Module 2, week 5

ECT Mentor session

Module 2: Engaging pupils in learning
Week 5: Curriculum and subject knowledge

Session Elements

analyse artefacts

collaborative learning

Learning Intentions for this session

Your ECT will learn how to:

Deliver a carefully sequenced and coherent curriculum, by:

3d. Using resources and materials aligned with the school curriculum (e.g. textbooks or shared resources designed by experienced colleagues that carefully sequence content).

Support pupils to build increasingly complex mental models, by:

3g. Revisiting the big ideas of the subject over time and teaching key concepts through a range of examples**.**

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:

3l. Interleaving concrete and abstract examples, slowly withdrawing concrete examples and drawing attention to the underlying structure of problems

Introduction

In their self-directed study session earlier this week, your mentee considered their own values around what education is for and used this to plan a sequence of learning, in which they considered prior knowledge and the core knowledge and skills within a specific topic. They then extended this by considering how students might be encouraged to think critically, and transfer their learning to new contexts.

In this session you will help your mentee to develop their topic and more broadly consider the way that school curricula are structured. This will involve taking the outline developed and considering how key concepts build up, how concrete examples support abstraction of key principles, and how a curriculum is resourced within your setting.

Research and Practice Summary

Critical thinking, transfer and schemata in a values-led Year 6 PE lesson

Rachel passionately believes that PE is a great way to inculcate important life-skills and values in her pupils. She must also keep to the National Curriculum. As you read this summary, think about how Rachel can use an invasion game lesson to teach her pupils important values that they can think critically about and apply elsewhere.

A school's **curriculum** sets out its vision for the knowledge, values and skills that it wishes its pupils to learn. Since the 1988 Education Reform Act, there has been a National Curriculum in England and Wales which specifies the core of what should be covered within the state education sector. At GCSE and A level, the National Curriculum also forms the basis for the specifications written by examination boards. Contemporary curriculum guidance makes clear that schools are expected to go beyond the core curriculum. In particular, schools have a responsibility to identify the specific knowledge, skills and values that will benefit their pupils. At all stages of education, therefore, teachers and school leaders determine the details of what is taught, and how this content is sequenced. In order to teach a carefully sequenced and coherent curriculum, teachers need a sound knowledge of the essential concepts, skills and principles of the subject. It is therefore essential that teachers

develop and maintain a high level of subject knowledge through initial and continuing professional development.

Subject knowledge encompasses what a teacher knows about the nature of a subject; the appropriate pedagogies to teach that subject; and an expert awareness of how that subject appears in the curriculum (i.e. what needs to be taught.) A teacher will continue, therefore, to expand their subject knowledge throughout their career. It is essential to effective teaching, for motivating and inspiring pupils, and for helping them to succeed academically.

You should aim to improve your subject knowledge by:

- engaging in high-quality subject-specific professional development (e.g. by doing development work such as planning and moderation with colleagues in school and in wider networks)
- participating in wider networks of fellow professionals, such as the Chartered College of Teaching
- building a repertoire of resources, illustrations and explanations by working with experienced colleagues. These colleagues may be in your school or members of networks (including online networks) which generate, share and critique such resources.

One of the most important aspects of teaching is the ability to establish an accurate understanding of the pupils' **prior knowledge** within a given subject or domain. In this way, the teacher can start with where their pupils are and help them from there, rather than working backwards from a long-term learning goal. It is also understood that increased prior knowledge reduces working memory load.

To help you address the prior knowledge needs of your pupils, you should:

- take account of it when planning how much new information to introduce (e.g. by conducting quick tests that give you instant feedback)

- identify likely misconceptions and plan to prevent them from occurring (e.g. by pre-teaching concepts, or by using classroom display to reinforce foundational ideas that are prone to misconception)
- give them regular purposeful practice (by setting aside time in each lesson) so they can consolidate learning in their long-term memory

How might Rachel take account of her pupils' prior knowledge?

A mental model or **schema** (plural **schemata**) is a pattern or network of thoughts, beliefs, and knowledge that organise categories of information and the relationships between them. Schema can be simple (e.g. cars are a kind of vehicle) or complex (e.g. to drive a car, you need to start the ignition, apply the clutch, put it in gear, check the mirrors, and so on).

