



# Taughmonagh Primary School and Nursery Unit

*A Retrieval Guide for pupils and parents*

- Retrieval practice
- Spaced practice
- Knowledge Organiser
  - Elaboration
  - Interleaving
- Child term focused ideas

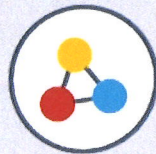
Our School focus this year - developing the extension of  
our working memory to long term memory

## Working memory vs long-term memory

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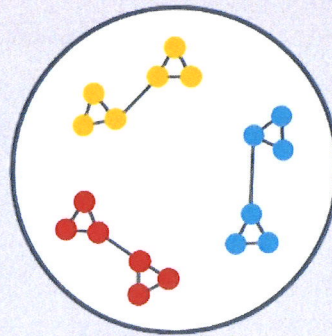
### Working memory is very small

This means that we forget new information quickly.



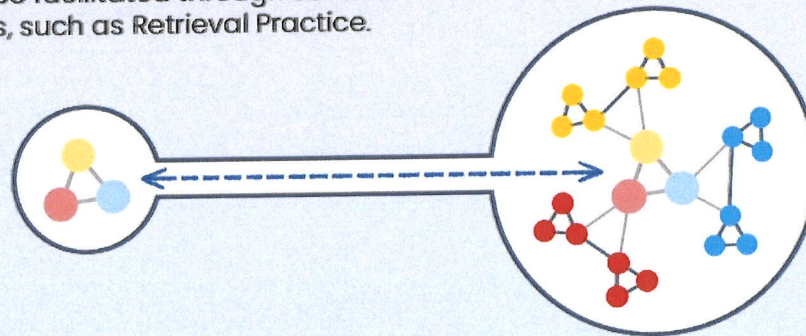
### Long-term memory is very large

This means that we can remember things from years and years ago.



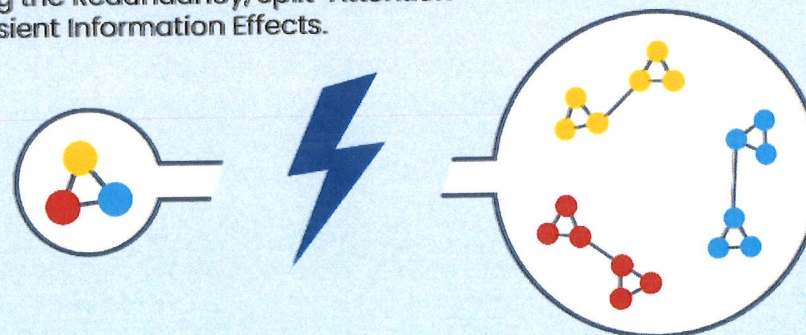
### Transfer between working memory & long-term memory is key for learning

This can be facilitated through several strategies, such as Retrieval Practice.



### Unfortunately, cognitive overload hinders this transfer

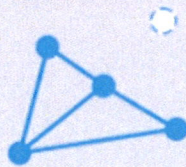
This overload can be reduced through mitigating the Redundancy, Split-Attention and Transient Information Effects.



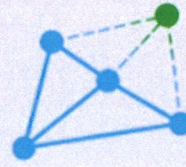
# The Benefits of Retrieval Practice

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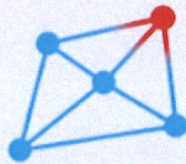
1. Identifies gaps in knowledge



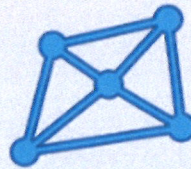
2. Makes connections



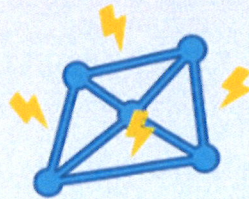
3. Checks for misunderstandings



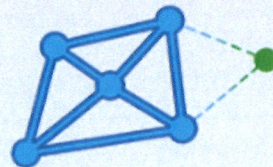
4. Strengthens connections



5. Makes connections robust under pressure and stress



6. Makes it easier to learn new things



## WHAT IS RETRIEVAL PRACTICE?

"**RETRIEVAL PRACTICE** IS A LEARNING STRATEGY WHERE WE FOCUS ON GETTING INFORMATION OUT. THROUGH THE ACT OF RETRIEVAL, OR CALLING INFORMATION TO MIND, OUR MEMORY FOR THAT INFORMATION IS STRENGTHENED AND FORGETTING IS LESS LIKELY TO OCCUR. RETRIEVAL PRACTICE IS A POWERFUL TOOL FOR IMPROVING LEARNING."



