

TEACHER HANDBOOK

EVERYTHING YOU NEED TO HELP YOU
APPLY THE EARLY CAREER FRAMEWORK



CONTENTS

WELCOME TO AMBITION INSTITUTE	4
USING THIS HANDBOOK	5
STRAND B: BEHAVIOUR	6
B1 STRAND OVERVIEW AND CONTRACTING	7
B2 ROUTINES	15
B3 INSTRUCTIONS	19
B4 DIRECTING ATTENTION	23
B5 LOW-LEVEL DISRUPTION	27
B6 CONSISTENCY	31
B7 POSITIVE LEARNING ENVIRONMENT	35
B8 STRUCTURED SUPPORT OF LEARNING	39
B9 CHALLENGE	43
B10 INDEPENDENT PRACTICE	47
B11 PAIRS AND GROUPS	51
B12 UPHOLDING HIGH EXPECTATIONS	55
STRAND I: INSTRUCTION	59
I1 STRAND OVERVIEW AND CONTRACTING	60
I2 IDENTIFYING LEARNING CONTENT	68
I3 INSTRUCTION FOR MEMORY	72
I4 PRIOR KNOWLEDGE	76
I5 TEACHER EXPOSITION	80
I6 ADAPTING TEACHING	84
I7 PRACTICE AND SUCCESS	88
I8 EXPLICIT TEACHING	92
I9 SCAFFOLDING	96
I10 QUESTIONING	100
I11 CLASSROOM TALK	104
I12 FEEDBACK	108

STRAND S: SUBJECT**112**

S1		STRAND OVERVIEW AND CONTRACTING	113
S2		PLANNING BACKWARDS FROM LEARNING GOALS	120
S3		TYPES OF KNOWLEDGE	124
S4		GAPS AND MISCONCEPTIONS	128
S5		ACQUISITION BEFORE APPLICATION	132
S6		PROMOTING DEEP THINKING	136
S7		DEVELOPING PUPILS' LITERACY	140
S8		SHARING ACADEMIC EXPECTATIONS	144
S9		ASSESSING FOR FORMATIVE PURPOSES	148
S10		EXAMINING PUPILS' RESPONSES	152
S11		ADAPTING LESSONS TO MEET PUPILS' NEEDS	156
S12		FEEDBACK	160

APPENDICES**164**

WELCOME TO AMBITION

At Ambition Institute we help schools tackling educational disadvantage to keep getting better, and help their teachers and school leaders to become more expert over time.

That's how we'll make sure every child gets a great education and the best possible start in life.



We train teachers and leaders at all levels to get better at the things that make the biggest difference: what you teach, how you teach it, and how you create the conditions for schools to thrive.



We share what works. Everyone can benefit from evidence of how great teaching and leadership can improve schools and change lives, so we connect people to the latest research and the best practice out there in the system.



We champion every teacher and school leader's potential to develop, as the driving force for sustainable school improvement.

By Autumn 2020, we will have worked with 14,000 educators across over 3,000 schools, reaching more than 1.3 million children across the country.

STARTING YOUR JOURNEY

Beginning your career as a teacher is both exciting and scary. Your first year on the job might be one of the most demanding developmental experiences you ever have, but also one of the most fulfilling.

Whenever we undertake a period of growth, it's vital that we're able to see improvement over time. It's what keeps us motivated and supports us in continuing to thrive.

That's why our resources focus on one area of teaching at a time, allowing you to see and feel that you are continually getting better.

Foundational concepts are revisited across modules to help you easily connect the theory to what this looks like in practice at school.

Having been NQTs themselves, our team understands that teachers start their careers in vastly different contexts and with a wide range of needs. So, you're in good hands.



USING THIS HANDBOOK

This handbook is a compilation of all the learning materials we've create for Ambition Institute's two-year programme, Early Career Teachers.

You can use these resources even if you're not on our programme. We recommend you work through them on a weekly basis and discuss them with your mentor at school.

Just 40 minutes' study a week will help you get into a powerful routine for improvement.

WHAT TO DO:



WATCH FOR 10

Videos are a great way to see what good looks like in practice and consider how you might apply the ideas from the module to your own teaching.



READ FOR 15

Reading is an effective way to dig deeper into the evidence and think about what this might mean for your teaching.



CHECK FOR 15

Quizzes help you check if you've understood key ideas from your reading. Use them to guide your reflection, re-reading, and discussion with your mentor.

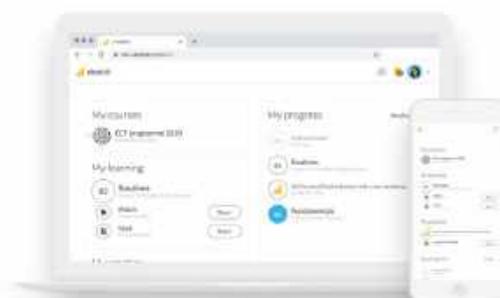
All evidence summaries and quizzes can be found in this textbook. We'll be releasing videos over the summer, all of which will be available here: ambition.org.uk/ecf

INTERESTED IN OUR FULL INDUCTION PROGRAMME?

Our programme, Early Career Teachers, includes all these resources plus a carefully designed combination of face-to-face training, virtual peer-learning groups, expert-led webinars and further support for effective in-school mentoring, all hosted on our bespoke, easy-to-use online professional development platform, Steplab.

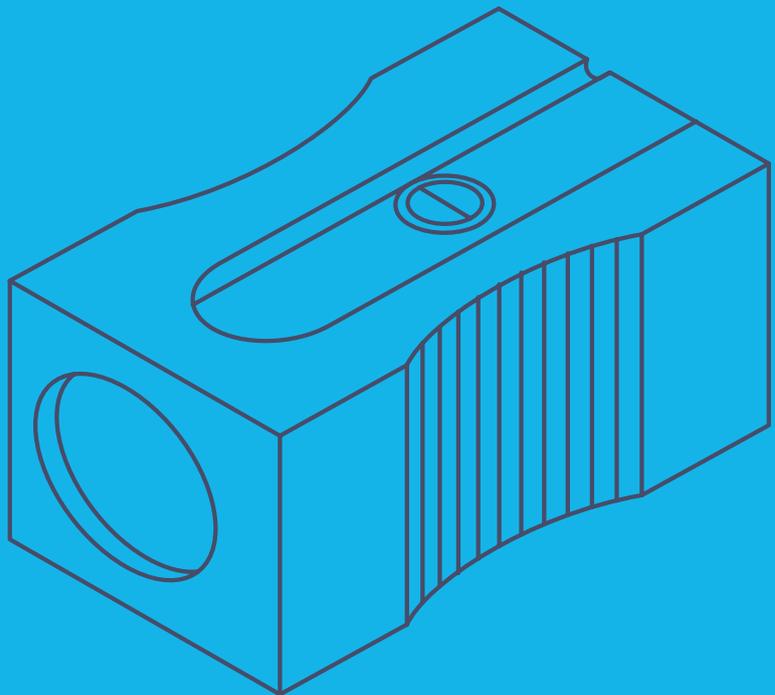
To find out more, check out ambition.org.uk/steplab

[LEARN MORE](#)



STRAND B: **BEHAVIOUR**

Getting behaviour right is a big deal. What pupils are thinking and doing helps them get ready to learn. When behaviour is working, your pupils will be paying attention, putting in effort and really caring about what they're learning. All of this will happen in a safe and trusted space where they can openly share their thinking. It requires time, consistency and good faith in all of your pupils.



B1 BEHAVIOUR: STRAND OVERVIEW AND CONTRACTING

READ | STRAND INTRODUCTION

Welcome to the Behaviour strand of the programme. This strand is composed of 12 modules and has been designed to last roughly a term. It is best completed during your first term as an NQT – typically the autumn term.

By the end of this strand you will have an evidence-informed understanding of:

- > How to establish an effective learning environment.
- > How to effectively manage behaviour.
- > The importance of holding and promoting high expectations for all pupils.

This programme has been designed to ensure that teachers develop a holistic understanding of effective teaching so, while the behaviour strand is mostly about behaviour, it also incorporates insights from instruction and subject.

Furthermore, you'll notice that as the strand progresses, modules will often touch on previously learned content. This is intentional and a crucial aspect of your learning experience. Some concepts on the programme are so important that they need to be revisited multiple times to ensure you develop a deep and durable understanding.

The strand comprises modules sequenced to first explore the process of establishing an effective learning environment, before considering how to promote behaviours that support effective learning.

- > **Module 1** explores the foundations of effective behaviour management.
- > **Modules 2-5** cover the process of laying the foundations of an effective learning environment.
- > **Modules 6-7** cover the process of maintaining an effective learning environment over time.

> **Modules 8-11** explore more complex ideas around certain practices that can support more effective learning, incorporating and building on previous modules.

> **Module 12** explores how teachers continue to improve the learning environment over time.

