WHAT CAN WE LEARN FROM KEY PEDAGOGIES IN INITIAL TEACHER EDUCATION AND HOW COULD THIS HELP TO CLOSE THE ATTAINMENT GAP BY FOCUSING ON THE IMPORTANCE OF FOUNDATIONAL KNOWLEDGE?

ANDREW PORTER SUBJECT AREA LEADER INITIAL TEACHER EDUCATION, SELL

LEARNING OBJECTIVES

- To outline the key theories underpinning Direct Instruction
- To understand some of the key theories taught to trainee teachers at Primary and Secondary level
- To consider whether these approaches are helpful in closing university attainment gaps

WHAT RESEARCH CONSISTENTLY SHOWS

- **Across disciplines / ages / large range of meta-analysis**
- Learning depends on prior knowledge
- Working memory is limited
- Understanding develops over time – the more you know, the more you can know
- Engagement is not the same as learning

Rosenshine (2012), Willingham (2021), Sweller (1988), Bjork (2011), Coe (2013), Biggs (2011).

- Complex cognitive skills such as critical thinking are not a collection of skills that can be employed at any given time or in any given context. They should be seen as a form of thought that requires knowledge with which to engage. Problem solving in geography requires students to learn specific geographical content knowledge. No matter how much we train students to solve maths problems or teach them Latin, it does not make them better 'problem solvers' or logical thinkers in other domains (De Bruyckere et al. 2020; Thorndike, 1923). Cross-discipline learning is not what many in education once hoped it would be.

- ‘One of the difficulties with determining what is effective in a classroom is that very often, what looks like it should work does not and vice versa. Take, for example, the notion of engagement. On the surface this would seem like a necessary condition for learning. However, there is some evidence that it may not be a sufficient one". (Deans for Impact, 2015).

WHY TEACHER-LED LEARNING MATTERS

If they (key facts of learning) are not explained to us and we are left to discover them for ourselves, many people will simply *never discover them*, or will have a *very imperfect understandings* of them.

"**Direct teacher instruction** was the third most powerful teacher factor." (p39) based on research by John Hattie. First was *feedback* and second was *instructional quality.*

"A highly formalised, explicit and teacher-led method of instruction is highly successful". (p40)

Students need knowledge to be able to engage with meaning and work out what is and is not relevant and correct.

EXPERT INDUCED BLINDNESS

Even when they try to compensate for it, experts wildly overestimate the average person's familiarity with their field.

In 1990, a researcher analysed the 'guess the tune I'm tapping' game. Tappers predicted that listeners would guess the song correctly 50% of the time, but in reality, listeners only got it right 2.5% of the time.

This wild mismatch is an example of a cognitive bias called ‘expert-Induced Blindness’. Once we know something it becomes incredibly difficult to imagine not knowing it ….. Or more importantly: it becomes hard to imagine others not knowing it.

The larger the gap in knowledge, the more this bias rears its head. As teachers, we can find ourselves systematically overestimating what our students know, and as a result not being explicit enough in our explanations; not explaining the ‘why’ as much as we should’.

Novice	Expert
Possesses little relevant background knowledge and skills (simple, messy and superficial cognitive schemas)	Has a lot of relevant background knowledge (complex, well-organised and deep cognitive schemas).
working memory restriction	Long-term memory support
Distracted by superficial details	Focused on the underlying (deeper) structures and/or patterns.
Learns best through explicit instruction and worked examples	Learns best through discovery and/or an investigative approach
Has difficulty in transferring certain principles to new contexts (transfer)	Can transfer principles to related domains

THE IMPORTANCE OF KNOWLEDGE

- We all have a common aim. We want students to think deeply about what we teach them and go beyond their current experiences. We want them to think critically, work together, solve problems, read for understanding and carry out complex cognitive tasks.

IMPORTANCE OF KNOWLEDGE

What you know determines what you see (Kirschner, 1991).

The more extensive one's knowledge-base in terms of both its breadth and its depth the more easily new knowledge is acquired and remembered (Alexander et al, 1994, Shapiro, 2004).

Secondary knowledge must be consciously taught and effortfully learned, building upon, yet distinct from, biologically primary knowledge.

What you already know does not require much mental effort, so experts with vast amounts of domain-specific knowledge can tackle new problems in their domain of expertise more efficiently than novices do (Willingham, 2021).

Knowledge can be organised into various hierarchies, forming complex schemas of interconnected ideas, and serve as conceptual coat hangers or anchors for the organisation of knowledge and learning new ideas (Hattie, 2023).

PRIOR KNOWLEDGE

Prior knowledge must be activated.

