

## TRAINING SESSION OUTLINES

### Block 10: Revisiting the importance of subject and curriculum knowledge

#### Overview

- The ECF statements covered by the training sessions in this Block are shown in the table.
- These sessions are complemented by and draw on the self-directed study materials and mentor sessions.

In these training sessions, ECTs will:

Learn that
3.3 Ensuring pupils master foundational concepts and knowledge before moving on is likely to build pupils' confidence and help them succeed
3.5 Explicitly teaching pupils the knowledge and skills they need to succeed within particular subject areas is beneficial
3.6 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
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

Learn how to
<b>Build on pupils' prior knowledge by:</b>
2e Linking what pupils already know to what is being taught (e.g. explaining how new content builds on what is already known)

2f Sequencing lessons so that pupils secure foundational knowledge before encountering more complex content
<b>Support pupils to build increasingly complex mental models, by:</b>
3h Drawing explicit links between new content and the core concepts and principles in the subject
<b>Help pupils apply knowledge and skills to other contexts, by:</b>
3k Ensuring pupils have relevant domain-specific knowledge, especially when being asked to think critically within a subject

## Session summary

The training sessions for this Block are:

Session	Content	Duration	ECF statements covered
10.1	Establishing secure knowledge	60 minutes	3.3, 3.5, 3.6 3h, 3k
10.2	Linking new ideas to existing knowledge	90 minutes	3.7, 2e, 2f

## Training Session 10.1: Establishing secure knowledge

The intended outcomes of this session are for Early Career Teachers to:

**Learn that:**

- 3.3 Ensuring pupils master foundational concepts and knowledge before moving on is likely to build pupils' confidence and help them succeed
- 3.5 Explicitly teaching pupils the knowledge and skills they need to succeed within particular subject areas is beneficial
- 3.6 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

**Learn how to:**

**Support pupils to build increasingly complex mental models, by:**

- 3h Drawing explicit links between new content and the core concepts and principles in the subject

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

- 3k Ensuring pupils have relevant domain-specific knowledge, especially when being asked to think critically within a subject

<b>Duration</b>	60 minutes
<b>Suggested pre-session activity for ECTs</b>	None
<b>To prepare for this session, trainers should:</b>	<ul style="list-style-type: none"> <li>● Read the self-directed study material for Block 10</li> <li>● Refresh/reread on the self-directed study material for Block 4</li> <li>● Read Deans for Impact (2015) The Science of Learning [Online] Accessible from: <a href="https://deansforimpact.org/resources/the-science-oflearning">https://deansforimpact.org/resources/the-science-oflearning</a> [retrieved 10 October 2018]</li> </ul>

Activities	ECF statements	Suggested materials
<p><b>Introduction to the session (10 minutes)</b></p> <p>Welcome participants and explain that they are going to focus on the following three ECF statements:</p> <ul style="list-style-type: none"> <li>● 3.3 Ensuring pupils master foundational concepts and knowledge before moving on is likely to build pupils' confidence and help them succeed.</li> <li>● 3.5 Explicitly teaching pupils the knowledge and skills they need to succeed within particular subject areas is beneficial.</li> <li>● 3.6 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.</li> </ul> <p>Think, Pair, Share activity:</p> <ul style="list-style-type: none"> <li>● Pose the question: <b>What is meant by 'foundational concepts and knowledge'?</b> <ul style="list-style-type: none"> <li>○ The key concepts within the subjects you teach</li> <li>○ The key knowledge within the subjects you teach</li> <li>○ All the things that a pupil will need to know to be successful in the subjects you teach – all learning will be based on these concepts/knowledge.</li> </ul> </li> <li>● Pose the question: Why is it important to define these in your subject?</li> </ul>		
<p><b>Ensure pupils master foundational concepts and knowledge before moving on (15 minutes)</b></p> <p>ECTs might feel as though the amount of content they need to cover makes it very challenging to sequence effective learning; it might feel as though taking time to secure learning in memory is a luxury that they cannot afford. It is worth making the point here that racing through content without embedding and rehearsing is not going to result in progress.</p> <p>Have ECTs read the short lesson observation report below. This could be done in a variety of way, e.g. trainer reads, groups read extract, read on own then discuss on tables etc. <b>There are two examples to choose from suitable for different key stages/phases/subjects.</b></p>	3.3	

An observer joins a secondary geography lesson on sustainable development. The pupils have been asked to compare approaches to sustainable development in a higher income country and a lower income country. The pupils have been given a text that includes case study examples of Kirklees and Bali which they are comparing. Pupils work so far shows that most are using the text provided to extract detail about each country. However, pupils are not relating the detailed extract from the text to the question provided. In the pupils' writing, it is not clear how the content they include relates to the idea of sustainable development, and pupils do not explicitly write about the different approaches to sustainable development.

