

Does it work for more able learners too?

5. Instructional models

Introduction

Schools are increasingly looking to the research evidence to understand how they can improve the learning and achievement of their students. Educational researchers such as John Hattie, Daniel Willingham, Barak Rosenshine and John Sweller have begun to influence the practice of many schools, while many are also undertaking their own school-based enquiries and research. Organisations such as the Chartered College, EEF and Ofsted are endorsing and disseminating evidence-based practices, with the result that it is not unusual to see in schools the use of Rosenshine's Principles to inform lesson planning, or cognitive load and recall theory informing curriculum planning and classroom pedagogy.

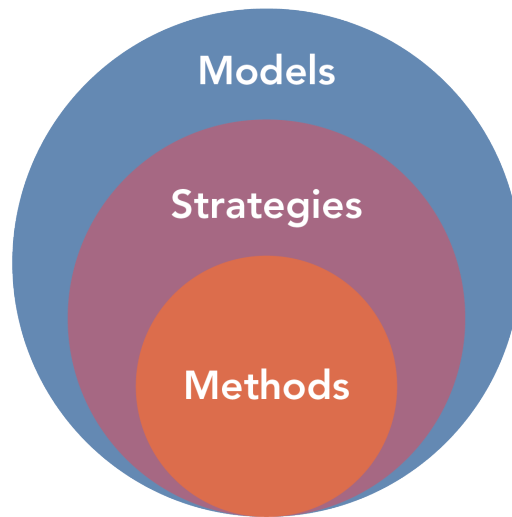
We know these practices are having a positive effect on many learners. However, it is important that we also interrogate these pervasive approaches – and their theoretical underpinnings – to evaluate what impact they have on different groups of learners, including the most able. In this series of information sheets, NACE sets out to do just that. This is part of our ongoing review of evidence-based approaches to teaching and learning, alongside a specific focus on research and developments directly affecting more able learners.

Thus far, the series has included information sheets exploring recall and retrieval practice; cognitive load theory; metacognition; and feedback for more able learners. Here, we bring these strands together through the lens of instructional models, which can be used to support the design and delivery of teaching and learning based on the principles outlined in the preceding information sheets, providing a shared framework for teachers, learners and school leaders.

It is important to note that there are many instructional models in circulation, and that there is no single right or wrong model. Each school context will be different, and school leaders and practitioners will need to select the most appropriate models and approaches for their learners. In this information sheet we have chosen to explore three models which share common principles that are underpinned by educational research and framed in a helpful way to support the gradual and intentional transfer of cognitive work from the teacher to the learner, within cognitively challenging classrooms.

The context: what are instructional models?

The diagram below shows elements of an instructional framework. This provides a cohesive structure made up of proven components which can be adapted to work with different teaching styles, content areas, and student needs. An individual teacher may have an instructional framework for her own teaching, but the most effective instructional frameworks are designed for the whole school to encompass all learning and practice. This means that the quality of provision is not dependent on the individual talent of the teacher but reflects the strength of the school.



Within the instructional framework teaching methods are chosen to improve specific skills. These vary within and between lessons. Teachers choose methods which are most likely to enhance learning, and which best relate to pupils' needs.

The methods are positioned within instructional strategies. Pupils learn best when they are truly engaged in what they are learning, when they have the opportunity to explore, debate, discuss, examine, defend, and experiment with the concepts and skills they are ready to learn. There are a range of these instructional challenges or pedagogical techniques, including:

- Direct or teacher-centred teaching;
- Indirect teaching in which pupils construct their own knowledge facilitated by teachers;
- Independent learning;
- Experiential learning where pupils involve themselves in the experience, and use analytic skills to reflect on their experiences;
- Interactive learning which allows pupils to interact with each other and with the material.

Teaching methods and strategies positioned within an Instructional model can unite school leaders, teachers and students with shared goals, a shared understanding of how to reach the goals, and a shared vocabulary for discussing progress.

When using instructional models, there are two aspects which need to be considered:

1. The first is to improve pupils' understanding of learning and develop their metacognitive skills and attributes to become self-regulators. This leads to the development of fluency and independence.
2. The second is the planned sequencing of an ambitious curriculum and pedagogical principles utilised to build on prior learning and deepen understanding for more able learners.

