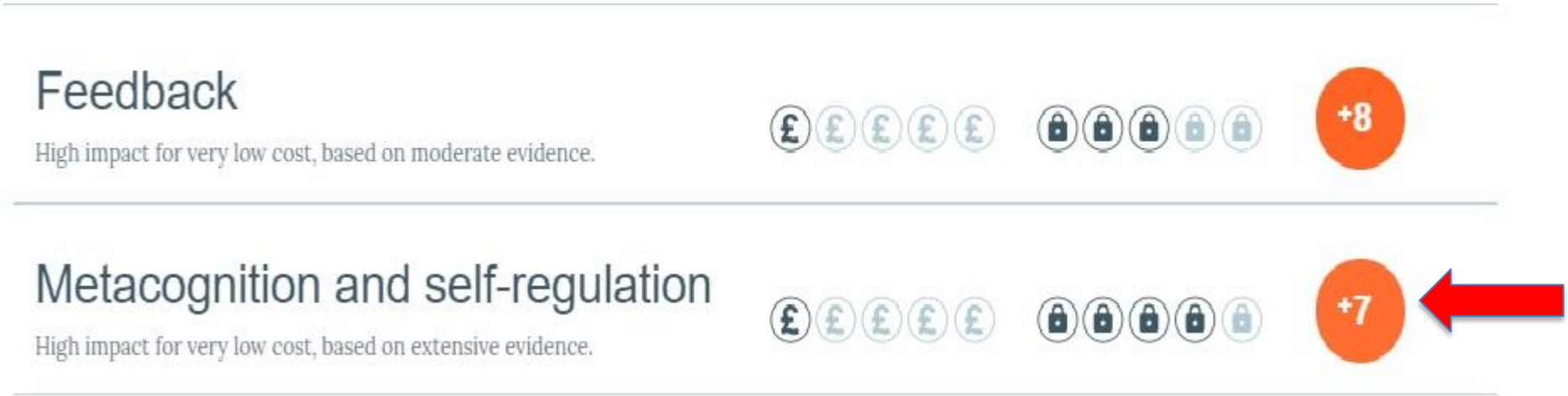
Effective Revision Strategies

1. Why focus on effective revision strategies?
2. What are the common issues?
3. Practical strategies from cognitive science.
4. The strategies in practice.

Why focus on revision strategies?

Metacognition and Self-Regulated Learning



Ranked second in the EEF toolkit as having a positive impact on outcomes (after feedback).

Education Endowment Foundation

METACOGNITION AND SELF-REGULATED LEARNING

Summary of recommendations

1

Teachers should acquire the professional understanding and skills to develop their pupils' metacognitive knowledge

- Self-regulated learners are aware of their strengths and weaknesses, and can motivate themselves to engage in, and improve, their learning.
- Developing pupils' metacognitive knowledge of how they learn—their knowledge of **themselves as a learner**, of strategies, and of **tasks**—is an effective way of improving pupil outcomes.
- Teachers should support pupils to **plan**, **monitor**, and **evaluate** their learning.

2

Explicitly teach pupils metacognitive strategies, including how to plan, monitor, and evaluate their learning

- Explicit instruction in cognitive and metacognitive strategies can improve pupils' learning.
- While concepts like 'plan, monitor, evaluate' can be introduced generically, the strategies are mostly applied in relation to specific content and tasks, and are therefore best taught this way.
- A series of steps—beginning with **activating prior knowledge** and leading to **independent practice** before ending in **structured reflection**—can be applied to different subjects, ages and contents.

3

Model your own thinking to help pupils develop their metacognitive and cognitive skills

- Modelling by the teacher is a cornerstone of effective teaching; revealing the thought processes of an expert learner helps to develop pupils' metacognitive skills.
- Teachers should verbalise their metacognitive thinking (*'What do I know about problems like this? What ways of solving them have I used before?'*) as they approach and work through a task.
- Scaffolded tasks, like worked examples, allow pupils to develop their metacognitive and cognitive skills without placing too many demands on their mental resources.

4

Set an appropriate level of challenge to develop pupils' self-regulation and metacognition

- Challenge is crucial to allow pupils to develop and progress their knowledge of tasks, strategies, and of themselves as learners.
- However, challenge needs to be at an appropriate level.
- Pupils must have the motivation to accept the challenge.
- Tasks should not overload pupils' cognitive processes, particularly when they are expected to apply new strategies.