By encouraging pupils to think about how concepts relate to one another, teachers can help them build increasingly complex and robust schemata. Metaphorically, schemata can be thought of as a system of hooks or shelves onto which pupils can hang, place or incorporate new knowledge, skills, beliefs and understandings.

To help your pupils develop their schemata and build increasingly complex mental models you can:

- revisit the big ideas of the subject over time and teach key concepts through a range of examples
- draw explicit links between new content and the core concepts and principles in the subject (e.g. by asking pupils to arrange ideas into categories - 'Put together all the words that are about weather.' 'Arrange the images by the places you would expect to find them.')
- carefully sequence teaching to facilitate the process of organising knowledge into increasingly complex mental models (e.g. in primary maths, you might organise a sequence of lessons where you introduce progressively less familiar quadrilaterals, always pointing out their common features)

- when you want to get your pupils to think about how they learn (metacognition), adopt a simple approach and repeat it often (e.g. use an acronym to help your pupils recall the steps)

Critical thinking describes the ability to obtain and analyse information about a given topic in an organised and rational manner, in order to understand the connections between concepts, facts and ideas, and to arrive at judgments or conclusions.

In order for critical thinking to take place, pupils must first have a secure knowledge of the concepts they are being asked to think about. It is difficult to think critically about a topic you know little about. However, there are also general aspects to critical thinking – aspects that are highly transferrable across subjects. These include constructing and deconstructing arguments, questioning, applying logic and reasoning, identifying and recognising logical fallacies, analysis, interpretation, inference, explanation, self-regulation, open-mindedness and problem-solving.

To help your pupils to think critically, you should:

- ensure they have a secure understanding of the subject area knowledge you want them to think critically about
- invite them to think critically by sharing their reasoning and challenging the reasoning of others (e.g. by asking 'What is your main reason for agreeing with Bilal?' 'Why might Leon have arrived at a different judgement?')

Why might Rachel want her pupils to do some critical thinking in her lesson?

The question of **transfer** is also an important one in education: to what extent are knowledge and skills transferable from one subject to another? To what extent can pupils transfer their learning in one context (e.g., drawing graphs in maths) to another (e.g., drawing graphs in science)? To what extent are pupils able to apply

the knowledge and skills they learn in school to their lives beyond the school gates? Research suggests that to a significant degree, knowledge and skills are context-dependent – that is, they tend to remain rooted in the contexts in which they were learned. This does not mean that transfer is not possible, but it does not tend to occur automatically, or naturally. It is therefore important that teachers support pupils in transferring knowledge and skills from one domain to another, and provide them with opportunities to practise transfer themselves.

To help you to support pupils to transfer their knowledge, you should:

- frequently ask the question 'Where else do you use these ideas?' (e.g. while teaching graphs in maths, you might ask them how they would apply the same knowledge to geography or science.)
- model the connections yourself (e.g. by saying how you use the knowledge or ideas in your own life)
- draw comparisons between the subjects your pupils learn, whether you teach them across subjects, or the teaching is shared by colleagues (e.g. a history teacher would refer to the war poetry their class had studied in English)

Transfer: Helen, a teacher in a Pupil Referral Unit, explains her thinking

Many of the PRU pupils initially struggle to see the point in learning. In order to get them to see their PRU experience as a whole, we look for cross-curricular links and I aim to include transferrable skills where possible in my lessons. So, when I am teaching about climates, I will get pupils to draw climate graphs. Before doing this, we will look at different types of graphs and I will ask pupils what they are and how they could be used. I will also ask them when they last drew one, in order to get them to see that they are transferring skills from other subjects and that skills learned in lessons should not be seen as stand-alone. I know this works when pupils moan that they have already done this in maths or science or they complete the graph element independently with

little help.

How might this apply equally to Rachel?

What did Rachel do?

Here is a recreation of Rachel's lesson plan, with a commentary about why it worked well.

Aim: To teach the 3Cs (co-operation, communication, collaboration) through an uneven-sided invasion game.

Initial instruction: 'Co-operation, communication and collaboration are really important in life and in sport. Working in a team, make a plan to help you achieve success in a game of 'Pass/Head/Kick'. In your team discuss and make a list of what helps you to achieve success in a team game.'