MAKING IT WORK

The features of effective learning environments can vary slightly depending on the subject(s), phase(s) or community you teach. In addition, there are some elements of the learning environment, like the school behaviour policy, that you will have limited control over. This is why it's important that you work with subject and phase specialists in your school to help you identify the best ways to apply your learning. You have the responsibility to take ownership of your professional development and make it work, but also the right to seek assistance and support (for example with challenging behaviour). Talking to your colleagues and your mentor about the ideas and practices you encounter will help you to better understand what 'good' looks like for your particular context.

The evidence cited in the strand draws primarily from research on:

- > Classroom practices of effective teachers.
- > Cognitive science and educational psychology (for example, how pupils learn).
- > Evidence on effective educational approaches (both in the UK and internationally).

You might have previously come across some of the terminology explored, however some of the technical

language used, particularly around cognitive science, may be new to you. Several key terms are explored further in the evidence summary below.

A REMINDER OF THE PROGRAMME PATTERN

Each module in the Behaviour strand follows the pattern below:

- > A 10-minute **video** shows what some of the key ECF ideas in the module look like in practice.
- > A 15-minute **evidence summary** provides an overview of key research to read relating to the key ECF ideas in the module.
- > 15 minutes of **quiz** and **reflection** enable you to check your understanding and consider the evidence in light of your knowledge and experiences.

- > Weekly **instructional coaching** that draws on this material and tailors the weekly focus to your specific context and needs, including the needs of your pupils, with built-in opportunities for practice. This is the main part of the mentoring process.

Year one of the programme has been designed with the intention of schools working through one module per week. However, the programme has been built in a flexible way so that schools can adapt it to their needs and work through it at a slower pace as required, while still ensuring they cover the ECF.

Now that we have introduced how the strand will work, it's time to dive into an evidence summary exploring some of some of the key ideas that underpin the strand.

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Ms Foden is starting a new year at school. She wants to create an effective learning environment for all of her pupils but worries that she may find it difficult to get some pupils to listen, work independently, or show sufficient respect in the classroom. What does an effective learning environment look like, and where should she start in building one?

KEY IDEA

Creating a predictable and secure classroom environment, managing pupil behaviour and holding high expectations all contribute to more successful learning.

THE CLASSROOM ENVIRONMENT AND PUPIL LEARNING

Effective teaching entails improving pupil achievement, in terms of both academic outcomes as well as other outcomes that matter to their future and success (Coe et al., 2014). Improving pupil achievement means generating a lasting change to pupils' capabilities or understanding. Pupil behaviour, the learning environment and how teachers manage these, all play a critical role in improving pupil learning.

The learning environment or classroom 'climate' is a result of multiple factors, such as (Coe et al., 2014):

- > Teacher expectations.
- > The relationships between teachers and pupils.
- > How the teacher manages the classroom.

There is strong evidence that certain teaching approaches lead to better pupil behaviour and create a more effective learning environment (IES, 2008).

The most effective learning environments are those that are predictable and secure, where pupils are responsive to the teacher (IES, 2008), and where pupils feel a sense of connection to their school, peers and teachers. Such classroom environments also contribute to a positive school culture (Chapman et al., 2013). Classroom environments like these are good for all pupils, but particularly those with special educational needs (Carroll et al., 2017).

In general, pupils are more alike than different in terms of how they think and learn (Willingham, 2009), so common approaches are likely to be effective in improving pupil behaviour. But this must be balanced with the need to match teaching and classroom management to individual pupil needs (IES, 2008). Providing additional support can be particularly beneficial to pupils with specific barriers to learning (Carroll et al., 2017).

In addition to improving pupil behaviour, over time effective learning environments can produce a range of important benefits, including:

- > **Pupil-teacher relationships:** Positive relationships and pupil perceptions of their teacher are based on repeated interactions over time (Wubbels et al., 2014). Being responsive to pupil needs, including considering and seeking to understand their feelings, can help build strong teacher-pupil relationships.
- > **Pupil attitudes to learning:** Pupil perceptions of school are shaped by teacher-pupil interactions and the goals, values and behaviours of classmates (Rathmann et al., 2018).
- > **Pupil wellbeing:** Pupils who perceive that their teachers are in control of the class and are able to

include them in activities are also more likely to feel satisfied in life and have better school outcomes (Rathmann et al., 2018).

- > **Wider outcomes:** In addition to generating high academic outcomes for pupils, effective environments can also improve wider outcomes such as university entrance and graduation rates, higher wages, and lower chances of becoming pregnant as a teenager (Chetty et al., 2014).

EFFECTIVE BEHAVIOUR MANAGEMENT

Part of creating an effective learning environment entails managing pupil behaviour. Effective behaviour management happens best when teachers anticipate challenging pupil behaviours and modify the classroom environment to prevent or mitigate them (IES, 2008). Behaviour management strategies typically fall into one of three categories:

- > **Proactive:** Approaches for pre-empting and preventing problem behaviours before they occur. For example, using seating plans.
- > **Reactive:** Strategies to deal effectively with classroom behaviours as they arise. For example, using rewards or sanctions.
- > **Escalation:** Where proactive and reactive strategies are failing to work after a time, or where behaviour is extremely disruptive or dangerous, teachers should follow the school behaviour policy and/or discuss with their mentor what further support can be put in place. For example, calling parents, setting detentions or sending pupils out of the class after a certain number of sanctions.

Part of effective behaviour management involves setting clear rules and consistently reinforcing them (Coe et al., 2014; IES, 2008). The goal of these rules should be to create an environment where pupils are routinely successful (Coe et al., 2014). In the first half of the Behaviour strand we explore a series of teacher approaches that establish an effective learning environment with good pupil behaviour. Evidence suggests that there are several specific ideas and practices that teachers can use to build an effective learning environment and manage pupil behaviour.

These include:

Time on task	While pupil behaviour is not a perfect indicator of whether pupils are learning (Coe, 2013), there is a significant relationship between the amount of time pupils spend on task and how much they learn (Muijs & Reynolds, 2010).
--------------	--

Peer effects	Pupil behaviour is influenced by that of their peers (IES, 2008). The more that individual pupils adopt on-task behaviours, the more likely it is that other pupils will follow them.	Motivation	Pupil motivation can be intrinsic (driven by the task itself) or extrinsic (driven by rewards and sanctions). Pupils who are motivated intrinsically are more likely to stay on task longer and persist when learning gets challenging (Lazowski & Hulleman, 2016). Over time, Ms Foden should aim to reduce extrinsic motivators and increase pupil intrinsic motivation. For example, helping pupils to master challenging content, and make links between their long term-goals and the work they are doing in school, can help pupils to journey from needing extrinsic motivation to being motivated to work intrinsically. Building effective relationships with parents, carers and families can improve pupils' motivation, as well as pupil behaviour and academic success (EEF, 2018). Ms Foden should use opportunities like parents evening to communicate proactively and engage parents and carers in their children's schooling.
Positive reinforcement	Positive reinforcement can create an effective learning environment. Positive reinforcement entails providing acknowledgement, praise and rewards for positive behaviours. However, teachers must be careful not to overuse praise, as this can inadvertently communicate low expectations (Coe et al, 2014). To avoid this, teachers can use 'acknowledgement' when expectations are merely met and reserve 'praise' for when they are exceeded. Sanctions for negative behaviours can also be used alongside positive reinforcement. Providing more praise than reprimand has been found to be most effective (IES, 2008).	Self-regulation	Self-regulation – the ability to steer our own behaviour and learning – is a strong predictor of attainment and future success. A key aspect of this is emotional regulation (Gutman & Schoon, 2013). This is important because negative pupil emotions can lead to pupils avoiding a task (Kluger & DeNisi 1996) and also because the ability to regulate one's emotions affects pupils' ability to learn, success in school and future life (EEF, 2017). Effective self-regulation also requires pupils to develop metacognitive strategies – how they plan, monitor and evaluate their approaches to specific tasks. Teacher support for pupil metacognition is likely to increase pupil self-regulation, success and therefore motivation (EEF, 2017).
Pupil success	Ensuring a high pupil success rate is a powerful way to foster pupil behaviour and learning (Rosenshine, 2012). How Ms Foden communicates her expectations of pupil success can influence what they do and achieve. For example, if she inadvertently communicates low expectations of success, pupils can start to think that they can't do it (Tsiplakides & Keramida, 2010) and reduce the amount of effort they put in (Gutman & Schoon, 2013). Conversely, pupils' prior experiences of success at a specific, appropriately challenging, task makes it more likely they will be motivated to persist at similar tasks in the future; this also makes it more likely they will be successful at such tasks (Gutman & Schoon, 2013). Ms Foden should balance challenge with high success rate (Rosenshine, 2012)		

BEHAVIOUR THAT FOSTERS EFFECTIVE LEARNING

In the second half of the Behaviour strand, we will explore ways that teachers can foster effective learning. This part of the strand has lots of connections with the Instruction strand. Evidence suggests that there are several specific ideas and practices that teachers can use to generate behaviours that further foster effective learning in the classroom. These include:

Guided instruction	Pupils learn best when they build on what they already know, and when teachers guide them clearly and directly towards what they need to know – an approach sometimes referred to as ‘explicit instruction’ (Coe et al., 2014). This is in contrast to less guided instruction, where pupils are left to ‘join the dots’ or discover things themselves. Once a teacher has established their classroom expectations, maintaining good pupil behaviour while adding to their teaching repertoire requires effective instruction. There are links with the Instruction strand later in behaviour.
--------------------	---

Practice	Getting pupils to think about and practise expected behaviours, by guiding them and reinforcing desirable behaviours, can foster positive changes in pupil behaviour change over time (IES, 2008). Guided practice can develop pupil metacognition linked to specific tasks, and practice can also develop pupils’ capacity to self-regulate their emotions, which can support pupils to be more successful and independent over time (EEF, 2017).
----------	--

Holding high expectations is one particularly important yet hard-to-pin-down part of creating an effective learning environment. When we talk about teacher expectations we mean: the beliefs that teachers hold and the messages that they communicate regarding what their pupils are capable of, both in terms of behaviour and learning. In turn, this influences the levels of classroom challenge and support that teachers provide (Coe et al., 2014). Inadvertently communicating low expectations can lead to a ‘self-fulfilling prophecy’, where pupils behave and learn in line with what the teacher

expects rather than what they are capable of (Murdock-Perriera et al., 2018; Tsiplakides & Keramida, 2010).

