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Recap!

Memory in 30 seconds

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1. The closet is a good metaphor; memory is reconstructive
2. The 'wardrobe needs to be tidied' = easier to find

3

Guide To Memory = by Chapter

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1	2	3	4	5
The Brain An overview + history	How memory changes When neurons connect	Types of memory A beginner's guide	Learning is emotional Hinder or support?	Cognitive load What is it? How to manage ...
6	**7**	**8**	**9**	**10**
Mental models Mnemonics for mental imagery	Brain plasticity How it forms or degrades	Cognitive apprenticeship Moving from novice to expert	Wellbeing + Memory Sleep, diet and exercise	Teacher Training Access, costs and leadership

Explainer – Practical Idea – Worked Example – Template

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THE HUMAN BR...

THE CEREBRAL CORTEX, CEREBELLUM AND BRAINSTEM

PARIETAL LOBE
- Touch
- Taste
- Smell
- Hearing

FRONTAL LOBE
- Speaking
- Thinking
- Movement
- Memory
- Judgement
- Behaviour

OCCIPITAL LOBE
- Vision
- Colour processing

TEMPORAL LOBE
- Fear
- Feelings
- Hearing
- Behaviour
- Speech

CEREBELLUM
- Coordination
- Balance
- Attention

BRAINSTEM
- Breathing
- Heart rate
- Temperature

DIENCEPHALON

TELENCEPHALON

CAUDAL
The back (or tail)

#GuideToMemory

One Neuron

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Myelin Sheath = a layered myelin (insulating) layer the forms around (sheath) the nerve cells. Made of protein and fat; it allows electrical impulses to transmit quickly and efficiently; increases the speed. The sheath is made of specialised cells call **glia**.

Axon = nerve that transmits from neuron to neuron and carries the information away from the cell body.

Nucleus = mission control! oval shaped membrane-bound structure; the main body of the neuron which transmits information

Cell Body = the protection surrounding a nucleus (soma)

Nucleus
Cell body
Axon
Myelin sheath
Dendrites
Axon Terminals

Synapses = the connection point where one neuron communicates with another

Dendrites = a branch from the axon to receive signals and form synapses. These get covered with synapses from **other** neurons

Axon Terminals = the endings that **make** synaptic **connections** with other nerve cells

#GuideToMemory

Curriculum 'Learning' Loop

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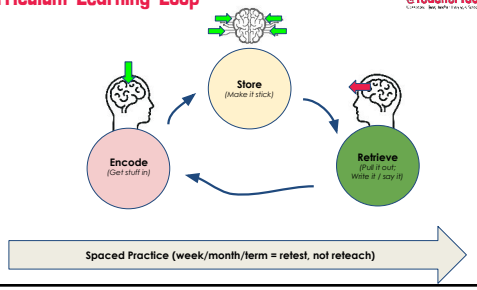

4 Stages of Memory

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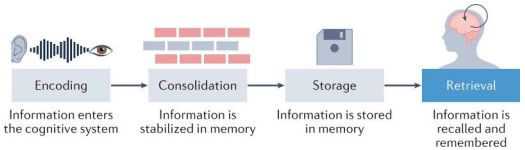

Encoding	Consolidation	Storage	Retrieval
Information enters the cognitive system	Information is stabilized in memory	Information is stored in memory	Information is recalled and remembered

According to some accounts, ***consolidation processes are repeated after retrieval*** *(reconsolidation).*

(Roediger III + Abel, 2022)

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When do you start teaching pupils HOW to learn?

A pause helps retention ...

9 Effective Learning Techniques

Inspired by Pomodoro Plus Plans (Taylor, 2019)

9 Effective Learning Techniques

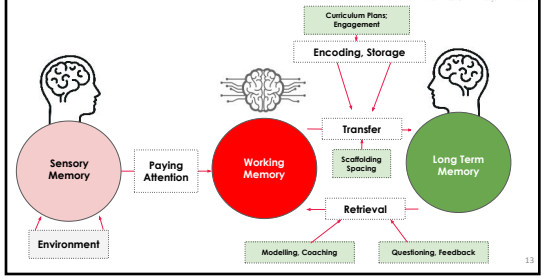
	Technique	Efficacy/Impact	What is it?
1	Retrieval Practice	High	Low stakes quizzing; desirable difficulty
2	Spaced + Interleaving	High	Presenting scheduled and mixed content over time
3	Elaboration	Medium	Generating and being able to explain why
4	Self-Explanation	Low	Explaining new information
5	Summarisation	Low	Bitesize overview
6	Highlighting	Low	Marking potentially important information whilst reading
7	Keyword mnemonics	Low	Keywords for mental models/imagery
8	Imagery for Text	Low	Mental imagery for text (dual coding); pair text with images
9	Rereading	Low	Restudying text material
	All these strategies have an impact on learning. N.b. Spaced + Interleaving have been amalgamated for this resource; they are separate strategies and interleaving is sometimes known as 'distributed practice'.		