Pupils put up their hands to ask how much they need to write. The teacher responds that they need at least two approaches for each country. One child asks if the teacher can check she has written the right things. This child has identified the problems such as traffic congestion, but not possible approaches. Pupils are using a range of vocabulary from the text, e.g. 'population density', 'flexible working', 'pesticides' and 'crop rotation'. However, when asked what these words mean, many pupils are unsure. Some are not sure if Kirklees is in the UK and they don't know where Bali is. When they are asked about what is meant by sustainable development, some pupils cannot say and others say something vague about 'it's to do with the environment'. When pupils are asked if they have learned about sustainable development in other countries or regions, pupils say they have not. Pupils' books show that they have covered topics such as population and arable farming, but they are not able to use this learning to recognise terms related to this new topic.

An observer joins a Year 2 primary lesson on the Great Fire of London. The pupils have been asked to plan how they will build a model of a typical house from the period based on accessing a range of written and video sources.

Pupils are animatedly discussing how they will build their models and what type of houses they will create. One pupil puts up their hand and asks if they can build it as big as they want so they could actually live in it? The teacher explains that a model should not be big enough to live in and they will also need to think about the actual size that houses were at this time. Another pupil asks if they can use green card when they make their model so they have a green house? The teacher responds asking the pupil to think about what material houses would have been made out of at this time to which the pupil is unsure so the teacher finds the paragraph in one of the texts which explains that houses were made of timber and thatch and directs the pupil to read it.

<p>The teacher notices that no pupils are looking at their sources anymore and so calls the class back together. The teacher asks the class what houses were made out of at the time. The pupil who has just read the paragraph calls out timber and thatch. The teacher asks the pupil to explain what this means but they are unable to and no other pupil is able to explain it.</p> <p>Questions:</p> <ol style="list-style-type: none"> <li>1. How has the teacher concerned considered:             <ol style="list-style-type: none"> <li>a. What matters most – what do pupils need to pay most attention to in the task?</li> <li>b. The extent to which pupils have mastered foundational concepts and knowledge needed to access this task?</li> <li>c. The sequence of activities that most enables learning?</li> <li>d. Issues of cognitive load in this lesson?</li> </ol> </li> <li>2. How might it feel to be a pupil in this lesson?</li> <li>3. What advice might you give to this teacher?</li> </ol>		
<p><b>To think critically, pupils need to have a secure understanding of the knowledge within the subject (15 minutes)</b></p> <p>Ask ECTs to consider the example they have just been looking at.</p> <p>Pose the question: <b>Were the pupils able to think critically in this lesson about sustainable development? Why/Why not?</b></p> <p>In groups, ECTs should discuss examples from their own subject or subject areas where pupils need to have secure understanding of the knowledge within the subject before being asked to think critically. The table below provides a range of scenarios that could be used.</p> <p>Teachers need to work out:</p> <ul style="list-style-type: none"> <li>● What are pupils being asked to think critically about?</li> </ul>	3.6	

- What is the foundational knowledge that needs to be taught in order for the pupils to succeed?
- How might that learning be sequenced over a series of lessons?

Scenario	Year group and subject/topic	Objective
1	6: Mathematics	To be able to add mixed numbers without a calculator, including fractions, e.g. $5\frac{3}{5} + 6\frac{3}{8}$
2	11: English	To analyse how Shakespeare presents the theme of loyalty in this extract from Macbeth?
3	1: Science	To predict which objects will float
4	5: History	Describe a day in the life of a 'chimney boy' in Victorian England
5	9: Science	Design an experiment to determine the value of acceleration due to gravity
6	7: MFL	Hold a conversation in the target language with a partner about what activities they enjoy outside of school
7	EYFS: Measuring comparisons	Categorise items into groups, e.g. longer/shorter, thinner/fatter, heavier/ lighter
8	8: PE (Dance)	Create a warm-up routine for a partner

Gather feedback from ECTs. Ask:

- How did you identify what pupils were being asked to think critically about?
- How did this help you work out what foundational knowledge needed to be taught in order for the pupils to succeed?