5

Promote and develop metacognitive talk in the classroom

- As well as explicit instruction and modelling, classroom dialogue can be used to develop metacognitive skills.
- Pupil-to-pupil and pupil-teacher talk can help to build knowledge and understanding of cognitive and metacognitive strategies.
- However, dialogue needs to be purposeful, with teachers guiding and supporting the conversation to ensure it is challenging and builds on prior subject knowledge.

6

Explicitly teach pupils how to organise and effectively manage their learning independently

- Teachers should explicitly support pupils to develop independent learning skills.
- Carefully designed **guided practice**, with support gradually withdrawn as the pupil becomes proficient, can allow pupils to develop skills and strategies before applying them in **independent practice**.
- Pupils will need timely, effective feedback and strategies to be able to judge accurately how effectively they are learning.
- Teachers should also support pupils' motivation to undertake the learning tasks.

7

Schools should support teachers to develop knowledge of these approaches and expect them to be applied appropriately

- Develop teachers' knowledge and understanding through high quality professional development and resources.
- Senior leaders should provide teachers with time and support to make sure approaches are implemented consistently.
- Teachers can use tools such as 'traces' and observation to assess pupils' use of self-regulated learning skills.
- Metacognition shouldn't be an 'extra' task for teachers to do but should be built into their teaching activities.

6

Explicitly teach pupils how to organise and effectively manage their learning independently

- Teachers should explicitly support pupils to develop independent learning skills.
- Carefully designed **guided practice**, with support gradually withdrawn as the pupil becomes proficient, can allow pupils to develop skills and strategies before applying them in **independent practice**.
- Pupils will need timely, effective feedback and strategies to be able to judge accurately how effectively they are learning.
- Teachers should also support pupils' motivation to undertake the learning tasks.

Explicitly teach pupils how to organise and effectively manage their learning independently.

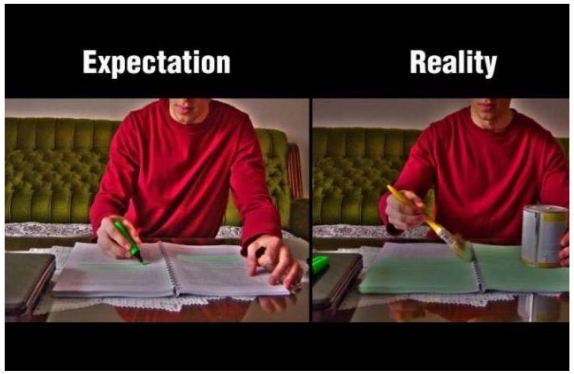
- Teachers should explicitly support pupils to develop independent learning skills.
- Carefully designed **guided practice**, with support gradually withdrawn as the pupil becomes more proficient, can allow pupils to develop skills and strategies before applying them in independent context.
- Pupils will need time, effective feedback and strategies to be able to judge accurately how effectively they are learning.
- Teachers should also support pupils' motivation to undertake the learning tasks.

What are the common issues?

Common Revision Issues

1. Revision usually takes place outside of the classroom and so is ‘uncontrolled’.

2. Students can spend a lot of time revising, but this time is wasted on ineffective activities…



Highlighting

Re-reading

Summarising

Why are these ineffective?

- Low challenge
- Little thinking required
- **Makes students feel like they are 'doing something' – a false sense of accomplishment**
- **The student looks busy.**