Inspired by (Table 1: Learning Techniques) 10.1177/1529100612453266 (Dunlosky et al (2013)

9 Study Skills, Month by Month

7/1529100612453266 (Dunlosky et al (2013)

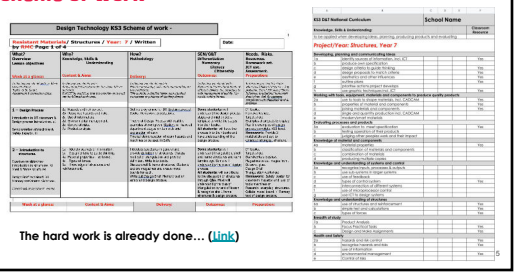
Explainer – Practical Idea – Worked Example – Template



What scheme of work will you revisit? Encode. Store. Retrieve

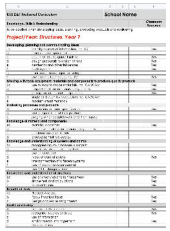
A pause helps retention …

Scheme of work



The hard work is already done… (Link)

Small tweaks...



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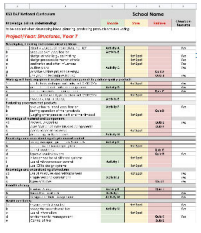

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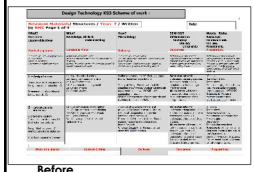

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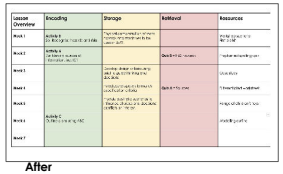

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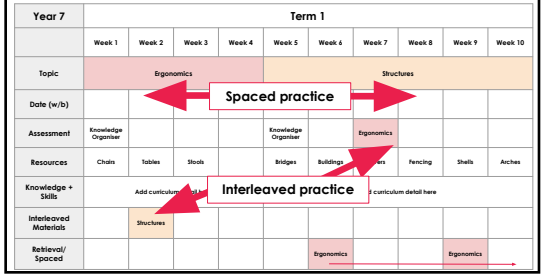

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So what? Now what?

A pause helps retention …

How To Learn: The Revision Revolution

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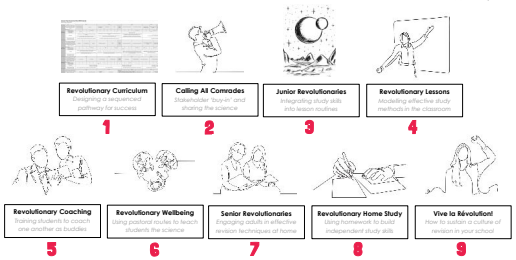

The Revision Revolution (Howell + McGill, 2022)

How does 'revision' make you feel?

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When Helen Howell and I first set about writing this book, we surveyed students on their perceptions of 'revision'. 33% said something negative!

It is **boring** but it helps you to get better results
It is **boring**
It's not something I enjoy but its **better than getting a bad mark.**
I feel **I need help** on what is the best way to revise for a particular subject
It seems boring sometimes when doing it but then while I'm doing it but I know that if I revise it will **pay off on my tests.**
I'm ok about it but **would like to go over different ways to revise** for English in lesson
I feel it can be boring but it has to be done
I find it quite **hard** because its a lot to revise
I feel as if there is a lot of revision, because you have **so many tests** to complete you don't have alot of time to revise other subjects because you are focusing on the main subjects.
I do not like it but I still do it **so I can get good marks** in a test or to help me in life no one else.
I think it is important however **I like guidance with my revision** so I like when teachers make resources that we can use
I feel a bit **stressed** about it

I feel that we all need to do revision in order to do well on the test but another point of view some other students may have is that revision is like extra homework and they may feel **stressed** that they will get **told off** for not completing or bringing in proof to show that you have revised.
It can be **stressful**

I think that revision always pays off and it ensures you to get a good grade after an assessment. Revision is **hard work** and most of the time you will not want to do it. You have to plan it out so you can do a bit each day and still get time to chill out

The Revision Revolution (Howell + McGill, 2022)

Revision has become a monster!

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Traditional Revision	Effective Revision
Completing past papers	Retrieval practice
Re-reading notes	Spaced practice
Highlighting	Dual coding
Cramming	Elaboration
Non existent?	Interleaving
Last minute interventions?	Concrete examples, explicitly modelled
After school free-for-all	Desirable difficulties
Little or no modelling	Lifelong study skills and habits

Structured in steps …

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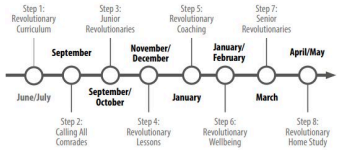

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4 Types of Curriculum Planning

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Lesson Plans	Schemes of Work	Curriculum Maps	Macro Curriculum
An individual plan for the lesson/week ahead; a route map to help a teacher meet the needs of groups of students.	The medium term sheets, providing specific details of resources and the assessment that underpins the content	A long term overview of a key stage outlining details of what students must know and how content is interleaved	A whole-school overview of intentions, how content is brought to life and how it will be evaluated…
1	2	3	4

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Some ideas …

Common Language Curriculum

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1. Study skills
2. Metacognition
3. Retrieval
4. Schema
5. Cornell Notes
6. Elaborative interrogation
7. The Leitner Method
8. Self-regulated learners
9. Autonomy

Using flashcards ...