Explanation of rules: Teams are 4 attackers 'v' 2 defenders. Attack: teams of 4 have to move the ball from one end of the court to the other. They can either throw, head or kick the ball in any combination but they must throw, kick and head at least once before you can score. They cannot use two of the same techniques one after the other. Defence: teams of 2 have to try to intercept the ball to prevent the attackers from getting the ball to the opposite end of the court.

Warm-up: Practise throwing, catching and heading the ball between pairs.

Play the game: Rachel monitors the play and keeps record of how her pupils show the 3Cs.

Plenary: Rachel stops the lesson for the 'EAR' part of the lesson. Rachel often uses EAR so the pupils have a framework for their thinking.

EVALUATE: How successful has your strategy been?

What could you change to improve your chances of success?

ACT: Now go back into the games trying out your new approach/strategy.

REFLECT: Now thinking about how effectively you worked as a team:

What did your team do to help them achieve success?

How well did you practise the 3Cs?

What could your team have done better?

What do you think are the important ingredients to make a team successful?

What have you learned about the 3Cs that would help you be more successful in other lessons or other situations?

This lesson is consistent with core knowledge requirements of the National Curriculum, where pupils are required to communicate, collaborate and compete with each other, and evaluate and recognise their own success. They develop physical competence in throwing, catching, kicking, controlling and heading the ball. Rachel believes in the 3Cs attribute and in the values of fairness and respect which are built in team games like this. The warm-up enabled Rachel to check the prior learning of her pupils in these physical skills. She could give feedback on their 3Cs as she monitored them at play.

This lesson enabled pupils to develop a range of core knowledge and skills relating to their physical, cognitive, social and affective development. These are all skills that are important and have application across the wider curriculum and life beyond school. Her questioning in EAR drew attention to that transfer. As the EAR phase unfolded it also allowed the pupils to think critically about successful team strategies. By using EAR Rachel helps her pupils to develop increasingly complex schemata for adding new ideas to existing knowledge.

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 below. Tailor your use of the Theory to Practice activities below in response to the review and plan sections of this session.

Review 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 plan a lesson which retained core knowledge but also introduced values important to your mentee. 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

Plan 5 mins

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 35 mins

Your mentee had the exemplification of Rachel's Year 6 PE lesson (above) to help model their own topic plan.

1. Analyse artefacts

Discuss with your mentee the topic planning that they devised in their self-directed study this week.

To support your discussion of their plan, ask your mentee to articulate their thinking on the questions below. (And help them to extend and refine their thinking with the prompts that follow.)

a. What are the key knowledge and skills within this topic? (And how could you communicate these to your pupils?)
b. What educational values are supported within this topic? (And why are these important to you?)
c. How does the topic draw on understanding of prior knowledge to sequence the content within the lessons (and any home learning), including key points of assessment? (Is their prior knowledge secure? Are they making common errors still?)
d. How are critical skills and transfer considered within the planning? (And can you use a rule-of-thumb like EAR to help develop schema?)

2. Collaborative planning

Support your mentee in developing their topic understanding and planning a bit further. At this stage it is best if you draw on existing school resources (e.g. textbooks, and shared resources developed by experienced colleagues) to do this.

To support your collaborative planning, you could follow these stages:

a) Begin to flesh out the overview by considering what activities the pupils might do in order to further demonstrate and deepen their knowledge of the concepts and skills being developed.
b) If your mentee focused on a single lesson, then consider what would come before this, and what might be next in this topic within your phase. If you are focusing on a sequence of lessons, then consider in detail how the key knowledge and skills in the topic build up over a series of lessons. (You might do this by picking out just one aspect of knowledge/skill and developing a flow diagram or by annotating a curriculum overview to show how this knowledge/skill develops over

time).

c) Now work together to add in and evaluate the examples and activities through which the knowledge/skill develops. This will help you and your mentee to consider the range of examples used and how prior knowledge is built on over time. (If you are using a textbook to help you here, you might see how you and your mentee could improve upon the set activities to make them more appropriate for the pupils they teach.)

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.

Finally, remind your mentee that they do not have another Self-directed Study session in this module.