1

- Use your class notes, knowledge organisers & textbooks to make a list of the important information & content that you need to know across different subjects.

2

- Then close your books & test yourself. You can create quizzes, use flashcards or complete past exam papers. Another technique is a 'Brain Dump' – use a blank page and write down everything you can remember about the topic, then check your work using your notes. Make sure you don't use your notes while completing the activities, just while checking your work!

3

- Retrieve as much information as you can then check your answers. It's important to know what you know and what you don't know ... yet!

4

- Use your answers to inform the next stage of your revision, focus on the areas that you struggled to recall from memory.


# What does a knowledge organiser look like?

At Taughmonagh PS and Nursery Unit, you will be set **one retrieval homework a week.**



You will receive a book and a pen for you to complete some retrieval work at home. This is to support your long-term working memory.




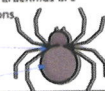




Your teacher will also give you a knowledge organiser which will look something like this below.

## Below is an example of what a knowledge organiser looks like:



### Mini-beasts KNOWLEDGE ORGANISER

ESSENTIAL MINI-BEASTS VOCABULARY		Main Types of Mini-beasts		Molluscs		Arachnids	
<b>crustacean</b>	An arthropod that is mainly found in water, often with a body covered in a hard shell.	There are four main types of mini-beasts. <ul style="list-style-type: none"> <li>• Insects</li> <li>• Arachnids</li> <li>• Molluscs</li> <li>• Crustaceans</li> </ul> 		Molluscs are animals that have a soft body, no spine and often covered in a shell. Molluscs often live in water. Examples of molluscs are snails and oysters.  Shell   Soft, spineless body 		Arachnids are arthropods that have eight segmented legs and no antennae. Their bodies are divided into two parts: the head and thorax in one part and the abdomen in the other. Examples of arachnids are spiders and scorpions.  Head and thorax   Abdomen	
<b>antennae</b>	The 'feelers' that arthropods use for sensing.						
<b>arachnid</b>	An arthropod with 8 segmented legs and no wings or antennae.						
<b>arthropod</b>	An animal with an exoskeleton, segmented body and jointed legs.						
<b>annelid</b>	An animal with a long, segmented body.	<b>Insects</b> Insects have three segments to their bodies: the head, the thorax and the abdomen. They have 6 legs and usually one or two pair of wings. Examples of insects are ants and flies.  Head  Thorax Abdomen		<b>Arthropods</b> Arthropods are the largest group of mini-beasts. They all have an exoskeleton (skeleton outside their body), a segmented body and six jointed legs.		<b>Life Cycle of Insects- Complete Metamorphosis</b> The female lays eggs on a leaf, which a larva grows inside. The larva then eats a lot in preparation for the chrysalis stage. When it is ready, the insect seals itself in a protective case (a chrysalis). This is called the pupa stage. After a while, it emerges as a fully grown adult, often with wings. Insects that go through complete metamorphosis include ladybirds, butterflies and moths.  	
<b>colony</b>	A group of birds, insects or animals that live in a group together.	<b>Crustaceans</b> Crustaceans are arthropods that have two pairs of antennae and are covered in a shell. Most crustaceans live in the sea. Examples of crustaceans are crabs and lobsters.  					
<b>exoskeleton</b>	A hard shell covering the outside of the body.	<b>MAKING LINKS TO PREVIOUS LEARNING GOLDEN VOCABULARY</b>		<b>Life Cycle of Insects-Incomplete Metamorphosis</b> With some insects, such as dragonflies, there isn't a pupa stage. Instead, the eggs hatch into nymphs (which look like a young version of the adult, but without wings). After that, the nymphs develop wings and become fully formed adults.  Insects that go through incomplete metamorphosis include crickets, grasshoppers and stick insects.  			
<b>mollusc</b>	An animal with a soft body, no spine and often covered with a shell.						
<b>thorax</b>	The middle part of an arthropods body which the legs and wings are attached to.	<b>metamorphosis</b>	The process of transformation from young to an adult form.	<b>Life Cycles</b>	Insects go through <b>metamorphosis</b> as part of their life cycles.		
<b>larva</b>	The young form of an insect.	<b>hibernate</b>	When some animals have long periods of deep sleep in very cold weather.	<b>Evolution</b>	Some animals have evolved to <b>hibernate</b> to survive harsh winters.		
<b>abdomen</b>	The bottom part of an arthropod's body.	<b>insect</b>	A small animal that has 6 legs and generally one or two pairs of wings	<b>Habitats</b>	Insects are found in a variety of habitats.		