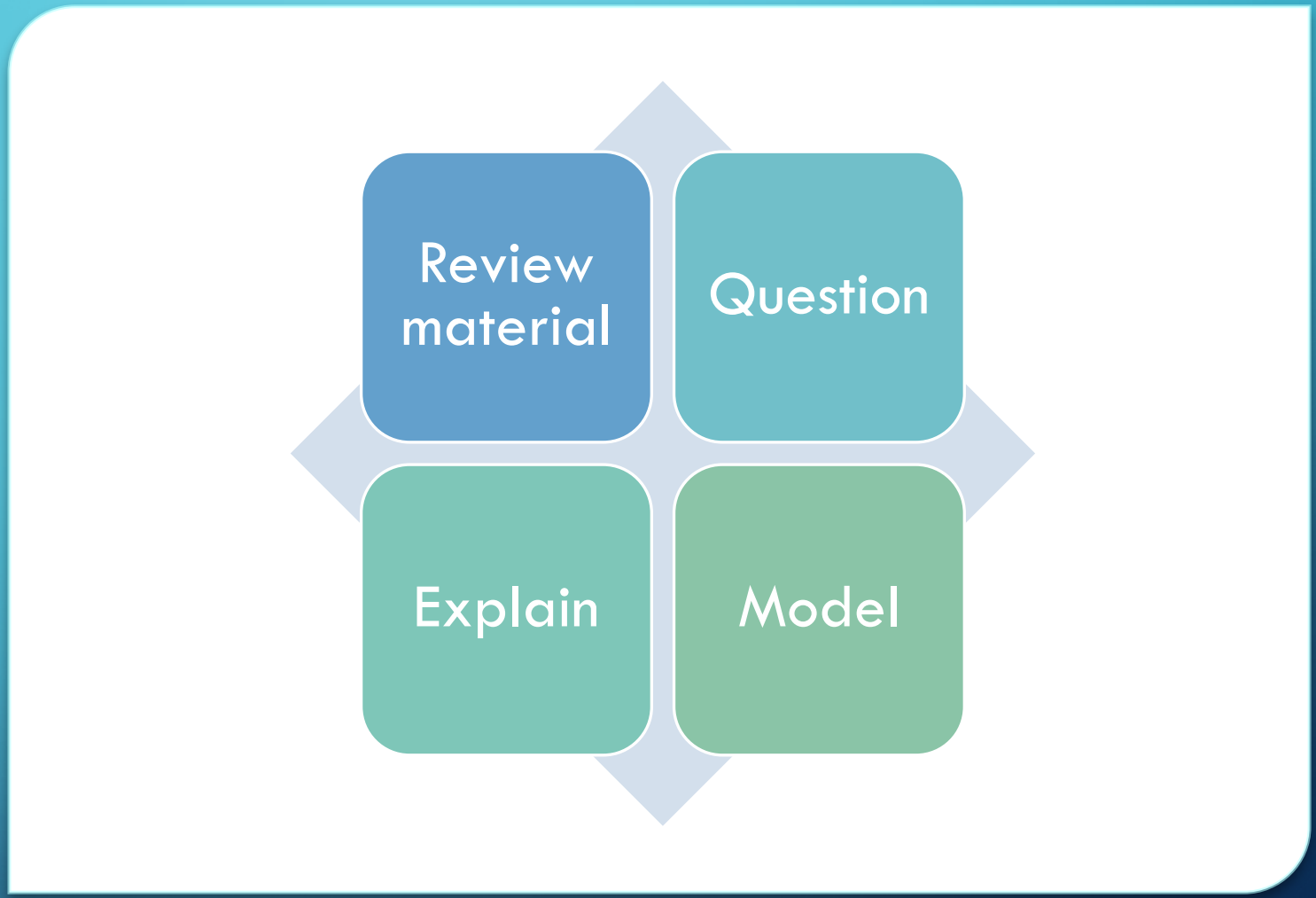
Relevant to the task

- A group of scholars, self-identifying as social realists, have expressed discontent with current trends in education, asserting that we are downgrading knowledge in education (Barrett, 2024).
- They argue this affects students from the most disadvantaged backgrounds (Wheelhan, 2010).

- If a schema contains incorrect information – a misconception or an incomplete model of how a process works – we can't simply overwrite it. A more primitive schema can return to dominate unless we unpick and fully re-learn a correct schema.
- We forget information that we do not initially store successfully in a meaningful schema or that we do not retrieve frequently enough. Our capacity to retrieve information improves if we practise doing this more often and do so in more depth.
- (Sherrington, 2019)

https://www.aft.org/sites/default/files/periodicals/Rosenshine.pdf

IN SIMPLIFIED FORM



KEY TAKEAWAYS

Are we consistently checking prior knowledge and explicitly teaching the new knowledge our students need?

Are we able to place our sessions into a clear and coherent sequence of learning where concepts and ideas are revisited?

Are we planning for the misconceptions and gaps in knowledge that some of our students might have?

Do our students know how to use this new knowledge to achieve well in their assessments? What does success look like?

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