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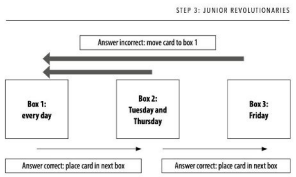
1. Simple and effective
2. Low threat
3. Small chunks
4. Quiz in a sequence
5. Increasing spacing strength
6. Then, retrieve, reorder and repeat



The Revision Revolution (Howell + McGill, 2022)

Brain Dump

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1.The question or task is… *The teacher explains the task; the pupil writes it down.*	
2. What I know… *The pupil writes down as much as they know in 3-5 minutes; this can be text, sketches, diagrams and keywords.*	
3. What I didn't know… *The teacher pairs pupils with somebody else and they swap notes, recording any information in this area they did not include in stage 2.*	
4. What I need to find out next time? *Based on stages 2 and 3, the pupil sets themselves a specific target to address by the next time a brain dump is completed on the same topic.*	

Some research ...

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Paper

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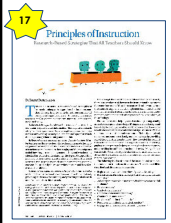
17



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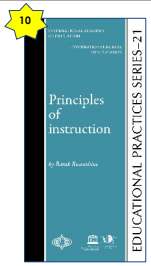

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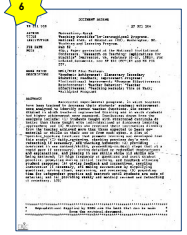

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17 Principles of Instruction

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1. Begin a lesson with a short review
2. Present new material in small steps
3. Limit the amount of material students receive at one time
4. Give clear and detailed instructions and explanations
5. Ask a large number of questions and check for understanding
6. Provide a high level of active practice for all students
7. Guide students as they begin to practice
8. Think aloud and model steps
9. Provide models of worked out problems
10. Ask students to explain what they have learned
11. Check the responses of all students
12. Provide systematic feedback and corrections
13. Use more time to provide explanations
14. Provide many examples
15. Re-teach material when necessary
16. Prepare students for independent practice
17. Monitor students when they begin independent practice

10 Principles

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1 2 3 4 5

6 7 8 9 10

10 Principles

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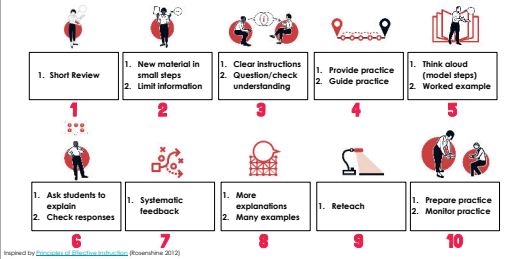

Inspired by Principles of Effective Instruction (Rosenshine 2012)

4 Principles

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1 2 3 4

4 Principles

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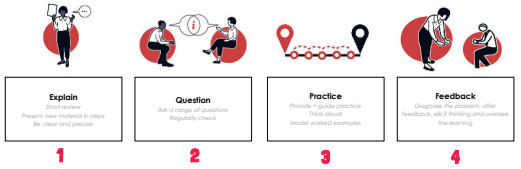

Inspired by Principles of Effective Instruction (Rosenshine 2012)

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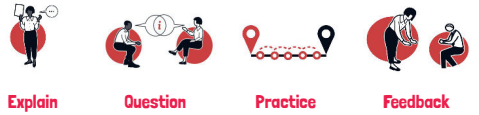

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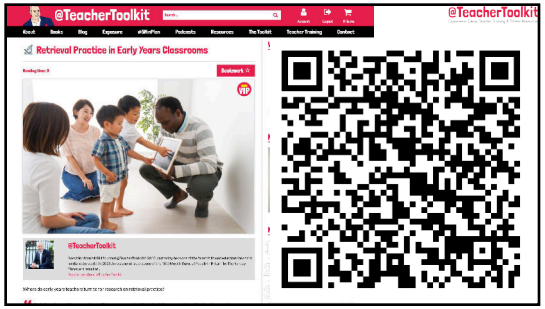

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Conclusions

The WHY

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Most people can drive a car …

Sample Chapter

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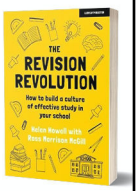

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A fantastic book that successfully interweaves the breadth of cognitive theory and practical strategies in a clear and accessible way. A great book to begin understanding the science of learning and the complexity of influences on this.

Sarah Benskin, assistant principal (teaching and learning, curriculum and CPD), @drblearning

This book is informative and accessible for quick reads. The consistent approach to each chapter works really well, especially for utilising the practical applications. The embedded use of diagrams adds to the reader's understanding of some complex concepts.

—SENCO and Senior Leader, Charlotte McLean

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