

ECT Mentor session

Module 2: Engaging pupils in learning

Week 4: Consolidation of learning

Session Elements



reflection



discuss with a
mentor



collaborative
learning



sharing of
practice

Learning Intentions for this session

Your ECT will learn how to:

Increase likelihood of material being retained, by:

- 2h. Balancing exposition, repetition, **practice** and **retrieval** of critical knowledge and skills
- 2i. Planning regular review and practice of key ideas and concepts over time
- 2j. Designing **practice**, generation and **retrieval** tasks that provide just enough support so that pupils experience a high success rate when attempting challenging work
- 2k. Increasing challenge with **practice** and **retrieval** as knowledge becomes more secure (e.g. by removing scaffolding, lengthening spacing or introducing interacting elements).

Support pupils to build increasingly complex mental models, by:

- 3f. Discussing curriculum design with experienced colleagues and balancing exposition, repetition, practice of critical skills and knowledge.

Develop fluency, by:

- 3i. Providing tasks that support pupils to learn key ideas securely (e.g. quizzing pupils so they develop fluency with times tables)
- 3j. Using **retrieval** and **spaced practice** to build automatic recall of key knowledge

Introduction

The learning outcomes from their self-directed study were to learn that:

- 2.5 **Long-term memory** can be considered as a store of knowledge that changes as pupils learn by integrating new ideas with existing **knowledge**.
- 2.7 Regular purposeful **practice** of what has previously been taught can help **consolidate** material and help pupils remember what they have learned
- 2.8 Requiring pupils to **retrieve** information from memory, and **spacing practice** so that pupils revisit ideas after a gap are also likely to strengthen recall
- 2.9 **Worked examples** that take pupils through each step of a new process are also likely to support pupils to learn
- 3.3 Ensuring pupils master **foundational concepts** and knowledge before moving on is likely to build pupils' confidence and help them succeed.

In this session you will help your mentee build on this previous activity, focusing in more detail on its practical implications. You will assist them in refining activities and approaches to be tried in the classroom, starting with their planned activity for promoting consolidation, and how to test its effectiveness (2h, 2j). Key goals include helping them to understand a) why retrieval and spaced practice help consolidate new information and facilitate recall (2k, 3j); b) why strategies that involve recall, review and the use of additional or interleaved information support the learning of new facts and concepts (2i); and c) how to use a balanced mixture of these techniques to build a foundation of knowledge in long-term memory that will boost pupils' confidence and help them succeed in future learning as direct support is reduced (3f, 3i).

Research and Practice Summary

Consolidation, coding, retrieval and spaced practice – Bob's science problem

Do you remember that two weeks ago you met Bob who was learning about cells in his biology lessons? After initially introducing cells and tackling problems linked to specialised cells, Bob's teacher waited a couple of weeks before returning to the topic and giving Bob's class a quick quiz on the topic.

Why did Bob's teacher do this? As you read this Research and Practice Summary, try to work out why.

Consolidation refers to the process of strengthening or stabilising new memories, transferring new learning from short- to long-term memory storage. When a memory is created (or 'encoded'), many aspects of that memory (including the context within which the learning occurred) are also stored. Teachers can draw upon this 'coding' to help their pupils consolidate new learning, as well as to recall learning stored in their long-term memory.



To help your pupils to consolidate their learning, you should:

- give concrete worked examples and elaboration (e.g. explaining the new learning to someone else, or showing models of 'what good looks like')
- give plenty of opportunity for them to retrieve knowledge that they might have begun to forget (e.g. by spacing your initial teaching and revision and doing recall activities such as low-stakes questioning)
- establish 'talk-partners' within your class, so that pupils establish the good habit of explaining things to one another

Encoding is defined as the initial learning of information; storage refers to maintaining information over time; retrieval is the ability to access information when you need it. **Retrieval practice** is any strategy that requires pupils to reconstruct knowledge by 'calling it to mind' from their long-term memory, so that it can be recalled, manipulated or used in the present. Retrieval practice is highly effective in helping pupils consolidate material that has been recently learned, and is more effective than simply re-reading material. The more easily pupils can retrieve information from their long-term memory, the less load is placed on their working memory. This in turn allows them to solve problems in front of them more easily, or to solve more challenging problems.



To help your pupils to improve their recall, you should:

- require them to retrieve information from memory. (This can take the form of frequent, low-stakes testing or quizzing; or you could ask them to demonstrate a previously taught skill so you can see what they have retained.)
- try revisiting material from 'last lesson, last week, last term': lengthening the spacing increases the challenge and can strengthen recall, i.e. spacing the practice

Spaced practice is a learning strategy whereby areas of the curriculum are broken up into short sessions, which are repeated over a longer period of time. This can be contrasted with 'blocking', whereby learning material is visited in large blocks which are not repeated. Spaced practice provides pupils with the time to form connections between the ideas and concepts, so that knowledge can be built upon and easily recalled later. By allowing a memory to be almost forgotten before it is next recalled, Ebbinghaus found the reactivation of the memory is more effortful, which strengthens neural pathways in the brain. When this process is repeated several times, the memory becomes stronger and much easier to remember.