## How do I complete retrieval at home with my knowledge organiser?

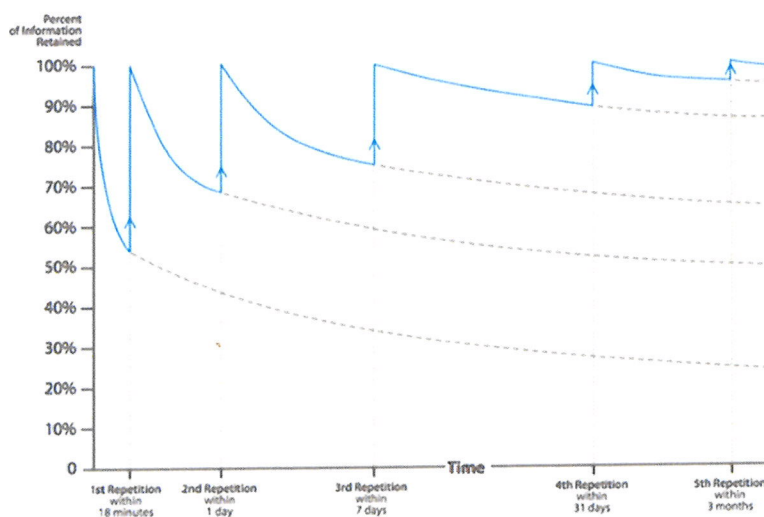
There are different terms that suggest what can be done. At the end, more child centred ideas will be provided.

### **WHAT IS SPACED PRACTICE?**

“SET ASIDE A LITTLE BIT OF TIME EVERYDAY TO THINK ABOUT WHAT YOU LEARNT IN SCHOOL. IT IS MORE EFFECTIVE TO COMPLETE YOUR HOMEWORK AND RETRIEVAL ACROSS THE WEEK RATHER THAN ALL IN ONE DAY - JUST TO GET IT DONE AND OUT OF THE WAY.”

THIS IS SPACED PRACTICE & IT IS REGARDED AS ONE OF THE MOST EFFECTIVE STRATEGIES TO LEARN

### **Rate of Forgetting with Study/Repetition**



The biggest influence on whether or not our brains retain something is time. According to the Ebbinghaus Forgetting Curve, as soon as we learn something, forgetting occurs rapidly at first then eventually slows down. It is important that we return to retrieving this information when we are on the cusp of forgetting.

## THE ONE ABOUT SPACING YOUR LEARNING

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### THE STUDY

Researchers devised an experiment to explore the optimum amount of time to leave between revision sessions.