<ul style="list-style-type: none"> <li>• Why is this process useful when planning? What does it show us?</li> <li>• What are the dangers of missing out these steps?</li> <li>• How does following this process help you sequence learning?</li> </ul>		
<p><b>Explicit teaching of knowledge and skills helps pupils to succeed (15 minutes)</b></p> <p>In Block 4, ECTs covered the importance of explicit teaching, recap briefly:</p> <p>Where there is a fundamental idea or concept which you have identified for pupils to master, you should not leave it to chance that pupils will learn it. When a teacher is explicit, and clearly directs pupils to the knowledge and skills needed in a particular subject area, they help to structure the acquisition of new learning.</p> <p>Pose the question: <b>What might explicit teaching include?</b></p> <p>Use a Think, Pair, Share activity to elicit the ECTs' responses.</p> <ul style="list-style-type: none"> <li>• Explicitly teaching key vocabulary pupils will need for the topic.</li> <li>• Modelling answers or processes on the board.</li> <li>• Carefully pacing explanations with appropriate use of questioning and practice time.</li> <li>• Using a variety of examples and non-examples.</li> <li>• NOT expecting pupils to work out concepts for themselves, e.g. through discussion with their peers or inductive reasoning.</li> </ul> <p>Pose the question: <b>What are the characteristics of explicit teaching?</b></p> <p>Ask ECTs to discuss this in groups and to and compile a list. Go through the lists together and pick out anything that they missed. Their lists should include:</p> <ul style="list-style-type: none"> <li>• Slow introduction of new concepts</li> <li>• Utilisation of definitions as explanations without definitions can be too vague</li> <li>• Concepts introduced carefully through sequenced examples and non-examples:             <ul style="list-style-type: none"> <li>○ Just using one example can be too vague – multiple examples reinforce understanding by showing the</li> </ul> </li> </ul>		

<p>common features between them</p> <ul style="list-style-type: none"> <li>○ Using examples and non-examples helps to understand boundary conditions (the rules, what's included, what's not)</li> <li>○ Make abstract/conceptual understanding more concrete</li> <li>● Regular purposeful pupil practice</li> <li>● Regular review of past material</li> <li>● Takes into account the limitations of working memory</li> <li>● Uses economy of language</li> <li>● Incorporates misconceptions.</li> </ul>		
<p><b>Planning for action (5 minutes)</b></p> <p>Ask ECTs: <b>Following this session, what will you do differently in your practice? What will you put into action in your lessons?</b></p> <p>This could be facilitated in a variety of ways, e.g. a Think, Pair, Share activity, post-its or if meeting virtually using the chat function.</p>		

Pose the question: **How could explicit teaching have supported pupils' learning in the lesson we just discussed?**

- They would have mastered foundational knowledge before being asked to do more complex things.
- Ensuring pupils knew where Bali was for example, by providing a labelled map and some explicit teaching around this would have reduced the cognitive load on the pupils, freeing up space in their working memory to process more complex tasks.

Explain that to be purposeful about what they are saying, ECTs may find it useful to script their exposition. Although they will not be learning these by rote, it can be a really useful exercise that will help them to clarify their ideas.

## Training Session 10.2: Linking new ideas to existing knowledge

The intended outcomes of this session are for Early Career Teachers to:

**Learn that:**

- 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

**Learn how to:**

**Build on pupils' prior knowledge, by:**

- 2e Linking what pupils already know to what is being taught (e.g. explaining how new content builds on what is already known)
- 2f Sequencing lessons so that pupils secure foundational knowledge before encountering more complex content

<b>Duration</b>	90 minutes
<b>Suggested pre-session activity for ECTs</b>	<ul style="list-style-type: none"> <li>● Read the self-directed study material from Block 10</li> <li>● Consider rereading/refreshing on content from Block 4</li> </ul>
<b>To prepare for this session, trainers should:</b>	<ul style="list-style-type: none"> <li>● Read the self-directed study material for Block 10</li> <li>● Refresh/reread on the self-directed study material for Block 4</li> <li>● Read Rosenshine, B. (2012) Principles of Instruction: Research-based strategies that all teachers should know. American Educator, 12–20. Accessible from: <a href="https://www.aft.org/sites/default/files/periodicals/Rosenshine.pdf">https://www.aft.org/sites/default/files/periodicals/Rosenshine.pdf</a>.</li> </ul>

Activities	ECF statements	Suggested materials
<p><b>Introduction to the session (15 minutes)</b></p> <p>Welcome ECTs to the session. Remind ECTs that they have covered this topic in Block 2 and Block 4. Explain that it is being looked again in Block 10 because it is a complicated concept and therefore revisiting the idea is valuable to support their own learning.</p> <p>Show the following picture:</p>  <p>Ask ECTs to write down anything that comes to mind when they look at it (1 minute).</p> <p>Ask: <b>What did you think about versus what an expert would think about?</b></p>		<p>ECTs to bring a lesson plan for a lesson they are going to teach</p>

Now show the next picture:

Probably a red filter over the lens – makes the sky look darker than you would expect

This is Ansel Adams without a doubt

Small aperture as detail the whole way through, but fast shutter (no blur on clouds)

Because of that, it's almost definitely Yosemite National Park

Probably taken with a Hasselblad

Definitely medium format, you can tell by the amount of detail

Rule of horizontal thirds

Black and white gives beautiful contrast

Dynamic range is fantastic – how did he do it without digital blending?