To help with your pupils' progress using spacing, you should:

- discuss with a colleague how your curriculum is arranged and where the opportunities may be to introduce more spacing
- make sure you enable your pupils to master foundational concepts first
- combine with retrieval practice activities such as low-stakes testing to improve their recall

What did Bob's teacher do?

Sarah, who teaches Bob biology, carefully considered how she would teach Bob's class about the structure and function of cells. This is foundational knowledge that Bob and his peers need to have a secure understanding of to succeed in biology.

Sarah began with careful exposition and opportunities for pupils to initially learn about cells. During their next lesson, they took this further to consolidate their learning by tackling a series of questions. After this second lesson, Sarah checked to ensure that all pupils understood what she had taught them and was pleased that they had.

However, Sarah knew that this would not be enough to consolidate this key knowledge into their long-term memory. Therefore, she planned opportunities to revisit this content using retrieval practice after appropriate intervals (spacing). Sarah did this using some quick questions at the start of her lessons linked to what pupils had learnt in the previous week. By adopting this approach, Sarah will support her pupils to learn about this foundational topic.

Mentor Meeting Activities

Throughout the session, try to refer explicitly to the Learning Intentions, and encourage your mentee to record key points in their Learning Log. Tailor your use of the Theory to Practice activities below in response to the review and plan sections of this session.

Review and Plan 5 mins

- (1) Start this session by briefly following up the actions that the mentee set at the end of last week's session, which was to do some planning around consolidation, retrieval and spaced practice (inspired by Bob's science lesson). Ask your mentee to summarise:
 - a. what they did
 - b. the impact of this on pupil learning (including how they are evaluating this)
 - c. what they will do going forward to build on these actions
- (2) Clarify the Learning Intentions for this session with your mentee.

At the start of this module, you looked at all of the learn how to statements for Standards 2 and 3 and conducted a module audit with your mentee: in some areas they will already be confident and skilled; in others they will want more practice, and support from you and others. Look back at this audit now and use it to help decide how you and your mentee will make the most productive use of the suggested Theory to Practice activities below.

Theory to Practice 40 mins



1. Discuss with Mentor

Based on their reading of this week's Research and Practice Summary, discuss with your mentee their understanding of:

- how consolidation of memory takes place through repeated experiences of events such as related problem-solving exercises
- how this process is supported by regular review/retrieval, external coding, and spaced practice

They may also want to discuss with you other questions that arose from their reading.

To support this discussion, it might be helpful to remember that consolidation of memory is an important part of learning, whether the pupil is building their fact-based knowledge or they are honing their practical or artistic skills. The more they recall their memory, the more they can habituate the skill or call the concepts to mind with ease. This applies to a wide range of learning types, including: setting your body to catch a ball; multiplication rules; neat handwriting; common everyday phrases in a foreign language.



2. Collaborative planning and sharing of practice

Jointly work through your mentee's lesson plan from their last self-directed session incorporating consolidation strategies, and how this might be refined to provide a balanced mix of support over a sequence of lessons.

To support this collaboration, you might:

- a) Consider the specific range and sequence of strategies to support consolidation (review/ retrieval, worked examples, external cueing,

spaced practice) that they have mapped out for their lesson plan, and how these might fit together. Here are some useful prompts:

- Is the balance right, or are they trying to do too much or too little?
- If they intend to use spacing between targeted practice, have they thought about what they will teach in the intervals?
- Have they thought about how their strategies will affect pupils in their class with differing prior attainment? (They may be able to withdraw scaffolded support for some pupils more quickly than others.)

b) Map out a more extended sequence of strategies to be applied across a series of lessons. Here are some prompt questions that you can use:

- Should some strategies be used earlier and others later? E.g. repeating or changing the cues.
- If so, what should be introduced when, and why?
- When should scaffolds be reduced, and for whom?
- How might the mentee tell when their pupils are ready for this?
- What will your mentee teach in the intervals between any spaces they decide to introduce between practice?
- How would your mentee know that their pupils have secured their learning?

c) As part of the discussion, share and reflect on examples from your own or another teacher's planning and activity. Explain to your mentee the key decisions you made about sequencing teaching over a number of lessons, and the most important factors influencing these decisions. For example, if you are teaching practical or physical skills, you might talk about how you get your pupils to learn, remember and practise these skills over time. By modelling your reasoning process, you are helping your mentee to shape their own thought processes around planning.



3. Reflection

Ask your mentee to reflect on their learning in this session and how they will apply this to their practice going forward. Encourage them to consolidate this learning into a series of prompts or 'key learning points' which they can use to help improve their lesson planning and teaching as they continue to develop.

Next Steps 5 mins

Agree with your mentee how they will now put their learning from this week's session(s) into practice in their teaching. Help your mentee to clarify:

1. the action(s) they will take and how these action(s) are expected to contribute to improving their workload and wellbeing
2. what success will 'look like' in relation to these action(s)
3. how they will evaluate their success in taking these action(s)

Note the date of your next mentor meeting, when you will check on your mentee's progress.