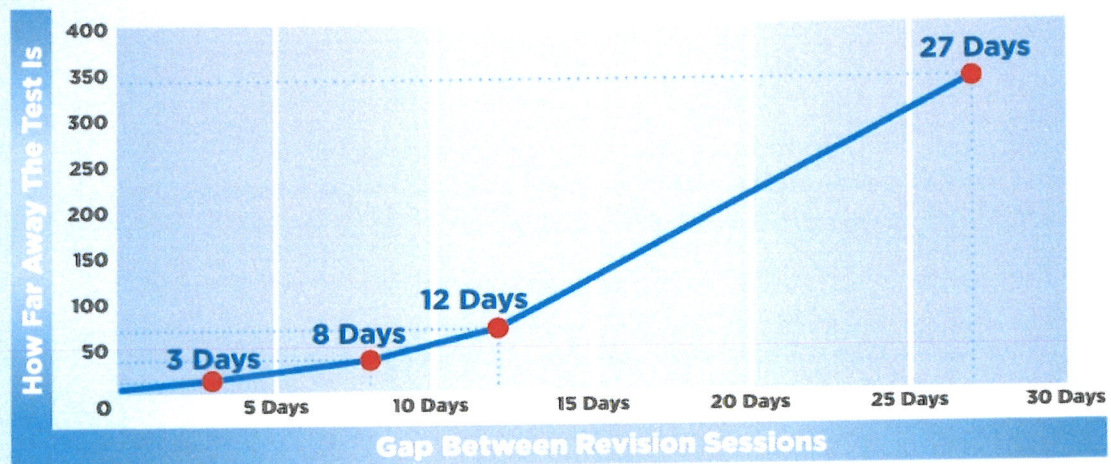
They had 1,354 students learn 32 obscure but true trivia facts. These included questions such as “who invented snow golf?” and “which European nation consumes the most spicy Mexican food?”. They then divided the participants into 26 groups, each with a different gap before their next revision session and a different amount of time after that before their final test. They then compared how many successful answers the participants recorded in their final exam to see what was the optimum amount of time to leave between study sessions.



### THE MAIN FINDINGS

- ✓ Spacing is more effective than cramming.
- ✓ The optimum gap to leave before you revisit the same material depends on how long you want to remember the material.
- ✓ The further away the test, the longer the gaps between study sessions should be.


The researchers found the following timings offer a good guideline:




Ref: Cepeda et al, 2008, *Psychological Science*

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# HOW DOES THIS LOOK IN OUR ORGANISER?



## Mini-beasts KNOWLEDGE ORGANISER



ESSENTIAL MINI-BEASTS VOCABULARY		MAKING LINKS TO PREVIOUS LEARNING GOLDEN VOCABULARY	
crustacean	An arthropod that is mainly found in water, often with a body covered in a hard shell.	Food chain	<b>Decomposers</b> form part of the food chain.
antennae	The 'feelers' that arthropods use for sensing.	Life Cycles	Insects go through <b>metamorphosis</b> as part of their life cycles.
arachnid	An arthropod with 8 segmented legs and no wings or antennae.	Evolution	Some animals have evolved to <b>hibernate</b> to survive harsh winters.
arthropod	An animal with an exoskeleton, segmented body and jointed legs.	Habitats	<b>Insects</b> are found in a variety of habitats.
annelid	An animal with a long, segmented body.		
colony	A group of birds, insects or animals that live in a group together.		
exoskeleton	A hard shell covering the outside of the body.		
mollusc	An animal with a soft body, no spine and often covered with a shell.		
thorax	The middle part of an arthropods body which the legs and wings are attached to.		
larva	The young form of an insect.		
abdomen	The bottom part of an arthropod's body.		
decomposer	An organism that decomposes organic material.		
metamorphosis	The process of transformation from young to an adult form.		
hibernate	When some animals have long periods of deep sleep in very cold weather.		
insect	A small animal that has 6 legs and generally one or two pairs of wings		



In your retrieval book – start by learning maybe the first three terms. Read the terms, cover the terms, write the term and check.

See where mistakes were made and retry

Remember to date the page in your retrieval work and mark your work

**Look** 

**Say** 

**Cover** 

**Write** 

**Check** 

# Checking for understanding

Is this the most important of Rosenshine's Principles?

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6th Principle

**Checking for understanding helps with...**

**Daily Review** – 1st Principle

... by ensuring there are no misconceptions in recent learning.

**Small steps** – 2nd Principle

... by knowing when to move on to the next level.

**Ask questions** – 3rd Principle

... by selecting high-quality questions.

