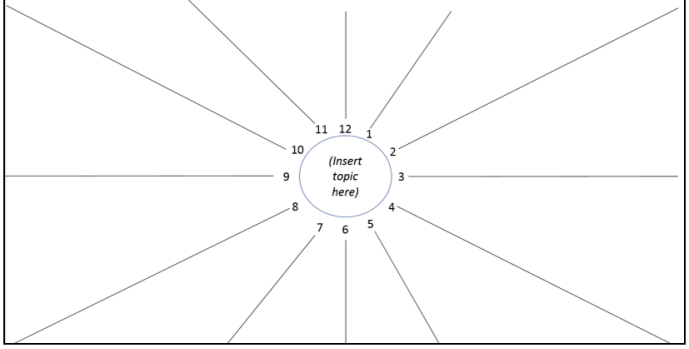
'Know it all' sheet

Write as much as you can in each of the boxes

(Put aspects of the topics in each box)	(Put aspects of the topics in each box)	(Put aspects of the topics in each box)
(Put aspects of the topics in each box)	(Put aspects of the topics in each box)	(Put aspects of the topics in each box)

Retrieval Clock

Spend 5 minutes on each topic, recalling all of your knowledge.



Quizzes

Cops: Write down everything you remember from last lesson here	Robbers: Write down anything that you have 'stolen' from your peers.



Answering a spoken question

When you ask your child how their day at school was, ask them to give you something specific that they learnt that day.

Practical ways to help your child learn their spellings

Encourage your child to learn their spellings using some of these different strategies.

Across and Down

Write each word across and down, sharing the same first letter.

Example: when
h
e
n

Bubble Words

Write your spelling words in bubble letters. After you have written them you can colour them in with crayons.

Silly Sentences

Write silly sentences with a spelling word in each sentence. Underline your spelling words.

Example:
My cat wears a yellow hat when she goes dancing.

Backwards Words

Write out your spelling words forwards and then backwards.

Example:
home emoh



Rainbow Words

First write your spelling words in pencil. Trace over the words 5 times, using a different coloured crayon each time.

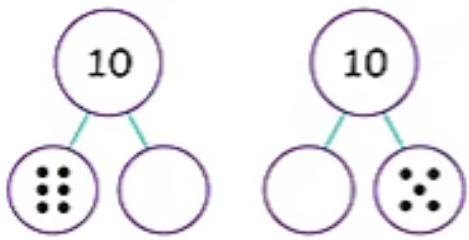


Which spelling is the highest score?

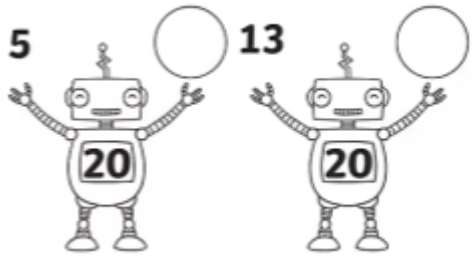
When helping your child to practise spellings, go back to words that they have already learnt; practise high frequency words as well as their year group spellings.

Practical ways to help your child learn their times tables and number bonds and other mathematical concepts

If your child is in Years 3, 4, 5 or 6 please encourage them to use their Times Tables Rock Stars account every day.



Draw part-part-whole models for number bonds to 10 or 20.



Play games like Snap to help with number bonds and times tables.



Practise telling the time and solving time problems e.g. how long do you think it is going to take you to run around the garden?



Revise names of 2D and 3D shapes & their properties e.g. identify shapes when shopping.



Count real life money.



Practise weighing and measuring when cooking.



Practise all 4 operations: addition, subtraction, multiplication & division, even on a car journey!

(+ - x ÷)



Practical ways to help your child learn their information from their knowledge organisers

Remember - don't be tempted to give the answers before your child has 'struggled' to retrieve it from their long term memory!

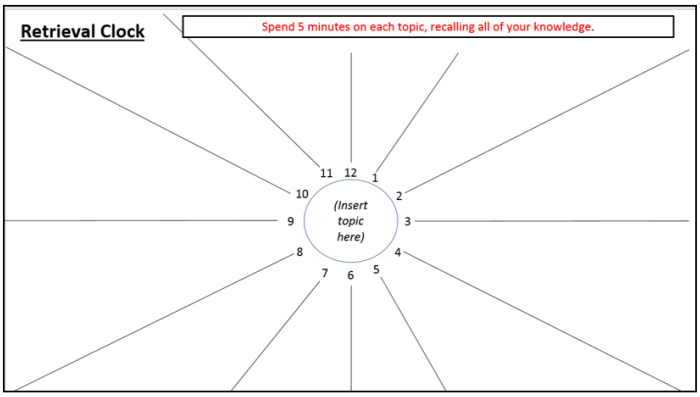


Encourage your child to do a 'brain dump' – what can they remember?

Fill in a Four in Four grid

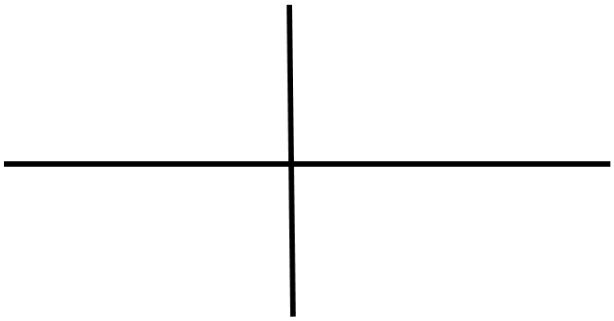
Retrieval Clock

Spend 5 minutes on each topic, recalling all of your knowledge.



'Four in Four'

You have four minutes to write down everything you know about the topics below



Create a Retrieval Clock on the topic from the knowledge organiser

Create a mind map

Create a quiz

Create a Retrieval Practice Pyramid

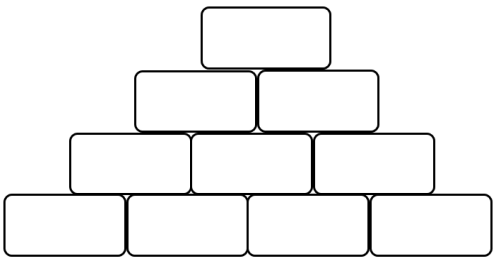
Retrieval Practice Pyramid

4 Points

3 Points

2 Points

1 Point



'Fix the errors' grid

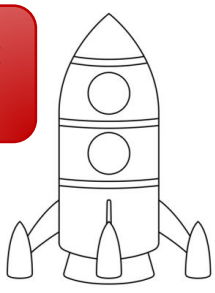
Change the statements in the grid so that they are correct

(Write common errors n the boxes)		

The lower the points, the more recent the topic was taught. For the highest points, try retrieving information from last term/year.

Fix the errors – can you work out what information is incorrect?

Fill in a Remembering Rocket



For any more information, please contact Fiona Micklefield at school on 01420 84400.