NUANCES AND CAVEATS

Behaviour is only one piece of the effective teaching puzzle. Effective instruction and sound teacher subject knowledge are also critical (Coe et al., 2014). And perhaps most importantly, these different dimensions of effective teaching influence each other – it is only when they are aligned that effective teaching can flourish (IES, 2008).

So, while Ms Foden must work hard to develop her understanding and approach around behaviour, she must also recognise that this needs to go hand-in-hand with things like providing the right balance of challenge and support for helping her pupils to experience regular success in the classroom. It is little wonder that becoming a great teacher takes time and continued learning.

CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. What is the impact of the classroom environment on pupil learning?

- a.) The classroom environment has no impact on pupil learning.
- b.) A positive 'classroom climate' (high teacher expectations, positive relationships and effective classroom management) can improve pupil behaviour and learning.
- c.) A predictable and secure learning environment can improve pupil behaviour and learning.
- d.) Classroom environment is only important for pupils with special educational needs and specific barriers to learning.

2. What are the benefits of an effective learning environment over time?

- a.) All of the benefits of an effective learning environment happen straight away.
- b.) Building an effective learning environment can, in time, lead to positive teacher/ pupil relationships.
- c.) Building an effective learning environment can lead to increased pupil wellbeing as pupils are more satisfied with their school experience.
- d.) Better pupil outcomes.

3. What strategies are used in effective behaviour management?

- a.) Reactive strategies respond to classroom behaviours as they arise e.g. through reward and sanction.
- b.) Proactive strategies anticipate and avoid problem behaviours, for example through using routines.
- c.) Escalation strategies identify further support where behaviour continues to be challenging e.g. by following the school behaviour policy/ discussing with the mentor.
- d.) Aggressive strategies respond to pupil behaviour by vigorously demonstrating what is acceptable and unacceptable.

4. How can teachers promote behaviours that foster effective learning?

- a.) Having high expectations of pupil behaviour and learning backed up by sufficient classroom challenge and support.
- b.) Praising pupils lavishly to build their motivation.
- c.) Ensuring pupils experience a high success rate.
- d.) Giving pupils practice of expected behaviours to support behaviour change over time.
- e.) Ensuring pupils experience failure often in order to build their resilience.



REFLECT

KEY TAKEAWAYS:

Ms Foden can promote positive pupil behaviour and an effective learning environment by understanding that:

- > Holding high expectations, creating an effective learning environment and managing behaviour effectively all positively impact pupil learning outcomes.
- > Creating an effective learning environment over time can also have benefits for classroom relationships, pupil attitudes to learning, pupil wellbeing and wider outcomes and wider school culture.
- > Teachers can create effective learning environments through proactive, reactive and escalation strategies.
- > Teachers can foster further effective learning behaviours through developing behaviours that help pupils to learn more successfully.
- > Teacher expectations play an important (yet complex) role in influencing pupil behaviour and learning.
- > Balancing the challenge and support that teachers provide in order that pupils experience success is key.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

Carroll, J., Bradley, L., Crawford, H., Hannant, P., Johnson, H., & Thompson, A. (2017). SEN support: A rapid evidence assessment. bit.ly/ecf-dfe

Chapman, R. L., Buckley, L., Sheehan, M., & Shochet, I. (2013). School-based programs for increasing connectedness and reducing risk behavior: A systematic review. *Educational Psychology Review*, 25(1), 95-114.

Coe, R. (2013). Improving Education: A triumph of hope over experience. Centre for Evaluation and Monitoring. bit.ly/ecf-coe2

Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014). What makes great teaching. Review of the underpinning research. Durham University. bit.ly/ecf-coe

Chetty, R., Friedman, J. N. & Rockoff, J. E. (2014). Measuring the Impacts of Teachers II: Teacher Value-Added and Student Outcomes in Adulthood. *American Economic Review*, 104(9), 2633–2679. [Bit.ly/ecf-che](https://bit.ly/ecf-che)

Gutman, L. & Schoon, L. (2013). The impact of non-cognitive skills on the outcomes of young people. bit.ly/ecf-eef2

IES (2008). Reducing Behavior Problems in the Elementary School Classroom. bit.ly/ecf-ies

Education Endowment Foundation (2017). Metacognition and Self-regulated learning Guidance Report. bit.ly/ecf-eef

Education Endowment Foundation (2018). Teaching and learning toolkit. bit.ly/ecf-eef14

Kluger, A. N., & DeNisi, A. (1996). The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. *Psychological Bulletin*, 119 (2), 254–284.

Lazowski, R. A., & Hulleman, C. S. (2016) Motivation Interventions in Education: A Meta-Analytic Review. *Review of Educational Research*, 86(2), 602–640.

Muijs, D. & Reynolds, D. (2010). *Effective Teaching*. London: SAGE Publications.

Murdock-Perriera, L. A., & Sedlacek, Q. C. (2018). Questioning Pygmalion in the twenty-first century: the formation, transmission, and attributional influence of teacher expectancies. *Social Psychology of Education*, 21(3), 691–707.

Rathmann K., Herke M., Hurrelmann K., Richter M. (2018). Perceived class climate and school-aged children's life satisfaction: The role of the learning environment in classrooms. *PLoS ONE* 13(2): e0189335. [Bit.ly/ecf-rat](https://bit.ly/ecf-rat)

Rosenshine, B. (2012). Principles of Instruction: Research-Based Strategies That All Teachers Should Know. *American Educator*, 36(1), 12–20. [Bit.ly/ecf-ros](https://bit.ly/ecf-ros)

Tsiplakides, I. & Keramida, A. (2010). The relationship between teacher expectations and student achievement in the teaching of English as a foreign language. *English Language Teaching*, 3(2). bit.ly/ecf-tsi

Willingham, D. T. (2009). *Why don't students like school?* San Francisco, CA: Jossey Bass.

Wubbels, T., Brekelmans, M., den Brok, P., Wijsman, L., Mainhard, T., & van Tartwijk, J. (2014). Teacher-student relationships and classroom management. In E. T. Emmer, E. Sabornie, C. Evertson, & C. Weinstein (Eds.). *Handbook of classroom management: Research, practice, and contemporary issues* (2nd ed., pp. 363–386). New York, NY: Routledge.

QUIZ ANSWERS

1. b, c
2. b, c, d
3. a, b, c
4. a, c, d

B2 | BEHAVIOUR: ROUTINES

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Mr Price wants to have a classroom where pupils enter quietly and begin their learning promptly. However, only about half of his pupils are starting the lesson in this way. Some pupils are taking up to ten minutes to settle and are slow to start tasks during the early part of the lesson. What might Mr Price do to tackle this challenge?

KEY IDEA

Establishing and maintaining routines can increase both the amount of time that pupils spend learning, and the quality of that learning.

KEY TAKEAWAYS:

Mr Price can use routines to establish positive behaviour for learning by understanding that:

- > Routines can create a positive and motivating climate in the classroom.
- > High expectations can improve pupil behaviour at both a classroom and school level.
- > For routines to take hold expectations must be clearly communicated and modelled.
- > For routines to stick they need to be revised, re-practised and reinforced.

THE POWER OF ROUTINES

Routines are just any aspect of the classroom that have a repeating and familiar pattern. There is a wealth of evidence to suggest that establishing and maintaining routines leads to positive, predictable and motivating classrooms (Kern & Clemens, 2007).

When pupils are able to predict the events that happen during their school day, they are more likely to be engaged and less likely to exhibit undesirable behaviours. Routines are great ways to increase the predictability of the classroom, particularly at the start of the school year.

Aspects of the lesson that are ripe for building strong routines include:

- > How pupils enter the classroom and start the lesson.
- > How pupils finish the lesson and exit the classroom.
- > What pupils do when they complete activities or get stuck.
- > How pupils engage in classroom discussion.