**Provide models** – 4th Principle

... by choosing the best way to explain something.

**Practise using new materials** – 5th Principle

... by seeing how confident your students are with new information.

**Obtain a high success rate** – 7th Principle

... by knowing what level to pitch questions at.

**Scaffold support** – 8th Principle

... by enabling differentiation and personalisation of learning.

**Independent practice** – 9th Principle

... by knowing when your students are ready to work on their own.

**Weekly and monthly review** – 10th Principle

... by cementing and ingraining information into long-term memory.

## WHAT IS ELABORATION?

"THE TERM ELABORATION CAN BE USED TO MEAN A LOT OF DIFFERENT THINGS. HOWEVER, WHEN WE ARE TALKING ABOUT STUDYING USING ELABORATION, IT INVOLVES EXPLAINING AND DESCRIBING IDEAS WITH MANY DETAILS. ELABORATION ALSO INVOLVES MAKING CONNECTIONS AMONG IDEAS YOU ARE TRYING TO LEARN."

1

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- Elaboration involves asking further questions & making links to help you connect new information with what you already know.

2

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- Ask yourself questions about a topic to delve deeper. The more information you have about a specific topic the stronger your grasp & ability to recall.

3

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- When you learn about the causes of WWI you could ask which causes are linked together? Which causes are short or long term? What was the major cause?

4

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- Another way to elaborate is to take two ideas or concepts & think about the various ways they are similar & how they are different.

## How can I do this in my retrieval book?

# How do I add elaboration?

Think What is the **detail** you are elaborating about?

Think What do you need your reader to understand about that **detail**?

Write! Add a sentence+ that tells the "who, what, where, when, why, or how" that your reader needs to know.

WHO

WHAT

WHERE

WHEN

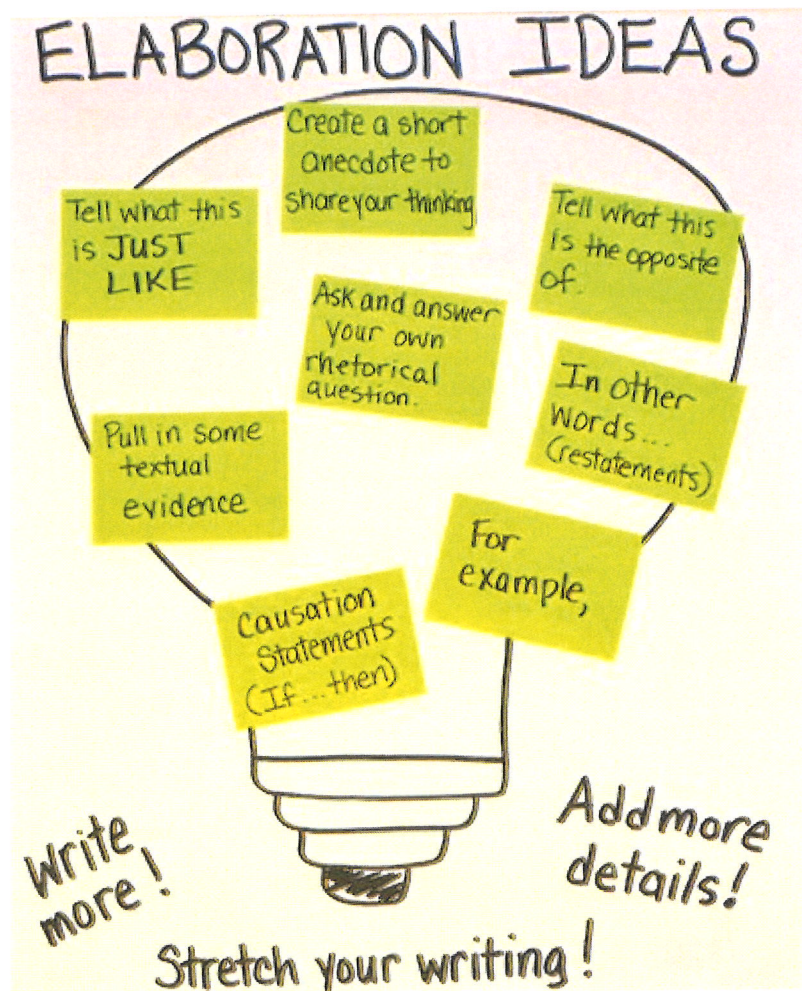
WHY

HOW

Many snack foods start out as vegetables. One example is potato chips.