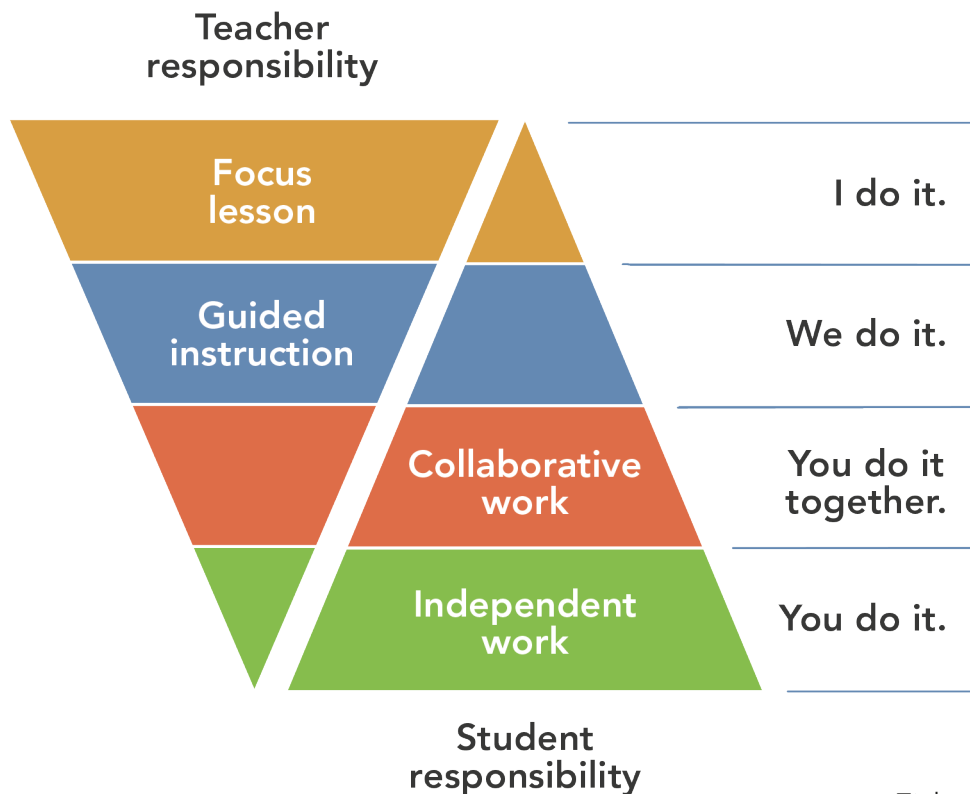
Good schools will devise their own frameworks which have instructional models within them. Professional development, curriculum provision and practice are all contained within this.

The instructional models examined in this information sheet are examples of practices which move the responsibility for learning from the teacher to the pupil in planned phases. Initially the teacher has the knowledge and control of learning, then shares the learning with the pupils. The pupils learn with the teacher and then they learn with each other, before taking responsibility for their own learning.

Many research-interested teachers will be aware of the following three instructional models from Fisher and Frey, the Education Endowment Foundation (EEF) and Rosenshine's Principles of Instruction. They all suggest that cognitive work should shift slowly and intentionally from teacher modelling to joint responsibility between teachers and student, to independent practice and application by the learner.

While these are three very different bodies of research, there is no conflict between the instructional suggestions that come from them. Rather, they each supplement, complement and reinforce one another, helping to give practitioners confidence in their validity.

Example 1: Fisher and Frey



Fisher and Frey (2008)

In brief: this is a gradual release of responsibility model.

I do: The first initial steps in each of the models explored here highlight the importance of presenting and communicating new ideas clearly, with concise, appropriate, engaging explanations; connecting new ideas to what has previously been learnt; modelling using worked examples. This helps pupils to build wider and deeper schema – the connections that learners make between new ideas and what they already know. “Great teachers activate that prior knowledge, reinforce it and connect new ideas to it” (Evidence Based Education, 2020).

We do it: In this phase, teachers use robust questions to jump-start thinking and expose any misconceptions. This also builds on the work discussed in NACE’s information sheet on effective feedback for more able learners, as this step enables students to take action based on the modelling and feedback provided. “If students do not use the feedback to move their own learning forward, it’s a waste of time” (Wiliam, 2014).

You do it together: Allowing students to consolidate their understanding through exploration, problem-solving, discussion, and thinking with their peers. Building in opportunity for self- and peer- assessment supports pupils in developing metacognition, working in line with research that “indicates self-regulation feedback leads to greater student engagement, effort, and self-efficacy, making it the most powerful type” (Hattie and Timperley, 2007).

You do it: Requiring students to use the skills and knowledge they’ve acquired to create authentic products and ask new questions.

Source: Fisher, D. & Frey, N. (2008). **Better Learning Through Structured Teaching: A framework for the gradual release of responsibility.** ASCD.

Example 2: Rosenshine's Principles of Instruction

In brief: provides 10 steps to consider when delivering lesson content.