SETTING EXPECTATIONS

To set up routines in ways that work and last, teachers need to communicate and reinforce expectations of what should happen. If pupils are not clear about what they are expected to do, routines are unlikely to take hold and remain.

Research has demonstrated that the higher the expectations that teachers have of their pupils, the better the behaviour will end up being. And if multiple teachers are able to set and maintain expectations, then behaviour will be better across the school as a whole (Kern & Clemens, 2007). Mr Price should recognise his responsibilities as part of a wider system of behaviour management, but also understand that he has the right to support and training from senior colleagues.

Communicating expectations around routines are most effective when they are:

- > **Concise:** Communicate the routine using a few clear steps. Complexity can be added as routines get embedded.
- > **Positively framed:** Say what you want pupils to do rather than what you don't want them to do.
- > **Modelled:** Regularly show your pupils what you want them to do, particularly when you are in the early stages of establishing a routine.

GETTING ROUTINES TO STICK

As well as setting clear expectations for a routine, we also have to think carefully about how we make that routine last. Routines will simply dissipate as pupils forget and other things interfere, unless we take intentional steps to make them stick. To maintain routines, we can (IES, 2008):

- > **Revise:** Continually repeat our expectations of what we think the routine should be like and why, even after pupils have 'got it'.
- > **Re-practise:** Keep getting pupils to do the routine. In the early days, you can even get them to do a 'rehearsal' or two.
- > **Reinforce:** Use the school behaviour system (e.g. praise, rewards and sanctions) to help pupils keep to the routine. To be effective, reinforcement should be mostly positive and consistently applied. Nuances and caveats

When routines are established, not only do they create more time and a better environment for learning, but they can help teachers see and deal with undesirable behaviour as soon as it arises. Routines create predictable patterns of classroom activity and so make it easy to spot when behaviour deviates from what is expected. Catching and correcting challenging behaviour early can make pupils feel safer and creates a warmer classroom environment where learning is more likely to occur (Kern & Clemens, 2007).

NUANCES AND CAVEATS

Is it realistic for Mr Price to expect all the pupils he teaches to meet his high expectations and adopt routines? Research suggests that clear expectations and predictable consequences are beneficial to both pupils with and without special educational needs, and especially useful for younger pupils (DfE, 2017; Gathercole et al., 2006).

CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. Why are routines important for pupils?

- a.) Routines create a positive and motivating classroom climate.
- b.) Routines create a predictable learning environment.
- c.) Unpredictable routines keep pupils on their toes and ready to learn.
- d.) Pupils only need routines for arrival and dismissal to class.

2. What impact do teacher high expectations have on pupil behaviour?

- a.) Pupil behaviour improves in the classroom.
- b.) Pupil behaviour improves beyond the classroom.
- c.) Teacher expectations have limited impact on pupil behaviour.
- d.) High expectations support positive behaviour for pupils with special educational needs.
- e.) High expectations support positive behaviour for younger pupils.

3. How do teachers convey their expectations?

- a.) Teachers do not need to convey their expectations.
- b.) Teachers should only convey their expectations at the beginning of the year.
- c.) Ensure they are covered in a few clear steps.
- d.) Frame them positively by saying what teachers want rather than what they don't want.
- e.) Teacher should model routines, with pupils rehearsing them.

4. How can teachers turn expectations into routines?

- a.) Revise routines – say them again to make them memorable and important.
- b.) Repractise – repeat routines with pupils to help make them automatic and effortless.
- c.) Briefly and clearly state expectations at the start of the year.
- d.) Reinforce – praise and sanction in line with routines.
- e.) Making a public example by sanctioning pupils not following a routine.

FURTHER READING

IES. (2008). Reducing behavior problems in the elementary school classroom. bit.ly/ecf-ies



REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Mr Price can use routines to begin to establish positive behaviour for learning by understanding:

- > Routines can create a positive and motivating climate in her classroom
- > High expectations make a difference to pupil behaviour at a classroom and school level
- > For routines to take hold expectations must be clearly communicated and modelled.
- > For routines to stick they need to be revised, re-practised and reinforced.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Department for Education. (2017). SEN support: A rapid evidence assessment. bit.ly/ecf-dfe
- IES. (2008). Reducing behavior problems in the elementary school classroom. bit.ly/ecf-ies
- Gathercole, S., Lamont, E., & Alloway, T. (2006) Working memory in the classroom. *Working memory and education*, 219-240.
- Kern, L. & Clemens, N.H. (2007). Antecedent strategies to promote appropriate classroom behavior. *Psychology in Schools*, 44, 65-75.

QUIZ ANSWERS

1. a, b
2. a, b, d, e
3. c, d, e
4. a, b, d

B3 | BEHAVIOUR: INSTRUCTIONS

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

For Ms Silva, the most challenging pupil behaviour occurs during 'transition' parts of her lessons - for example, when she moves from giving an exposition to asking her pupils to do some independent work. At these times they often take a while to settle, and sometimes even do the wrong things. She also finds herself having to repeat her instructions multiple times which can take up valuable learning time. How can Ms Silva best manage these transitions to help her pupils get on with their learning quickly and independently?

KEY IDEA

Setting high expectations and providing clear instructions are powerful ways to foster good behaviour and create an effective learning environment.

KEY TAKEAWAYS:

Mr Ms Silva can improve pupil behaviour and learning by understanding that: Routines can create a positive and motivating climate in the classroom.

- > Holding and communicating high teacher expectations can improve pupil behaviour.
- > Effective instructions can both prevent problems occurring and reinforce desired behaviours.
- > Delivering effective instructions involves a concise 'what' and a clear 'how'.
- > Checking that pupils understand instructions before letting them start increases the chances of success.

TEACHER EXPECTATIONS MATTER

Setting and communicating clear expectations has a strong influence on pupil behaviour (Murdock-Perreira & Sedlacek, 2018). For example, conveying low expectations can generate a 'self-fulfilling prophecy' where pupils end up behaving according to the expectations we have set, rather than what they are capable of (Tsiplakides & Keramida, 2010). Sometimes teachers can communicate low expectations without realising. This can happen when we ask certain pupils more questions than others, or when we permit pupils to call out when they shouldn't.

To mitigate this, Ms Silva should be intentional about holding and communicating high expectations for her pupils. This means:

- > Continually assuming that all her pupils are capable of behaving well and making progress in their learning.
- > Relentlessly communicating to pupils that she knows they are capable and that she expects nothing less than exemplary behaviour and learning from them.
- > Regularly providing clarity to her class about the kind of classroom culture that she values.

CLEAR INSTRUCTIONS CAN MAKE A HUGE DIFFERENCE

Giving instructions is a great opportunity to embed high expectations into your lesson. Delivering instructions effectively can help make lesson transitions go smoothly and foster a purposeful and effective learning environment (IES, 2008). Effective instructions can reduce challenging behaviour, reinforce desirable behaviour, and make the classroom more structured and predictable for pupils (Kern & Clemens, 2007). For example, directing pupils to sit in a seating plan and giving them clear instructions for how to begin the starter activity increases the chances of an orderly entrance and successful start to the lesson.

Instructions are powerful because they act as a reference point that pupils use as a guide for what to do and how to do it. However, giving effective instructions is not always easy to do well. In particular, there are two features of how pupils think that can thwart our efforts:

- > **Limited working memory:** People can only think about so many things at once. If we give our pupils too many instructions to hold in their heads, it is likely that they will be unable to retain any of them.
- > **Forgetting:** People forget things. This is especially true when instructions are overly lengthy or for unfamiliar classroom activities (Gathercole et al., 2006).

Both of these situations are exacerbated by the mental demands of the classroom. During our lessons, we often ask pupils to both hold instructions in their heads and

think hard about lesson content - for example, when we expect pupils to remember our instructions for conducting a paired discussion while also considering complex questions about Caesar's invasion of Britain. To make it feasible for our pupils to meet high expectations, we must make sure our instructions are easy to understand and put into practice.

ISSUING EFFECTIVE INSTRUCTIONS

Bearing in mind the above features of how pupils think, classroom instructions are likely to be more effective when they are:

- > **Stepped:** The best instructions are broken down into a clear sequence of manageable steps (Gathercole et al., 2006).
- > **Brief:** They include as few steps as possible and get straight to the point, especially when giving instructions for new or unfamiliar activities. If you are struggling to achieve a low number of steps, it may be worth looking at making the task itself less complex.
- > **Visible:** Displaying instructions in addition to communicating them verbally means that pupils won't have to remember them while also thinking about the lesson content.
- > **Checked:** Pupils can easily misunderstand initial instructions. Checking that pupils have understood the steps before letting them get on with the task can increase the chances that they do the right thing (Rosenshine, 2012). This also increases the chances of them remembering the instructions.
- > **Supported:** Consistent language and non-verbal actions for common classroom directions also make them more likely to be memorable.

NUANCES AND CAVEATS

It is important to think about how we communicate instructions. Timing, tone of voice and how we model instructions can all make a difference to how well they are taken on board. Providing clear instructions is beneficial to all pupils but it can be especially important for younger pupils, those with Special Educational Needs and those with lower working memory capacity (Gathercole et al., 2006).



CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. Clear instructions support high expectations because...

a.) They support in creating a purposeful and effective learning environment.

b.) They are easy to script.

c.) They make it more likely pupils will respond to instruction, as working memory is less likely to be overloaded.

2. What factors should a teacher consider when giving instructions?

a.) That they are displayed.

b.) How brief they are.

c.) How stepped they are.

d.) That they make it clear the teacher is watching for naughty behaviour.

3. Which pupils are effective instructions helpful for?

a.) Only pupils with SEND.

b.) Younger pupils.

c.) Only older pupils.

d.) All pupils.

e.) Pupils with lower working memory capacity.

FURTHER READING

Gathercole, S., (2008) The Psychologist. bit.ly/ecf-ga

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Ms Silva can improve pupil behaviour and learning by understanding that:

- > Holding and communicating high teacher expectations can improve pupil behaviour.
- > Effective instructions can both prevent problems occurring and reinforce desired behaviours.
- > Delivering effective instructions involves a concise 'what' and a clear 'how'.
- > Checking that pupils understand instructions before letting them start increases the chances of success.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Gathercole, S., Lamont, E., & Alloway, T. (2006). Working memory in the classroom. *Working memory and education*, 219-240.
- IES (2008). *Reducing Behavior Problems in the Elementary School Classroom*. bit.ly/ecf-ies
- Kern, L., & Clemens, N. H. (2007). Antecedent strategies to promote appropriate classroom behavior. *Psychology in Schools*, 44, 65-75.
- Murdock-Perriera, L. A., & Sedlacek, Q. C. (2018). Questioning Pygmalion in the twenty-first century: the formation, transmission, and attributional influence of teacher expectancies. *Social Psychology of Education*, 21(3), 691-707.
- Rosenshine, B. (2012). Principles of Instruction: Research-based strategies that all teachers should know. *American Educator*, 12-20. [Bit.ly/ecf-ros](http://bit.ly/ecf-ros)
- Tsiplakides, I. & Keramida, A. (2010). The relationship between teacher expectations and student achievement in the teaching of English as a foreign language. *English Language Teaching*, 3(2), 22-26. [Bit.ly/ecf-tsi](http://bit.ly/ecf-tsi)

QUIZ ANSWERS

1. a, c
2. a, b, c
3. b, d, e

B4 | BEHAVIOUR: DIRECTING ATTENTION

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Ms Silva knows what she wants her pupils to do and communicates it clearly. However, during her expositions or when pupils are working independently, she finds that some pupils simply drift off and stop paying attention to her or the task. What could she do to keep her pupils focused for more of the lesson?

KEY IDEA

Attention naturally drifts and so teachers need to continuously monitor and actively direct pupil attention to maintain a classroom where all pupils succeed.

KEY TAKEAWAYS:

Ms Silva can direct pupil attention and increase learning by understanding that:

- > Self-regulation and pupil motivation can affect how pupils direct their attention, which naturally wanders over time.
- > Proactively monitoring, modelling and reinforcing helps direct pupil attention and keep them on task.
- > When reinforcement is positively framed it makes pupils feel safe and creates a more productive learning environment.
- > Teachers can redirect attention in the least intrusive ways. But if action taken by the teacher is sometimes clearly visible, pupils can feel that their teacher is more effective and experience a stronger sense of shared classroom values.

ATTENTION WANDERS

Ms Silva has high expectations of her pupils. She regularly communicates these and keeps her instructions clear and concise to help pupils meet these expectations (Gathercole et al., 2016). However, even this does not guarantee that her pupils will continue to pay attention throughout the lesson.

It is natural for the mind to wander after a time, particularly in busy environments such as the classroom (Sweller et al., 1998). Attention is also influenced by pupil motivation. For example, where pupils believe they may be unsuccessful, they can end up avoiding a task, while prior experiences of success make them more likely to persist at similar tasks (Gutman & Schoon, 2013).

Whatever the reason, Ms Silva needs to recognise that pupil attention wanders, so this is something she needs to take responsibility for and direct as needed to keep her pupils learning.

DIRECTING PUPIL ATTENTION

A variety of strategies can be used to direct pupil attention. These include:

- > **Modelling:** Showing pupils exactly what paying attention looks like.
- > **Reinforcing:** Acknowledging or praising pupils who are demonstrating good levels of focus, being specific about what they are doing to earn this recognition.
- > **Positively framing:** Saying what you want to see from pupils rather than what you don't want to see.

One useful distinction here is to appreciate the difference between praise and acknowledgement. Praise entails rewarding a behaviour that exceeds expectations, whereas acknowledgement entails showing that you have noticed a behaviour that meets expectations. Over-praising pupils who are merely following standard rules can inadvertently convey low expectations and hamper learning (Coe et al., 2014).

Pupil capacity to self-regulate their emotions and behaviour influences how well they can direct their attention towards specific tasks. No-one is able to completely self-regulate their attention at all times, and this ability varies between individuals. But self-regulation can be developed, improving pupils' abilities to learn effectively (EEF, 2017). In addition, our behaviour is influenced by that of our peers. The more pupils that are paying attention, the more others will be encouraged to do so (IES, 2008). Effective teachers take account of these factors to help their pupils focus by using, for example:

- > **Brief reminders:** Issuing a quick reminder of what is expected, using consistent language and non-verbal signals. "We're just waiting for one more person to face the front in silence, thank you."

- > **Private reminders:** Having subtle conversations with individuals when it is only a few who need support to stay focused. "Hi Jenny, let me know if there is anything you need to help you get started."
- > **Benefit of the doubt:** Communicating a belief that off-task behaviour is a result of enthusiasm for learning rather than purposeful disruption. "I know you are really keen to discuss this task with your partner but, to do a good job of it, first you need to put your pens down and face me."

PUPIL PERCEPTIONS MATTER

Pupils tend to have a more positive classroom experience when they feel that their teacher is effective at managing the attention and behaviour of the class. This is important because pupils who have positive classroom experiences are more likely to feel wider life satisfaction and get better results. Pupils see effective teachers as those who (Rathmann et al., 2018):

- > Are aware of everything in class, instantly noticing when pupils aren't paying attention.
- > Manage to quickly re-involve pupils if they don't pay attention for a moment.
- > Have the class under control.

CHANGE TAKES TIME

Explaining a classroom routine just once or delivering a set of instructions without follow up is rarely enough to create lasting classroom change. For high expectations to become embedded, teachers need to continually remind and reinforce (IES, 2008).

Reinforcement is more effective when it acknowledges positive behaviour more often than highlighting negative behaviour. Over time, this approach has been shown to increase academic engagement and focus (IES, 2008).

NUANCES AND CAVEATS

Acknowledgement, praise and reminders are powerful teaching tools for directing attention. However, there are also times when teachers simply need to issue a sanction or escalate the issue in line with the school behaviour policy. For example, when pupils are being defiant, inhibiting learning or risking the safety of others (IES, 2008).

CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. What reasons might a pupil be off task, despite clear instructions and modelling?

- a.) The pupil is struggling with self-regulation.
- b.) The pupil is confident with the instructions.
- c.) The pupil is worried they will not be successful at the task.
- d.) The pupil is confident with the task.

2. What is an example of positive framing?

- a.) "I can see the blue table has all their pens out."
- b.) "I have nearly 100% of the class there."
- c.) "We should all be sat with our legs crossed."
- d.) "The blue table isn't quite there yet."

3. Which of the following corrections is positively framed?

- a.) "Why have the back row not got their pens out?"
- b.) "I am still waiting as people are not following my instructions."
- c.) "Pens down, eyes on me."
- d.) "Everybody should have their book open on page 13 with their finder points on the first work, ready for reading."

FURTHER READING

Gutman, L. & Schoon, L. (2013). The impact of non-cognitive skills on the outcomes of young people. bit.ly/ecf-eef2

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Ms Silva can direct pupil attention and increase learning by understanding that:

- > Self-regulation and pupil motivation can affect how pupils direct their attention, which naturally wanders over time.
- > Proactively monitoring, modelling and reinforcing helps direct pupil attention and keep them on task.
- > When reinforcement is positively framed it makes pupils feel safe and creates a more productive learning environment.
- > Teachers can redirect attention in the least intrusive ways. But if action taken by the teacher is sometimes clearly visible, pupils can feel that their teacher is more effective and experience a stronger sense of shared classroom values.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014). What makes great teaching: Review of the underpinning research. Durham University. bit.ly/ecf-coe
- EEF (2017). Metacognition and Self-regulated learning Guidance Report. bit.ly/ecf-eef
- Gathercole, S., Lamont, E., & Alloway, T. (2006). Working memory in the classroom. Working memory and education, 219-240.
- Gutman, L. & Schoon, L. (2013). The impact of non-cognitive skills on the outcomes of young people. bit.ly/ecf-eef2
- IES (2008). Reducing Behavior Problems in the Elementary School Classroom. bit.ly/ecf-ies
- Rathmann, K., Herke, M., Hurrelmann, K. & Richter, M. (2018). Perceived class climate and school-aged children's life satisfaction: The role of the learning environment in classrooms. PLOS ONE. bit.ly/ecf-rat
- Sweller, J., van Merriënboer, J. J. G., & Paas, F. G. (1998). Cognitive Architecture and Instructional Design. Educational Psychology Review, 10(3), 251-296.

