## Overview: Block 2, Half Term 2

### Block title: How pupils learn - memory and cognition

### Time commitment:

- 4 hours self-directed study materials
- 7 x 1-hour mentor sessions
- 2 x training sessions

### Why this, why now?

Helping pupils to learn is the cornerstone of what teaching is all about. Despite best intentions learning does not always take place. Unfortunately, it is not as simple as: you teach it, they learn it. Learning is affected by a multitude of factors such as what prior knowledge pupils had, how many distractions there were in the classroom, and how much new content is being introduced at one time. There have been significant advances in cognitive science over the past 40 years which have led to an understanding of 'cognitive load' and how it influences learning.

Understanding cognitive load helps teachers know how pupils learn, and importantly, how they can design instruction which optimises the environment for learning to take place. There are some really important factors of memory and cognition which underpin learning and this Block will help you to understand these and their implications for teaching.

### Your workload

Your time as a teacher is a precious resource. By using evidence-informed approaches to manage cognitive load, you maximise the potential for learning in every lesson. Instead of having to re-teach something later in the year, you can focus on getting it right the first time.

| Learn That | Self-directed study materials | Mentor Sessions | Training outlines |
|---|---|---|---|
| 2.1 Learning involves a lasting change in pupils' capabilities or understanding. | x | x | x |
| 2.2 Prior knowledge plays an important role in how pupils learn; committing some key facts to their long-term memory is likely to help pupils learn more complex ideas. | x | x | x |
| 2.3 An important factor in learning is memory, which can be thought of as comprising two elements: working memory and long-term memory. | x | x | x |
| 2.4 Working memory is where information that is being actively processed is held, but its capacity is limited and can be overloaded. | x | x | x |
| 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. | x | x | x |
| 2.6 Where prior knowledge is weak, pupils are more likely to develop misconceptions, particularly if new ideas are introduced too quickly. | x | x | x |
| 2.9 Worked examples that take pupils through each step of a new process are also likely to support pupils to learn. | x | x | x |
| 3.7 In all subject areas, pupils learn new ideas by linking those ideas to existing knowledge, organising this knowledge into increasingly complex mental models (or "schemata"); carefully sequencing teaching to facilitate this process is important. | x | | |

| Learn How To | Self-directed study materials | Mentor Sessions | Training outlines |
|---|---|---|---|
| **Avoid overloading working memory, by:** | | | |
| 2a. Taking into account pupils' prior knowledge when planning how much new information to introduce. | x | x | x |
| 2b. Breaking complex material into smaller steps (e.g. using partially completed examples to focus pupils on the specific steps). | x | x | x |
| 2c. Reducing distractions that take attention away from what is being taught (e.g. keeping the complexity of a task to a minimum, so that attention is focused on the content). | x | x | x |
| **Build on pupils' prior knowledge, by:** | | | |
| 2d. Identifying possible misconceptions and planning how to prevent these forming. | x | x | x |
| 2e. Linking what pupils already know to what is being taught (e.g. explaining how new content builds on what is already known). | x | x | x |
| 2f. Sequencing lessons so that pupils secure foundational knowledge before encountering more complex content. | x | x | x |
| 2g. Encouraging pupils to share emerging understanding and points of confusion so that misconceptions can be addressed. | x | x | x |
| **Make good use of expositions, by:** | | | |
| 4g. Combining a verbal explanation with a relevant graphical representation of the same concept or process, where appropriate. | x | x | |