Common Revision Issues

1. Revision usually takes place outside of the classroom and so is ‘uncontrolled’.

2. Students can spend lots of time revising, but this time is wasted on ineffective activities.

3. Students revise what they already know and feel confident about (motivation).

4. Some students do not revise at all, whilst some students revise too much (student wellbeing).

5. The depth and breadth required for current specifications means that revision needs to begin early.

Self-regulated students

+

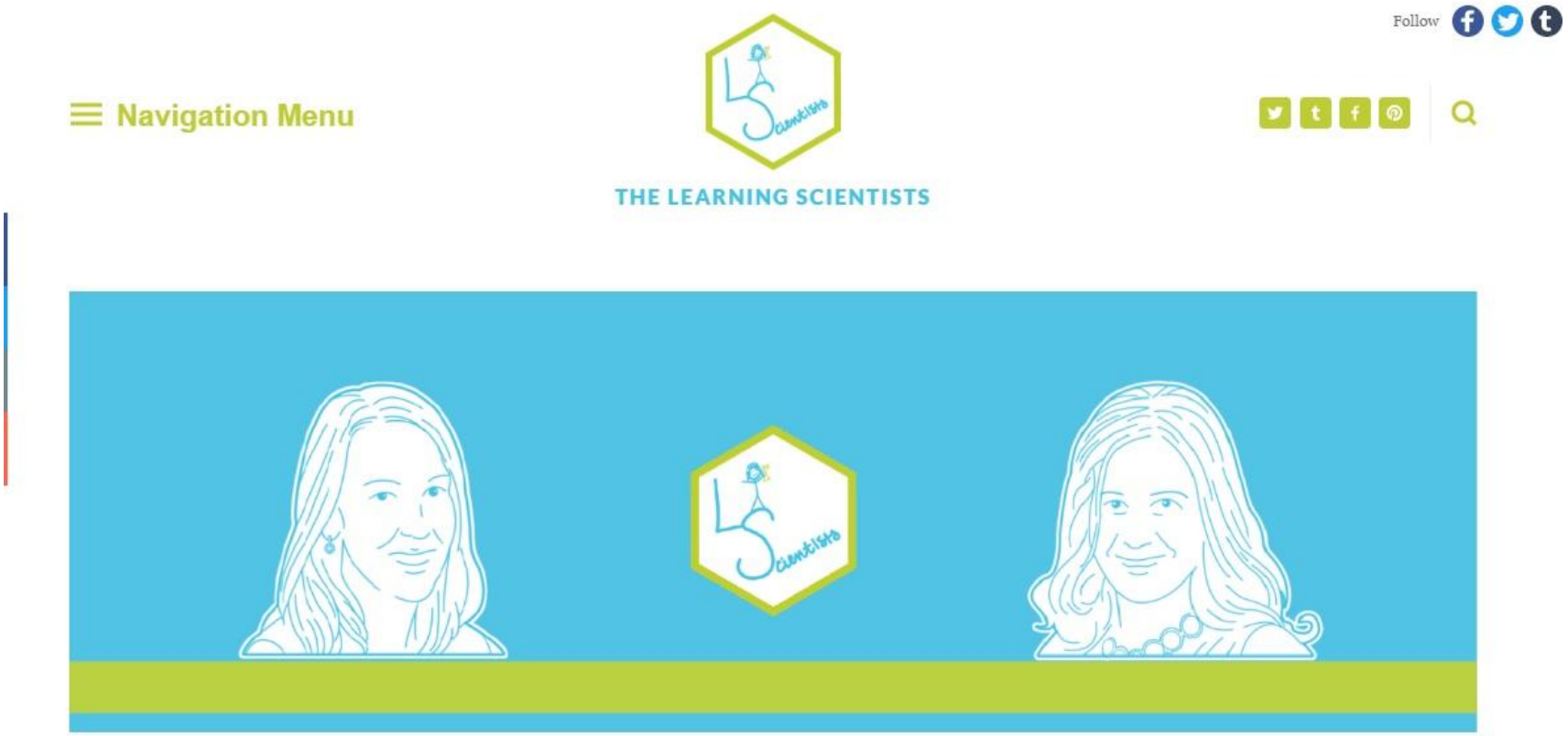
reduction of issues

= effective revision.

Practical Revision Strategies from Cognitive Science

The Learning Scientists

http://www.learningscientists.org/



Six Learning Strategies

'We aim to :

- Motivate students to study
- Increase the use of effective study and teaching strategies that are backed by research
- Decrease negative views of testing'.

1. **Retrieval practice.**
2. **Spaced practice.**
3. **Elaboration.**
4. **Interleaving.**
5. **Concrete examples.**
6. **Dual coding.**

We will :

- Explore the study strategies
- Consider how to use these strategies for revision.