QUIZ ANSWERS

1. a, c
2. a, b, c
3. c, d

B5 | BEHAVIOUR: LOW-LEVEL DISRUPTION

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Ms Silva feels she can secure positive behaviour from most pupils most of the time. However, she occasionally finds a few pupils are not following her instructions or are being disruptive in subtle ways. For example, having whispered conversations during a silent task, or turning around to talk to others when she is not looking. Ms Silva worries that, over time, others will begin to follow suit. How can she address this low-level disruption? Ms Silva feels she can secure positive behaviour from most pupils most of the time. However, she occasionally finds a few pupils are not following her instructions or are being disruptive in subtle ways. For example, having whispered conversations during a silent task, or turning around to talk to others when she is not looking. Ms Silva worries that, over time, others will begin to follow suit. How can she address this low-level disruption?

KEY IDEA

Tackling low-level disruption – both proactively and reactively – can improve learning and foster a positive classroom environment over time.

KEY TAKEAWAYS:

Ms Silva can begin to address low-level disruption by understanding that: Routines can create a positive and motivating climate in her classroom

- > Addressing low-level disruption means supporting pupils to meet clear behavioural expectations that ensure the learning environment is effective and that pupils remain on task.
- > This can be achieved through proactively communicating expectations and reactively reminding pupils in a way which is consistent, proportionate and reinforces wider school expectations.
- > Consistently addressing low-level disruption can improve pupil-teacher relationships and classroom culture.

PROACTIVELY ADDRESSING LOW-LEVEL DISRUPTION

Ms Silva has noticed occasional instances of low-level disruption. Research suggests there is a link between time on task and pupil learning (Muijs & Reynolds, 2010), so low-level disruption is a problem because it reduces time on task, making the learning environment less effective. Effective teaching can address this by proactively avoiding problem behaviours where possible and reacting to get learning back on track (IES, 2008).

In effective learning environments, pupils are clear about what they are expected to do (IES, 2008). Ms Silva has already considered how to convey clear behavioural expectations through routines, instructions and directing pupil attention. Fundamental to this is ensuring expectations are specific enough for pupils to know exactly what they are expected to do, without any confusion or ambiguity, making it less likely they'll go off-task. For example, "I expect everyone to be silent, with pens down and eyes on me" is more concrete than "I need your attention", where it is not clear whether pupils are still allowed to talk, where they should be facing or what exactly they should be doing. In the second example confusion or ambiguity could lead to pupils going off-task. Alongside clear behavioural expectations it is also helpful if teachers explain the purpose and benefits of a task so pupils know both what they are expected to do and why.

She can also be proactive by positively reinforcing these expectations through acknowledgement, drawing attention to these behaviours. For example, once she has shared a concrete behaviour, she can say "I can hear Sarah and Katie talking in partner voices about question 2." She could also make links to shared values and classroom and school culture: "I can see Katie and Sarah are taking turns, which is respectful." She should however avoid lavish praise unless expectations have been exceeded, as unwarranted praise lowers pupil motivation (Coe et al., 2014).

REACTIVE TEACHER REMINDERS HELP PUPILS STAY ON TASK

Reminders are powerful reactive strategies, to ensure pupils successfully stay on task once proactive strategies have been used. While clear and concise expectations help pupils understand what strategies are best applied to tasks, effective reminders can help pupils follow through with those strategies (IES, 2008). Many of the strategies that teachers employ to direct pupil attention are also useful for tackling low-level disruption.

For example:

- > **Anonymous & positive framing:** Picking out examples of expected behaviour without naming names. "I can see four people have already opened their exercise books." (Lemov, 2015)
- > **Targeting specific pupil behaviours:** Naming and reminding particular pupils what they should be doing using concise language. "Edward: facing your partner."
- > **Private correction:** If pupils need a further reminder or sanction, doing this privately, where possible, in a quick

one to one conversation avoids class attention and saves face for the pupil. For example, quietly saying to an individual "That's a first consequence. I should see you facing your partner discussing the work." (Lemov, 2015)

- > **Highlighting the benefits** Teachers can briefly remind pupils of the purpose of the task and how it might help them achieve their goals during the task. "Knowing your number bonds will help you solve numerical problems much faster."

Taken together, such strategies can reduce low-level disruption and increase the likelihood that pupils successfully complete tasks. Effective learning environments are predictable (IES, 2008), so Ms Silva needs to be consistent with her reminders, for example by linking them to school rules and behavioural expectations.

IMPROVING PUPIL-TEACHER RELATIONSHIPS

Consistently addressing low-level disruption can also improve pupil-teacher relationships and pupil wellbeing. Pupils have positive perceptions of predictable and secure learning environments, where teachers effectively monitor and manage the class (Rathmann et al., 2018). In contrast, when teachers show low expectations of pupil success, this can lead to reduced pupil self-belief and motivation (Tsiplakies & Keramida, 2010). This can sometimes happen in an unspoken and unintentional way. For example, correcting minor transgressions by some pupils but not others can imply the teacher thinks some pupils are more likely to misbehave or less able to complete a task than others. This can have a knock-on effect on pupil motivation and learning, which can be particularly detrimental for low-attaining pupils (Gutman & Schoon, 2013). Teachers must be careful not to inadvertently communicate low expectations by permitting low-level disruption or being inconsistent. What we permit, we promote.

NUANCES AND CAVEATS

Teachers do not need to respond in a subtle way to every instance of disruption. School behaviour policies often have rewards and sanctions and it is appropriate to use these, particularly to address significant disruption. But where possible, proactive, least intrusive and positive reinforcement of clear behavioural expectations are most effective (IES, 2008). Prevention is better than cure.

Negative pupil emotions can also lead to low-level disruption where pupils avoid learning. This can happen where pupils suspect they might fail at a task, especially when failure poses a threat to their positive self-image (Kluger & DeNisi 1996). In the longer-term, teachers can address this by developing pupils' ability to self-regulate their emotions (EEF, 2017). Immediately, teachers can usually avoid this issue by ensuring clear expectations and reminders give pupils the best chance of being successful. Teachers can also make extra reminders and help private, to preserve pupil self-image in front of their peers and give pupils time to respond to the correction, to overcome possible emotional responses to having their behaviour corrected.

CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. Why should teachers anticipate low-level disruption?

- a.) There is a link between time on task and pupil learning. The more disruption can be avoided, the more pupils are likely to learn.
- b.) Pupils need lots of praise to behave well. Teachers should be lavish with praise to avoid disruption.
- c.) Teachers can ensure pupils are clear about what they have to do to avoid disruption.
- d.) Helping pupils see links between their actions and shared values helps keep them on task.

2. Which of the following are effective strategies to react to low-level disruption?

- a.) Making an example of pupils who are off-task.
- b.) Naming and reminding particular pupils what they should be doing using concise language.
- c.) Anonymously acknowledging a pupil.
- d.) Positive framing of expected behaviours.
- e.) High expectations support positive behaviour for younger pupils

3. How can addressing low-level disruption affect pupil-teacher relationships?

- a.) Predictably addressing low-level disruption improves pupil-teacher relationships.
- b.) Celebrating every pupil success however small improves pupil-teacher relationships.
- c.) Consistently addressing low-level disruption – treating all pupils the same – improves pupil-teacher relationships.

FURTHER READING

EEF (2019) Improving behaviour in schools bit.ly/ecf-eef15

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Ms Silva can begin to address low-level disruption by understanding that:

- > Addressing low-level disruption means supporting pupils to meet clear behavioural expectations that ensure the learning environment is effective and that pupils remain on task.
- > This can be achieved through proactively communicating expectations and reactively reminding pupils in a way which is consistent, proportionate and reinforces wider school expectations.
- > Consistently addressing low-level disruption can improve pupil-teacher relationships and classroom culture.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014). What makes great teaching: Review of the underpinning research. Durham University. bit.ly/ecf-coe
- EEF (2017). Metacognition and Self-regulated learning Guidance Report. bit.ly/ecf-eef
- Gutman, L. & Schoon, L. (2013). The impact of non-cognitive skills on the outcomes of young people. bit.ly/ecf-eef2
- Kluger, A. N., & DeNisi, A. (1996). The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. *Psychological Bulletin*, 119(2), 254–284.
- Lemov, D. (2015). *Teach Like a Champion 2.0* (2nd ed.). San Francisco: Jossey-Bass.
- Muijs, D. & Reynolds, D. (2010). *Effective Teaching*. London: SAGE Publications.
- Rathmann K., Herke M., Hurrelmann K. & Richter M. (2018). Perceived class climate and school-aged children's life satisfaction: The role of the learning environment in classrooms. *PLOS ONE*. bit.ly/ecf-rat
- Tsiplakides, I. & Keramida, A. (2010). The relationship between teacher expectations and student achievement in the teaching of English as a foreign language. *English Language Teaching*, 3(2). bit.ly/ecf-tsi

QUIZ ANSWERS

1. a, c, d
2. b, c, d
3. a, c.