Lead lines give the image depth

Rule of vertical thirds

Small waterfall at the intersection draws the eye and lends further interest

This is what an expert photographer might have said about this image:

Novice = surface details (descriptive, emotive)

Expert = Depth of image (technical details, composition).

Whenever you encounter a scenario which requires thought, you draw on your experience and knowledge in order to think about it. You draw upon knowledge/experiences from your long-term memory which helps you think about and process scenarios/information in your working memory.

### Recap of prior learning – what is schema theory? (10 minutes)

This could be delivered in a variety of ways, e.g. Think, Pair, Share or facilitator presents the information:

- Information is organised into schema within our long-term memory.
- Your mind is constantly bringing schema into your working memory to supplement your thinking.
- An expert has a more complex schema and so can assimilate the photo (refer back to first activity) with more information from their long-term memory.
- For novice learners:
  - Schemas are limited
  - There are few links between ideas
  - Working memory is used to process information
  - Cognitive overload is likely
  - **Learning is hard!** As a result, learners benefit from **explicit instruction, support and guidance.**

Sequencing effectively to support the process of transferring knowledge to the long-term memory  
(20 minutes)

'Our goal as teachers is to help pupils know what we know and be able to do what we do.' Ask ECTs: **How can we sequence learning to support pupils to transfer knowledge from their working memory to long-term memory?**



Pupils can't do  
all the things  
that we can do

Pupils can  
independently do the  
things we can do



- Initially there is a high degree of support as part of your instruction
- Then you reduce the support but still give them lots of guidance
- After a while, they can work with light guidance
- And eventually with minimal guidance – probably working independently with you giving feedback and intervening where required
- And finally, we want them to get to the stage where they can do it independently – without us.

Look at the following examples:

- What steps did the teacher take to get pupils working independently?
- What steps were missing?
- What advice would you give them?

#### **Year 1**

I was teaching my pupils to form the letter M. I explained that I needed all pupils to listen carefully because they were going to have a go at writing M's as soon as I had finished explaining. I talked through how they did M's in reception. I explained how we were going to write M's and showed them examples on a handout I had created for them. Quite a few pupils really struggled.

#### **Science**

I was teaching my pupils about how the heart works. I showed them a diagram on the board and explained how it worked in detail. I then asked them to have a go at drawing a diagram themselves and none of them could do it!

#### **History**

In my lesson yesterday I looked at World War One. To start, I put a list of key words on the board and asked pupils to mind map what these words meant to them. I then asked them what they thought the lesson would be about. I explained the key facts and we looked at pictures to support understanding. I then explained that I wanted them to answer a question based on their learning; a few pupils were able to complete this but the answers I got were not great.

<p><b>Putting it into practice (20 minutes)</b></p> <p>Ask ECTs to look at a lesson plan they will be teaching in an upcoming lesson. Ask them to analyse their lesson using the following questions. They should make annotations on their lesson plan:</p> <ul style="list-style-type: none"> <li>● How long will you spend instructing from the front?</li> <li>● Can you script out your exposition to ensure economy of language?</li> <li>● Is there an opportunity to model examples for the pupils?</li> <li>● How will this help them achieve the learning objective?</li> <li>● Is there opportunity for paired/group work?</li> <li>● Can you see the steps to independence in your plan?</li> <li>● Have you focused enough time on each stage?</li> <li>● Is there opportunity for pupils to work independently?</li> <li>● Will this help them consolidate what they have learned?</li> <li>● Does it allow them to think about the content you are trying to teach them?</li> </ul>		
<p><b>Peer feedback (15 minutes)</b></p> <p>ECTs should talk their lesson plan through with a partner who should work through the questions to support:</p> <ul style="list-style-type: none"> <li>● How long will you spend instructing from the front?</li> <li>● Can you script out your exposition to ensure economy of language?</li> <li>● Is there an opportunity to model examples for the pupils?</li> <li>● How will this help them achieve the learning objective?</li> <li>● Is there opportunity for paired/group work?</li> <li>● Can you see the steps to independence in your plan?</li> <li>● Have you focused enough time on each stage?</li> <li>● Is there opportunity for pupils to work independently?</li> <li>● Will this help them consolidate what they have learned?</li> <li>● Does it allow them to think about the content you are trying to teach them?</li> </ul>		

Planning for action (10 minutes)

Ask ECTs: **Following this session, what will you do differently in your practice? What will you put into action in your lessons?**

This could be facilitated in a variety of ways, e.g. a Think, Pair, Share activity, post-its or if meeting virtually using the chat function.