Rosenshine presents 10 research-based principles of instruction, along with suggestions for effective classroom practice. These principles come from three sources: (a) research in cognitive science, (b) research on master teachers, and (c) research on cognitive supports.

In summary, the principles are:

1. Review existing knowledge
2. Deliver new material in small steps
3. Ask questions
4. Provide models
5. Guide student practice
6. Check student understanding
7. Obtain high success rate
8. Scaffolds for difficult tasks
9. Independent practice
10. Weekly and monthly review

Source: Rosenshine, B. (2012). **Principles of Instruction: Research-Based Strategies That All Teachers Should Know.** *American Educator*. Available at: <https://www.teachertoolkit.co.uk/wp-content/uploads/2018/10/Principles-of-Instruction-Rosenshine.pdf>

I do: Begin a lesson with a short review of previous learning: daily review can strengthen previous learning and can lead to fluent recall. Present new material in small steps with student practice after each step: only present small amounts of new material at any time, and then assist students as they practice this material. Provide models: providing students with models and worked examples can help them learn to solve problems faster.

“Worked examples allow students to focus on the specific steps to solve problems and thus reduce the cognitive load on their working memory.”

We do it: Ask a large number of questions and check the responses of all students: questions help students practice new information and connect new material to their prior learning. Questions and student discussion are a major way of providing this necessary practice. Most successful teachers in Rosenshine's studies spent more than half of the class time lecturing, demonstrating, and asking questions.

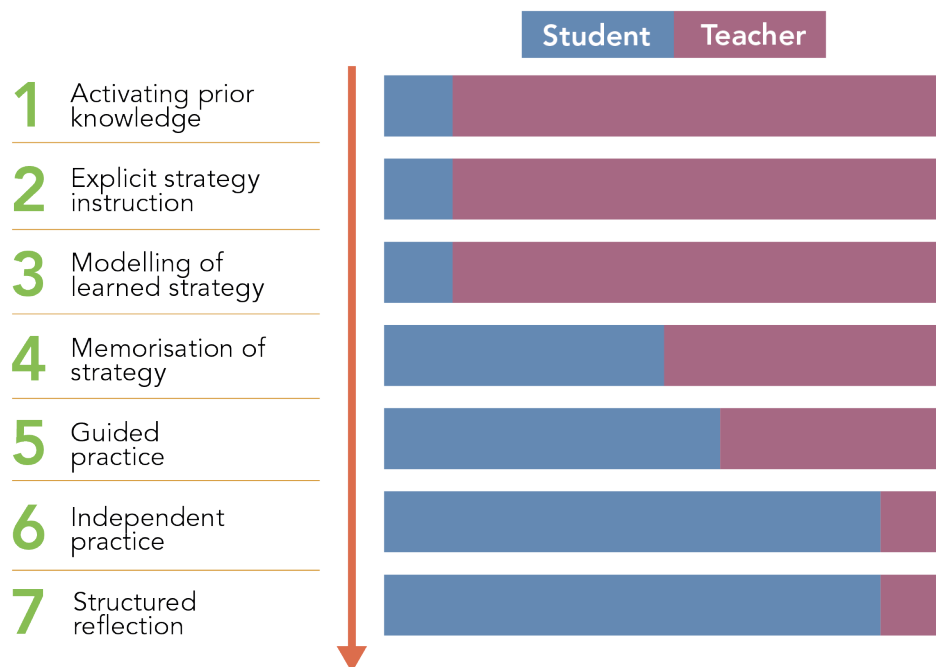
“The most effective teachers also ask students to explain the process they used to answer the question, to explain how the answer was found. Less successful teachers ask fewer questions and almost no process questions.”

You do it together: An important finding from information-processing research is that students need to spend additional time discussing, rephrasing, elaborating, and summarising new material in order to store this material in their long-term memory. The quality of storage in long-term memory will be weak if students only skim the material and do not engage in it.

You do it: Students need extensive, successful, independent practice in order for skills and knowledge to become automatic. Independent practice provides students with the additional review and elaboration they need to become fluent. It is essential to remember that independent practice should involve the same material as the guided practice. Often, this is not the case when “challenging” homework is set for more able learners who simply have not developed the appropriate knowledge or skills to complete the task at home.

Example 3: Education Endowment Foundation: metacognition and self-regulated learning

In brief: Practical advice on how to develop pupils' metacognitive skills and knowledge using a seven-step model for teaching metacognitive strategies. Outlines similar steps to Fisher/Frey and Rosenshine in moving from teacher-led to student-led learning.