B6 | BEHAVIOUR: CONSISTENCY

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Ms Mahrez is able to tackle disruptive classroom behaviour when it arises, but some of her pupils need constant monitoring to keep them on task and others do little more than the minimum required to complete the task. What can she do to create an even more productive learning environment?

KEY IDEA

Being consistent in sharing and reinforcing expectations supports pupil motivation. Over time it can generate an increasingly positive, stable and effective learning environment.

KEY TAKEAWAYS:

Ms Mahrez can improve the effectiveness of her classroom by understanding that:

- > Consistency entails predictably modelling and enforcing classroom systems. It is most effective when positive reinforcement moves pupils towards intrinsic motivation.
- > Consistency can improve teacher-pupil relationships and school culture by promoting shared values.
- > Over time, consistently enabling pupils to be successful can improve pupil wellbeing, motivation, behaviour and academic outcomes.

CONSISTENCY AND SYSTEMS

When teachers are predictable in how they act, pupils come to know what to expect, feel more secure in the classroom and can focus more on their learning (Rathmann et al., 2018). Being predictable entails being consistent in how we respond to similar behaviours by different pupils (both good and bad), and by consistently modelling expected attitudes, values and behaviours (IES, 2008).

One way to increase the predictability of our action is by sticking closely with a classroom behaviour system aligned with wider school expectations. Such systems often include (IES, 2008):

- > Proactive teaching of sanctions and rewards.
- > Reactive procedures for responding to common situations.
- > Basic policies for escalating persistent or extreme behaviour.

It is important that the system is simple to follow and easy to remember, for example with consistent language and non-verbal reminders for common classroom tasks. When this is the case, Ms Mahrez will be able to respond quickly without having to think too hard about every situation, and so is more likely to respond consistently over time.

The most effective systems are those that use reinforcement of positive behaviours more than reprimands (IES, 2008). However, teachers must also be careful not to over-use praise (Coe et al., 2014), using acknowledgement when expectations are met (“Thank you for putting your pen down, Jen”) and only praising when they are exceeded (“Well done for constructing a sentence that uses powerful persuasive language, Jamil”).

INTRINSIC MOTIVATION

Effective classroom behaviour systems also make the most of pupils’ intrinsic motivation. Intrinsic motivation is when pupils do something because they want to, perhaps because it is related to their identity or values. In contrast, extrinsic motivation is where pupils do something because of a sanction or reward. This distinction is important because pupils who are motivated intrinsically are more likely to behave better and persist longer with tasks when they get challenging (Lazowski & Hulleman, 2016).

Over time, teachers should aim to gradually reduce pupil reliance on external rewards or sanctions (IES, 2008). Ms Mahrez could do this by using intentional and consistent language that promotes challenge and aspiration, and helping pupils make links between their actions, successes and long-term goals. For example, when setting up a task which requires retrieval of prior knowledge, Ms Mahrez might say “successfully remembering this will help you to learn about figurative language, which are crucial for much of the English we’ll learn in the future and will also help you with everyday reading and writing”.

CONSISTENCY AND PUPIL-TEACHER RELATIONSHIPS

Effective whole school environments often include:

- > High expectations from teachers of pupil learning.
- > Consistent enforcement of collectively agreed upon disciplinary policies.
- > Effective classroom management (Chapman et al., 2013).

Therefore, individual teachers have a role in communicating shared values and improving classroom and school culture. They can do this by reinforcing expectations and following school behaviour policies in their classrooms and around the school. For example, challenging pupils on their manners in the corridor or upholding school rules in the playground.

Teacher consistency can also improve pupil-teacher relationships. Pupil perceptions are based on repeated interactions over time, so when teachers consistently manage the class in a controlled and positive way, pupils are more likely to believe that their teacher has their ‘best interests at heart’ and feel more ‘connected’ to school (Chapman et al., 2013). When this happens, pupils are more likely to interpret corrective interactions from their teacher – for example, being reminded to turn around and listen – as a supportive act rather than just a meaningless punishment.

CONSISTENCY BREEDS SUCCESS

In addition to improving pupil wellbeing and whole school climate, consistency over time can have a positive impact on pupil outcomes. When teachers regularly communicate a belief that everyone is able to achieve academically, their pupils are more likely to live up to those expectations (Murdock-Perriera et al., 2018). Furthermore, when teachers are able to consistently enable success, pupils will increasingly believe in their own ability, feel more positive about school and improve their outcomes over time.

In short, consistency is a powerful tool for promoting high expectations, enabling a positive whole-school climate and building trusting pupil-teacher relationships.

NUANCES AND CAVEATS

Teaching pupils strategies to develop their ability to self-regulate their emotions can also lead to more consistent pupil responses in the long term - for example, developing pupil emotional language to express the problems they are experiencing and self-calming strategies to support them to learn more effectively when the content is challenging (EEF, 2018). Supporting pupil success can also help (IES, 2008). Enabling pupils to be successful can minimise emotional barriers while developing emotional self-regulation.

CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. What is important to know about consistency and systems?

- a.) Effective systems publicly shame negative behaviour as soon as it occurs.
- b.) Effective systems include proactive, reactive and escalation strategies.
- c.) Effective reinforcement is about regularly praising pupils who meet your expectations.
- d.) Effective systems use reinforcement of positive behaviour more than reprimand.

2. Which of the following is a correct definition of intrinsic motivation?

- a.) Intrinsic motivation is when pupils do something because of a fear of a sanction.
- b.) Intrinsic motivation is when pupils do something for an external reward.
- c.) Intrinsic motivation is when pupils do something that they don't want to.
- d.) Intrinsic motivation is when pupils do something because they want to, perhaps because it is linked to their identity or values.

3. Which of the following are benefits of a consistent classroom environment?

- a.) Improves the chances pupils will succeed.
- b.) Improves pupil-teacher relationships.
- c.) Decreases pupils' intrinsic motivation.
- d.) Improves pupil wellbeing.

FURTHER READING

Rathmann K., Herke M., Hurrelmann K. & Richter M. (2018). Perceived class climate and school-aged children's life satisfaction: The role of the learning environment in classrooms. PLOS ONE. [bit.ly/ecf-rat](https://doi.org/10.1371/journal.pone.0198848)

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Ms Mahrez can improve the effectiveness of her classroom by understanding that:

- > Consistency entails predictably modelling and enforcing classroom systems. It is most effective when positive reinforcement moves pupils towards intrinsic motivation.
- > Consistency can improve teacher-pupil relationships and school culture by promoting shared values.
- > Over time, consistently enabling pupils to be successful can improve pupil wellbeing, motivation, behaviour and academic outcomes.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Chapman, R. L., Buckley, L., & Sheehan, M. (2013). School-Based Programs for Increasing Connectedness and Reducing Risk Behavior: A systematic review. *Educational Psychology Review*, 25(1), 95-114.
- Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014). What makes great teaching: Review of the underpinning research. Durham University. bit.ly/ecf-coe
- EEF (2018). Teaching and Learning Toolkit. bit.ly/ecf-eef14
- IES (2008). Reducing Behavior Problems in the Elementary School Classroom. bit.ly/ecf-ies
- Lazowski, R. A., & Hulleman, C. S. (2016). Motivation Interventions in Education: A Meta-Analytic Review. *Review of Educational Research*, 86(2), 602-640.
- Murdock-Perriera, L. A., & Sedlacek, Q. C. (2018). Questioning Pygmalion in the twenty-first century: the formation, transmission, and attributional influence of teacher expectancies. *Social Psychology of Education*, 21(3), 691-707.
- Rathmann K., Herke M., Hurrelmann K. & Richter M. (2018). Perceived class climate and school-aged children's life satisfaction: The role of the learning environment in classrooms. *PLOS ONE*. bit.ly/ecf-rat

QUIZ ANSWERS

1. b, d
2. d
- 3.a, b, d

B7 BEHAVIOUR: POSITIVE LEARNING ENVIRONMENT

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Ms Mahrez is increasingly pleased with the behaviour of her pupils. However, they are not always willing to think hard or take risks in their learning. For example, they are sometimes reluctant to contribute answers when they think they might be incorrect and give up quickly when tasks are challenging. She wants pupils to develop approaches to challenging goals which support them to be resilient and independent. How can Ms Mahrez move from simply managing behavioural issues such as low-level disruption, to actively encouraging behaviours that underpin successful learning?

KEY IDEA

Teachers should seek to model and develop positive attitudes, values and behaviours that underpin successful learning – particularly emotional self-regulation – and show pupils the role of making mistakes in being successful.

KEY TAKEAWAYS:

Teachers can create a positive environment where behaviour promotes learning by understanding that:

- > Teacher expectations affect pupil attitudes, values and behaviours, and therefore influence learning outcomes.
- > Teachers are role-models for pupils. What teachers say and do will influence pupil behaviour, attitudes and values.
- > Teachers can promote pupil behaviour which is resilient and motivated by developing pupil emotional self-regulation. This means they have a healthy approach to failure as part of the learning process and also ensures pupils regularly experience meaningful success.