Potatoes grow underground from the roots of potato plants.

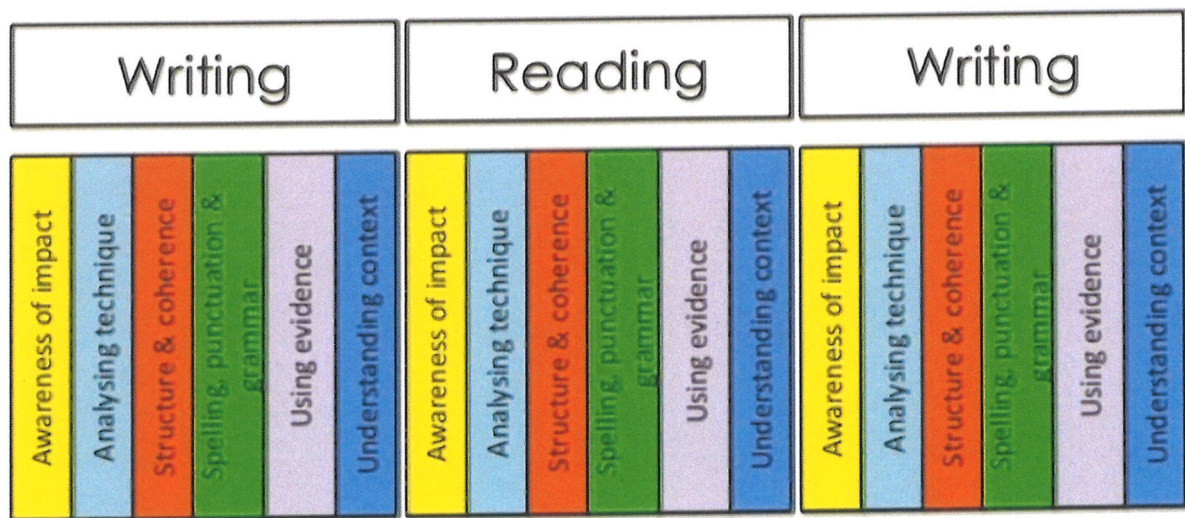
To turn them into chips, the potatoes are sliced thin and fried in hot oil.



## WHAT IS INTERLEAVING?

"INTERLEAVING IS A PROCESS WHERE STUDENTS MIX & COMBINE MULTIPLE SUBJECTS & TOPICS WHILE THEY STUDY IN ORDER TO IMPROVE THEIR LEARNING. BLOCKED PRACTICE ON THE OTHER HAND, INVOLVES STUDYING ONE TOPIC VERY THOROUGHLY BEFORE MOVING TO ANOTHER. INTERLEAVING HAS BEEN SHOWN TO BE MORE EFFECTIVE THAN BLOCKED PRACTICE LEADING TO BETTER LONG-TERM RETENTION."

## Interleaving



## THE ONE ABOUT SPACING AND INTERLEAVING

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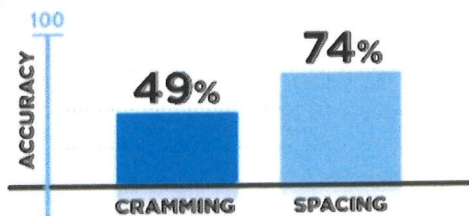
## THE STUDY

How much impact does the order and timing of questions that students answer have on how well they learn the material? Is spacing, which is doing little and often, better than cramming? Does interleaving, which is mixing up the type of problems, help more than blocking?

