

Subject and Curriculum

The following 'Learn that' statements have been addressed through taught sessions, both in Whole School Issues and in Maths. The 'taught sessions' referred to below are maths specific sessions.

Learn that....

1. A school's curriculum enables it to set out its vision for the knowledge, skills and values that its pupils will learn, encompassing the national curriculum within a coherent wider vision for successful learning.
2. Secure subject knowledge helps teachers to motivate pupils and teach effectively.
3. Ensuring pupils master foundational concepts and knowledge before moving on is likely to build pupils' confidence and help them succeed.
4. Anticipating common misconceptions within particular subjects is also an important aspect of curricular knowledge; working closely with colleagues to develop an understanding of likely misconceptions is valuable.
5. Explicitly teaching pupils the knowledge and skills they need to succeed within particular subject areas is beneficial.
6. In order for pupils to think critically, they must have a secure understanding of knowledge within the subject area they are being asked to think critically about.
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.
8. Pupils are likely to struggle to transfer what has been learnt in one discipline to a new or unfamiliar context.
9. To access the curriculum, early literacy provides fundamental knowledge; reading comprises two elements: word reading and language comprehension; systematic synthetic phonics is the most effective approach for teaching pupils to decode.
10. Every teacher can improve pupils' literacy, including by explicitly teaching reading, writing and oral language skills specific to individual disciplines.

Corresponding Taught Sessions

Issues in: Algebra, Probability and Statistics, Geometry and Measure, Ratio, Proportion and Rates of Change, Number.

Curriculum and Subject Knowledge

Literacy and Oracy in Mathematics (Feb)

Learn How To....

Deliver a carefully sequenced and coherent curriculum, by:

- Receiving clear, consistent and effective mentoring in how to identify essential concepts, knowledge, skills and principles of the subject.
- Observing how expert colleagues ensure pupils' thinking is focused on key ideas within the subject and deconstructing this approach.
- Discussing and analysing with expert colleagues the rationale for curriculum choices, the process for arriving at current curriculum choices and how the school's curriculum materials inform lesson preparation.

And - following expert input - by taking opportunities to practise, receive feedback and improve at:

- Providing opportunity for all pupils to learn and master essential concepts, knowledge, skills and principles of the subject.
- Working with expert colleagues to accumulate and refine a collection of powerful analogies, illustrations, examples, explanations and demonstrations.
- Using resources and materials aligned with the school curriculum (e.g. textbooks or shared resources designed by expert colleagues that carefully sequence content).
- Being aware of common misconceptions and discussing with expert colleagues how to help pupils master important concepts.

Support pupils to build increasingly complex mental models, by:

- Discussing and analysing with expert colleagues how to revisit the big ideas of the subject over time and teach key concepts through a range of examples.
- Discussing and analysing with expert colleagues how they balance exposition, repetition, practice of critical skills and knowledge.

And - following expert input - by taking opportunities to practise, receive feedback and improve at:

- Drawing explicit links between new content and the core concepts and principles in the subject.

Develop fluency, by:

- Observing how expert colleagues use retrieval and spaced practice to build automatic recall of key knowledge and deconstructing this approach.

And - following expert input - by taking opportunities to practise, receive feedback and improve at:

- Providing tasks that support pupils to learn key ideas securely (e.g. quizzing pupils so they develop fluency with times tables).

Help pupils apply knowledge and skills to other contexts, by:

- Observing how expert colleagues interleave concrete and abstract examples, slowly withdrawing concrete examples and drawing attention to the underlying structure of problems and deconstructing this approach.

And - following expert input - by taking opportunities to practise, receive feedback and improve at:

- Ensuring pupils have relevant domain-specific knowledge, especially when being asked to think critically within a subject.

Develop pupils' literacy, by:

- Observing how expert colleagues demonstrate a clear understanding of systematic synthetic phonics, particularly if teaching early reading and spelling, and deconstructing this approach.
- Discussing and analysing with expert colleagues how to support younger pupils to become fluent readers and to write fluently and legibly.
- Receiving clear, consistent and effective mentoring in how to model reading comprehension by asking questions, making predictions, and summarising when reading.
- Receiving clear, consistent and effective mentoring in how to promote reading for pleasure (e.g. by using a range of whole class reading approaches and regularly reading high-quality texts to children).
- Discussing and analysing with expert colleagues how to teach different forms of writing by modelling planning, drafting and editing.

And - following expert input - by taking opportunities to practise, receive feedback and improve at:

- Teaching unfamiliar vocabulary explicitly and planning for pupils to be repeatedly exposed to high-utility and high-frequency vocabulary in what is taught.
- Modelling and requiring high-quality oral language, recognising that spoken language underpins the development of reading and writing (e.g. requiring pupils to respond to questions in full sentences, making use of relevant technical vocabulary).

Mentor Meeting Activity

Pre-reading:

DfE Non-statutory guidance for the national curriculum in

England <https://www.gov.uk/government/publications/teaching-mathematics-at-key-stage-3>

A video to summarise how to navigate this document is here

https://vimeo.com/649450168/c617c19f4c?utm_source=NCETM+Newsletters&utm_campaign=1b989fd52a-secondary-round-up-november-2021&utm_medium=email&utm_term=0_13f8d631f4-1b989fd52a-222799969

Trainees to familiarise themselves with the schools' scheme of learning and identify where their next topic fits into previously covered curriculum both in-year and in previous years.

For a topic trainees are about to teach, use the idea of coherence to create a medium term plan of how this topic could be broken down into a series of lesson objectives. Then collaboratively create key examples and non examples to make the lesson content clear to

pupils. Identify any particularly difficult concepts and determine key words and phrases to explain them.

Trainees to complete any end of topic assessments for the upcoming topic in order to identify expectations for that particular topic.

Discuss any departmental Calculation Policies or standardised methods that are used within the department to ensure continuity.

Follow up Activity

Use the plan created during the meeting to inform the completion of more formal lesson planning documents. Try to structure these around a sequence of learning objectives and ensure you plan plenary activities to assess how well these have been achieved.

Observe more experienced colleagues teaching the planned topic (or a topic identified as a precursor to that topic) with a class to see how they introduce and explain the topic (or to identify prior knowledge the pupils the trainee is teaching will have).

Talk to colleagues within the department about resources, models and explanations used to develop the topic in question.

Review a topic you're about to teach and highlight where you would expect student misconceptions. Create examples to expose these misconceptions and pre plan your explanations to address them.

Practice aloud how you will explain key concepts for topics you are about to teach. Carefully consider the use of key terminology and how you will explain this to students and create opportunities for students to use this mathematical language fluently.