1. Retrieval Practice

- Retrieval practice is when the student thinks about something that they have learned in the past (e.g. a previous lesson) **right now**

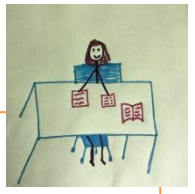
- It's crucial that the thinking occurs **after** the learning: you have to forget to remember (**to increase storage strength**). Forgetting then retrieving will
  a) make the information more retrievable later
  b) help make the information applicable to new contexts

- The student needs to retrieve the information on their own (no notes or teachers helping!)

- However, it is important that the student gets feedback on their retrieved information so that they do not believe false information

- Retrieval practice is difficult but it works over time – this is a key message.

1. Retrieval Practice



Using **Retrieval Practice** for **Revision**

1. **Practice tests and practice questions**. The teacher can provide these or students can make their own questions (these need to be checked). Provide accurate answers for feedback.

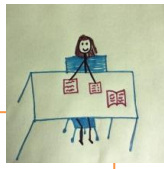
2. **Flashcards.**

3. **Students write down everything they know about a topic on a blank piece of paper**. Check and add what's missed.

4. **Students draw everything they know about a topic on a blank piece of paper**. Check and add what's missed.

5. **Create concept maps**. Take the main ideas and link them together with phrases that explain the relationships.

1. Retrieval Practice



Example of Retrieval Practice for Revision from DHS

- **Students have knowledge organisers for every unit**

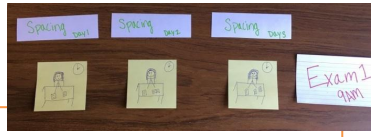
- **Learn sections of previous unit every week for homework and then quizzed in class**

- **After-school revision incorporates**
    a. a short-answer quiz based on previous topics
    b. independently answering exam questions based on a previous topics
    c. checking and getting feedback on the exam question responses.

2. Spaced Practice

- Spaced practice is the opposite of cramming. It involves the **student spreading their studying over longer periods of time**, but studying for shorter blocks
- Five hours spread over two weeks is better than five hours in one go the night before an exam
- Spaced practice involves early planning and lots of organisation
- The student needs to get used to setting aside a bit of time every day: **shorter** but more **frequent** bursts of revision
- As with retrieval practice, allow time to forget. Go back to older information
- Students still study up to the exam, but they also study in the **weeks before** the exam rather than only in the hours before. It's about **forming habits**.

2. Spaced Practice



Using **Spaced Practice** for **Revision**

1. **Plan in advance** and spread out learning in the months and weeks before the exams.

2. Set aside a **bit of time every day** for revision.

3. Review information from each subject but not immediately afterwards – **leave some time.**

4. **Do a little** at a time, but **do this a lot**.

5. Use the six **effective learning strategies** during the spaced practice.

2. Spaced Practice

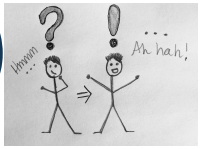
Example of Spaced Practice for Revision from DHS

- Students supported with **revision timetable templates** that encourage spaced practice. This occurs very early in the academic year during tutor time/period 1.

- Try to schedule after-school revision sessions so that they **do not immediately follow lessons in the same subject or topic**

- **Model the practice:**
  a. lots of short in-class quizzing
  b. homework that encourages shorter but more frequent bursts of study rather than long, isolated hours of work.

3. Elaboration (Elaborative Interrogation)



- In this context, elaboration means **explaining and describing ideas with many details**

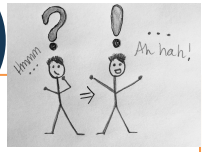
- **Elaborative interrogation** is a specific type of elaboration. This involves the student asking questions – **how** and **why** things work or happen

- **Elaboration** and **elaborative questioning** is about students making connections
  a. between different ideas that they are learning in class
  b. between ideas that they are learning in class and what they experience outside of the classroom

- Making these connections helps students to organise ideas (create a schema). This makes the ideas easier to recall and use in the future

- Elaborative questioning will work differently for different subjects and topics.