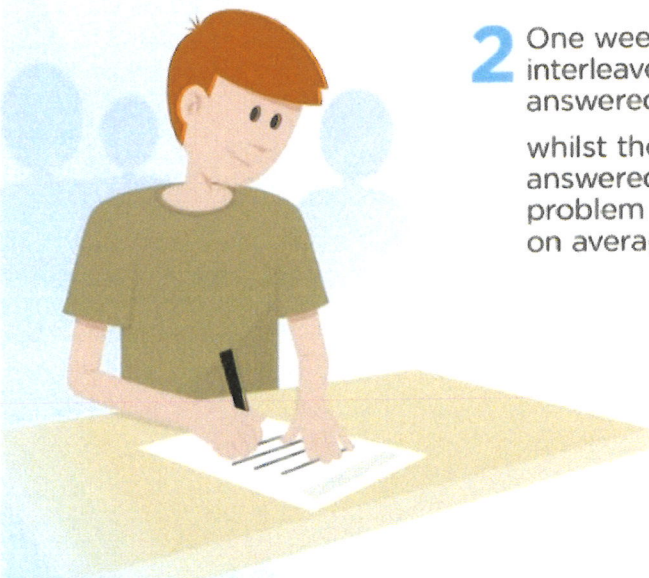
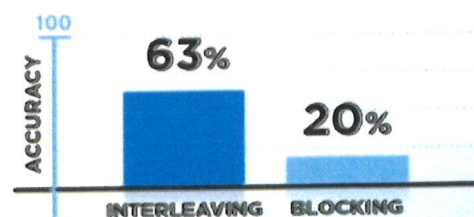
In the first study, researchers explored the difference between spacing out maths revision sessions over the course of a week, compared to doing them all in one sitting. In their second study they also measured the impact of working on the same sort of maths problems for the whole session against mixing up the type of questions the students had to answer.

## THE MAIN FINDINGS

- 1 In the final test, students who spaced out their revision sessions got an average mark of 74%, whereas those who crammed their revision got 49%.



- 2 One week after their revision, students who interleaved the type of questions they answered got an average of 63% whilst those that had answered the same sort of problem (i.e. blocking) got on average 20%.



# Strategies to use in your retrieval book to support your long-term memory



## Retrieval Practice: Brain Dump



Write down what you can recall from memory about conditions in the WW1 trenches ...

**Look**

**Say**

**Cover**

**Write**

**Check**

### USING FLASHCARDS TO REVISE

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- Split a box into 5 different compartments and label them 1 to 5.
- Place all your flashcards in compartment 1.
- Test yourself on a flashcard. If you can correctly recall the information move the flashcard into compartment 2, if not then put it back in compartment 1.
- Continue to test yourself and each time you correctly recall the information, move the flashcard into the next compartment. Flashcards from compartment 1 should be reviewed daily, with flashcards from compartment 2 being reviewed every other day, compartment 3 every third day and so on.
- Eventually, all your flashcards will have been transferred to compartment 5 and the information they contain stored in your long-term memory.

1 **Write 3-5 QUESTIONS** to test someone else's knowledge about \_\_\_\_\_.

**MINDMAP** + GAPS

2

3 **EXPLORE DISTINCTIVENESS**

How is \_\_\_\_\_ different/similar to \_\_\_\_\_?

(OLDER IDEA) VS (NEWER IDEA)

4 **What KEYWORDS** did you learn/think were important last lesson? Use them in a sentence.

5 **LINKING + THINKING**

Make links between the words/phrases given, explaining why clearly.

6 **BRAIN DUMP**

Think of everything you know about \_\_\_\_\_. Use each letter of the alphabet to guide you.

7 **PICTURE**

8 **LOOK**

Use your knowledge organiser

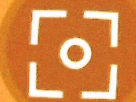
9 **Use your knowledge organiser**

# 10 WAYS Parents and Guardians CAN HELP THEIR CHILD STUDY

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**Encourage good sleep habits**



**Minimise distractions during study time**



**Ensure your child eats breakfast**



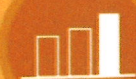
**Get your child to study using Retrieval Practice**



**Minimise procrastination**



**Get your child to teach you the material**



**Set high but realistic expectations**



**Provide motivation**



**Make sure your child gets fresh air everyday**



**Avoid “all work and no play”**