Evidence suggests the use of “metacognitive strategies” – which get pupils to think about their own learning – can be worth the equivalent of an additional +7 months’ progress when used well. This model follows the same principles in supporting more able learners to acquire knowledge, develop it, embed it and become independent learners (explored in more detail in the earlier NACE information sheet on metacognition).

“To move from novice to expert, our pupils need to know how an expert athlete, artist, historian, or scientist habitually thinks and acts. We need to make these largely implicit processes explicit to our novice learners” (EEF, 2018). Many students think that teachers problem-solve by remembering a certain formula; they do not always see the internal processing that takes place. Teachers need to externalise their thinking, so learners can see how they select some options and discard others.

It is worth remembering that the scaffolding outlined in the models above should not be too specific as this may inhibit reflection for more able learners. Some “deliberate difficulty” is required so that pupils have gaps where they have to think for themselves and monitor their learning with increasing independence. Reinforcing the value of the processes modelled by engaging the pupils in reflecting on how successful they were at the end of the activity or lesson is also important.

Source: <https://educationendowmentfoundation.org.uk/tools/guidance-reports/metacognition-and-self-regulated-learning/>

In practice: using instructional models as reflective practitioners

The use of instructional models highlights the importance of self-reflection and the need to adapt lesson design to challenge all learners according to the phase of learning. Such models can promote cross-curricular conversations that are vital for continuous improvement and can provide a common vocabulary to discuss effective practice within schools.

A common problem is that “what is taught” isn’t necessarily the same as “what is learned”. This is what makes teaching a complex activity, requiring a process of reflection to consider theoretical perspectives such as those outlined in the models above. When a gap in learning is identified, it may be useful to revisit the lesson content with a focus on a particular step within the model. That could be improving the quality of instruction, modelling subject-specific vocabulary, using collaborative group work to encourage learners to consider more than one viewpoint, or recalling prior learning to help learners make new connections and build a stronger argument. This process requires teachers to become “pedagogical thinkers”.

It is important to be clear that the success of a lesson is not based on rigid adherence to a particular instructional model. It is not suggested that every lesson must always start with focused instruction (goal setting and modelling) before progressing to guided instruction, then to collaborative learning, and finally to independent tasks (Grant et al, 2012). Teachers will often reorder the phases – for example, begin a lesson with an independent task such as recall, or engage students in collaborative peer inquiry prior to providing teacher modelling. What is important and necessary for deep learning is that students experience all four phases of learning when encountering new content.

Instructional models can help teachers to reflect upon and consider the following questions:

- What content do I want to deliver and how should I sequence this to improve long-term memory?
- Where are the misconceptions and which steps do I need to revisit?
- Why do pupils need to learn this?
- What do they know and what do they need to know?
- Are the tasks engaging and do they include desirable difficulties?
- How will the learning progress within the lesson?
- What will happen between lessons?
- What is working and why?
- How can I make small changes to my practice to increase effectiveness?

What does this mean for more able learners?

For more able learners to thrive they must be guided to become independent, autonomous learners who have control and take ownership of their learning. The instructional models explored in this information sheet can help to support this through modelling, high-quality instruction, group work, independent practice and challenging questions which prompt students to engage with the curriculum enthusiastically through critical inquiry.

Novice learners may benefit from structure and guidance, while experienced learners may benefit from more space and independence (Kirschner and Hendrick, 2020). However, this does not always mean that more able learners are cut away from the “we do” and “you do it together” stages in favour of “discovery learning” that may be deemed to be more challenging. While some students flourish in the freedom granted by this discovery learning, many flounder, unable to direct themselves to the required end without the necessary background knowledge. Rosenshine bemoans the (then) fashionable idea of “learning by discovery” and the belief that skills are “better caught than taught” (Rosenhine, 1997).

To summarise, for effective independent learning to take place, it is helpful to explore these step-by-step instructional models to encourage the development of student responsibility and ownership of learning. For this learning to take place, there needs to be some form of “desirable difficulty” built into the steps and tasks – not too hard, not too easy. “Desirable difficulties” are important to trigger encoding and retrieval processes that support learning, comprehension and remembering. If, however, tasks are too difficult (the learner does not have the background knowledge or skills to respond to them successfully), they become *undesirable* difficulties and pupils can become disengaged (Bjork, 2009).

The Lunch & Learn webinar which accompanies this information sheet explores how teachers can use the three instructional models outlined here to release learning and enable pupils to become increasingly skilled and independent.

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For information or further copies of this publication:
Horticulture House, Manor Court, Chilton, Didcot OX11 0RN
01235 425000 | info@nace.co.uk | www.nace.co.uk
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