3. Elaboration (Elaborative Interrogation)



Using **Elaboration** for **Revision**

1. Students should **list everything they need to know** about a topic**.** They then ask questions about **how these ideas work** and **why. *For example: Why does photosynthesis need carbon dioxide?***

2. Students make connections between the ideas they are learning by **comparing** and **contrasting** them. ***For example: How is Lady Macbeth similar to Ebenezer Scrooge?***

3. Students should make connections between what they are learning and what they already know from previous lessons. ***For example: How does the portrayal of Juliet link to second wave feminism?***

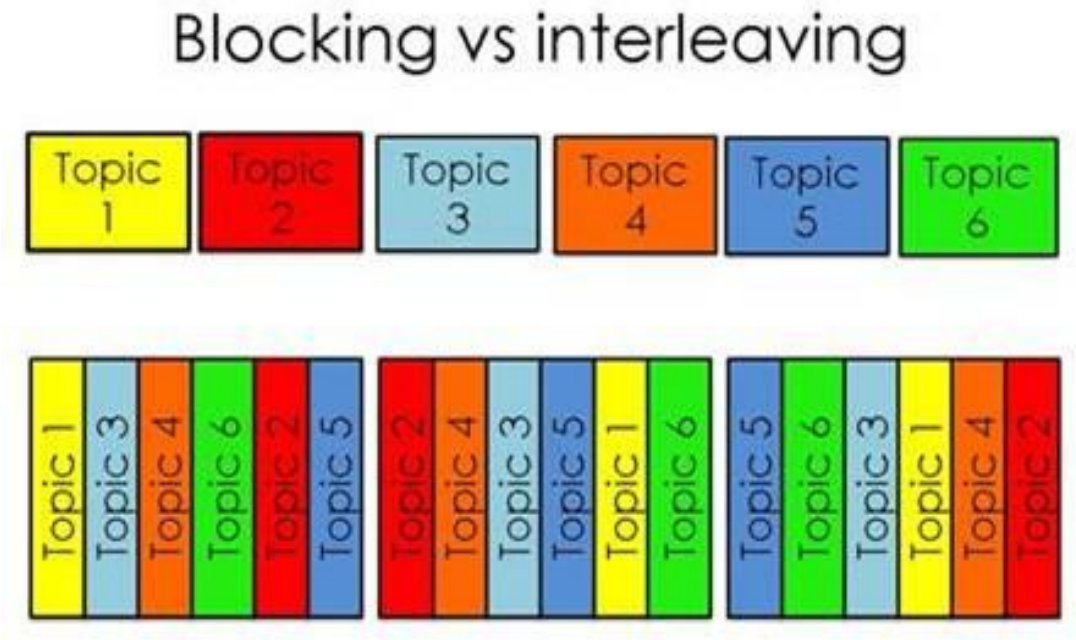
4. Students should make connections between what they are learning and their experiences. ***For example: Name an example of a corporation that operates in Worthing.***

4. Interleaving

- **Interleaving** means not studying one topic, idea or type of problem for too long in isolation
- Instead, revision will be more effective if students switch between different ideas and topics in a revision session
- Interleaving requires **balance**. Students need to spend long enough on a topic to learn but also not study one thing for too long
- Interleaving means **switching between topics in the same subject** (this helps with finding connections). It is not about switching between subjects, e.g. from science to drama, in one session
- Students should change the interleaving order.

4. Interleaving

Using **Interleaving** for **Revision**



Use the other effective strategies for interleaved sessions.

Interleaving helps with elaborative questioning as students can make connections between topics as they switch.

4. Interleaving

Example of Interleaving for Revision from DHS

- **Revision timetable templates**
- **Curriculum design models interleaving in Year 10 and Year 11.**

5. Concrete Examples

- Human memory works much better with **specific, concrete examples** instead of **abstract ideas**
- Information and ideas will be stored more effectively if they are linked to concrete examples
- Concrete examples need to be something that the students already fully understand and know.

5. Concrete Examples

BBC NEWS

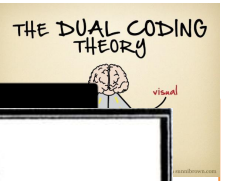
Using **Concrete Examples** for **Revision**

- Provide students with plenty of **concrete examples during explanations** and in their books. Students should refer to these concrete examples in their own explanations when revising – this can be a specific revision task or quiz

- Students should **find concrete examples of concepts** from their **everyday life** outside of school

- Use time in revision sessions to **check students' concrete examples** that they have found at home. Some are more accurate than others – they need an expert eye.

6. Dual Coding



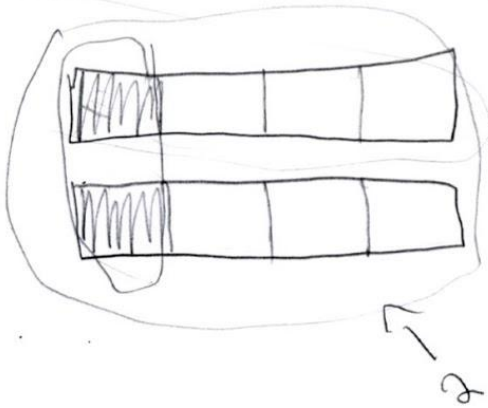
- D
- A
  i

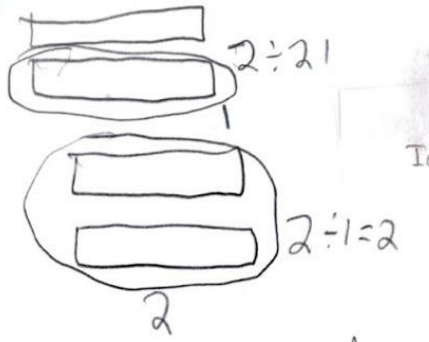
EXPOSITION | CONFLICT | RISING ACTION

The ÷ expression asks, what is 2 divided into $\frac{1}{4}$ groups. $\frac{1}{4}$ is less than 1.

Jack and Nick each have 1 apple. They both divide their apple by 4.

$2 \div \frac{1}{4}$

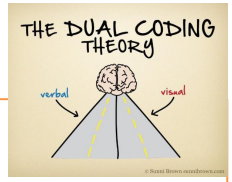




$2 \div \frac{1}{4}$

Based on this way $2 \div \frac{1}{2}$ will be more than 2. So, $2 \div \frac{1}{4}$ will equal more than $2 \div \frac{1}{2}$ which is more than $2 \div 1$.

6. Dual Coding



Using **Dual Coding** for **Revision**

1. **Students find visuals that match class materials.** Students have to explain how the visual links to the verbal (text) information from the lesson.

2. Next, students explain how the visuals link to the information from lessons **without their notes** and **using their own words.**

3. Students draw **their own visual representations** using their notes.

4. Finally, students need to **retrieve** the information by writing out ideas and drawing visual representations with **no materials to assist them** (retrieval practice).

The Strategies in Practice

The Strategies in Practice

1. It's easier to improve one strategy at a time: Retrieval practice as a whole-school focus.

2. Confusion about interleaving – swap between topics rather than subjects.

3. Anxiety over timing with interleaving.

4. The strategies need explicit teaching. We tried at tutor-time but it needs to be subject-specific. Staff need lots of explicit teaching, too.

5. Flashcards are often used incorrectly:
   a) Students just copy out swathes of text
   b) Students use to memorise decontextualised definitions

The Strategies in Practice

Flashcards

Set 1	Concept	Explanation
Set 2	Instruction	• Draw this concept • Give a concrete example • When is this likely to happen? • What is the opposite? • What is similar to this concept from another subject?

Use the learning strategies to create instructions.

6

Explicitly teach pupils how to organise and effectively manage their learning independently

- Teachers should explicitly support pupils to develop independent learning skills.
- Carefully designed **guided practice**, with support gradually withdrawn as the pupil becomes proficient, can allow pupils to develop skills and strategies before applying them in **independent practice**.
- Pupils will need timely, effective feedback and strategies to be able to judge accurately how effectively they are learning.
- Teachers should also support pupils' motivation to undertake the learning tasks.

Explicitly teach pupils how to organise and effectively manage their learning independently.

- Teachers should explicitly support pupils to develop independent learning skills.
- Carefully designed **guided practice**, with support gradually withdrawn as the pupil becomes more proficient, can allow pupils to develop skills and strategies before applying them in independent context.
- Pupils will need time, effective feedback and strategies to be able to judge accurately how effectively they are learning.
- Teachers should also support pupils' motivation to undertake the learning tasks.

jcrane16@durring.com
research@durring.com

@MrCranePE
@DurringResearch

https://researchschool.org.uk/durrington/
https://classteaching.wordpress.com/