MOVING BEYOND COMPLIANCE

Teacher expectations matter: the extent to which a teacher believes a pupil is likely to achieve alters that pupil's experience of the classroom and their own likelihood of success (Coe et al., 2014; Tsiplakides & Keramida, 2010). Ms Mahrez has communicated and embedded high expectations of pupil behaviour into her classroom routines and behaviour management systems. With these essential foundations in place, she now needs to build further on these to maximise pupil learning. This can be achieved by modelling and embedding attitudes, values and behaviours that support pupils to learn more successfully.

Effective teaching sets goals which challenge pupils and is demanding yet supportive in ensuring pupils successfully meet these (Coe et al., 2014). Ms Mahrez has reflected on the behaviours she wants to see and those which her pupils would benefit most from developing to successfully tackle such work. For example, she wants her pupils to be willing to join class discussions and offer answers even when their thinking is not fully developed, or when there is a risk of being wrong. Pupils sharing their thinking will enable her to gather more information on what her pupils know and don't know, improving her ability to teach responsively and supporting pupil success (Black and Wiliam, 2009; Speckesser et al., 2018).

Ms Mahrez's focus is still on the climate in her classroom but it has shifted from behaviours which might hinder her teaching to behaviours which will support her to teach, and pupils to learn, more successfully.

MODELLING EFFECTIVE LEARNING BEHAVIOURS

Adults can be powerful role models for pupils. Where trusting relationships are present, what teachers do will influence how pupils behave and the choices they make (Johnson et al., 2016). Ms Mahrez realises that before explaining desired behaviours she first needs to model them – how she acts is as important as what she says. Once Ms Mahrez has planned exactly what she wants to model to pupils – for example, proactively contributing, sharing answers that they are unsure of and supporting others who contribute in class – she can then direct pupil attention to her behaviours in these areas.

Effective teaching ensures that pupils experience success and helps them recognise failures as natural steps on the path to future success (Coe et al, 2014). Ms Mahrez can embrace this by showing pupils why errors are useful for her teaching, what a respectful and safe class climate looks like and calling on pupils to emulate these resilient and motivated behaviours.

Effective teaching also seeks to develop pupils' emotional self-regulation (EEF, 2018). By modelling the emotional impact of sharing an answer that might be

wrong, she can help pupils develop their self-awareness (“this might feel hard”) and their self-regulation (“making an attempt and failing is a natural part of learning. Getting it wrong now is a step on the path to getting it right in the future”). This is crucial as often pupils refuse tasks where they feel there is a risk they will fail (Kluger & de Nisi, 1996).

SUPPORTING PUPILS TO UNDERSTAND AND ADOPT EFFECTIVE LEARNING BEHAVIOURS

In addition to modelling, Ms Mahrez can improve her classroom environment by supporting pupils to understand and adopt behaviours and attitudes that will help them to learn more effectively.

To achieve this, Ms Mahrez needs to direct pupil attention to the specific behaviours she has modelled – particularly linked to resilience and motivation – and explain why these are important. For example, she can explain that it is important for pupils to be open in contributing answers in class so that she can understand their errors. She can also explain that she needs pupils to be supportive and respectful of each other to create an environment where classmates feel comfortable contributing even where they might be wrong. Pupil behaviours can further be shaped by behaviour they observe in their peers (IES, 2008). So, Ms Mahrez should draw attention to other pupils exhibiting the positive behaviours she wants to see.

Effective teachers often attribute pupil success to ‘effort rather than ability’, and value ‘resilience to failure’ (Coe et al, 2014). In developing this attitude in her pupils, Ms Mahrez needs to reward effort and highlight its contribution to success. When a pupil works hard, thinks hard or attempts a problem, Ms Mahrez should construct her praise to help pupils understand that these behaviours and mind-sets are valuable approaches to learning that will make success more likely.

When reinforcing her modelling, Ms Mahrez should ensure her words and actions line up. She should consistently remind pupils who are not meeting her expectations, and still distinguish between acknowledgement for expectations met and praise for expectations exceeded.

NUANCES AND CAVEATS

Getting the balance between pupil success and encouraging pupil errors is challenging for Ms Mahrez. Teachers should aim for a high success rate (Coe et al., 2014) while developing pupil emotional self-regulation to support them to address the inevitable negative feelings around errors.

CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. What are the benefits of teachers setting high expectations when seeking to move pupil attitudes, values and behaviours beyond compliance?

- a.) All pupils will eventually comply with your asks.
- b.) Pupils are more likely to live up to high expectations.
- c.) Pupils will always put maximum effort into every task.
- d.) Pupils can adopt expectations which help them to learn more effectively.

2. Which of the following are important when modelling effective learning behaviours?

- a.) Modelling is not needed. It is simpler for teachers to tell pupils what they expect.
- b.) Identifying exactly what behaviours will support pupil success.
- c.) Modelling emotional responses to errors and how to overcome these.
- d.) Using rewards to encourage high attainment.

3. How can teachers support pupils to understand and adopt effective learning behaviours?

- a.) Spotlight pupils not meeting expectations and explain how this makes it less likely they'll get great results.
- b.) Direct pupil attention to pupils exhibiting effective learning behaviours.
- c.) Explain that errors are an important part of learning, and that pupils need to be supportive of peers who make errors.
- d.) Link pupil success to ability rather than effort.

FURTHER READING

EEF. (2018). Teaching and learning toolkit. Entry on social and emotional learning. bit.ly/ecf-eef14

EEF. (2019). Improving Social and Emotional Learning in Primary Schools. bit.ly/eef-ecf15

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Teachers can create a positive environment where behaviour promotes learning by understanding that:

- > Teacher expectations affect pupil attitudes, values and behaviours, and therefore influence learning outcomes.
- > Teachers are role-models for pupils. What teachers say and do will influence pupil behaviour, attitudes and values.
- > Teachers can promote pupil behaviour which is resilient and motivated by developing pupil emotional self-regulation. This means they have a healthy approach to failure as part of the learning process and also ensures pupils regularly experience meaningful success.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Black, P., & William, D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation and Accountability*, 21(1), 5–31.
- Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014). What makes great teaching. Review of the underpinning research. Durham University. bit.ly/ecf-coe
- EEF. (2018). Teaching and learning toolkit. bit.ly/ecf-eef14
- Johnson, S., Buckingham, M., Morris, S., Suzuki, S., Weiner, M., Hershberg, R. & Lerner, R. (2016). Adolescents' Character Role Models: Exploring Who Young People Look Up to as Examples of How to Be a Good Person. *Research in Human Development*, 13(2), 126–141.
- Kluger, A. N., & DeNisi, A. (1996). The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. *Psychological Bulletin*, 119(2), 254–284.
- Speckesser, S., Runge, J., Foliano, F., Bursnall, M., Hudson-Sharp, N., Rolfe, H. & Anders, J. (2018). Embedding Formative Assessment: Evaluation Report. bit.ly/ecf-eef9
- Tsiplakides, I. & Keramida, A. (2010). The relationship between teacher expectations and student achievement in the teaching of English as a foreign language. *English Language Teaching*, 3(2). bit.ly/ecf-tsi

QUIZ ANSWERS

1. b, d
2. b, c
3. b, c

B8 | BEHAVIOUR: STRUCTURED SUPPORT OF LEARNING

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Ms Sterling notices that, while pupils are willing to attempt class work, when they perceive tasks to be too hard this leads to off-task behaviour – including getting distracted and sometimes distracting others. How can she make learning more manageable, supporting pupils to persist at tasks?

KEY IDEA

Breaking challenging tasks into steps and providing support when necessary makes it more likely pupils will persist with tasks.

KEY TAKEAWAYS:

Ms Sterling can make learning more manageable for pupils by understanding that:

- > When academic demands are not well matched to pupil capabilities, pupils' working memory can become overloaded, causing them to stop trying or go off-task.
- > Introducing new material in steps, building on prior knowledge and using guides and scaffolds all help to avoid overloading pupils' working memory and make it more likely that pupils will stay on-task.

MAKING LEARNING MANAGEABLE SUPPORTS ON-TASK PUPIL BEHAVIOUR

Challenging behaviour can arise when there is a mismatch between classroom academic demands and pupil capabilities (IES, 2008). This happens because working memory capacity is limited and can become easily overloaded when pupils are asked to complete tasks which are unfamiliar or overly complex (Gathercole et al., 2008; IES, 2008). Pupils may seek to avoid a task if it seems threatening to their sense of self (Kluger & DeNisi, 1996): for example, if a pupil thinks they might fail at the task.

By making learning manageable, teachers affect how pupils behave, as well as how they learn (IES, 2008). Ms Sterling has already been thinking about the foundations of managing behaviour: telling pupils the types of behaviour she expects, modelling this, and responding consistently. Refining her instruction is another way to improve pupils' learning behaviours since students' success can build their motivation and confidence (Coe et al., 2014). Introducing new material in steps is a particularly effective approach to making learning more manageable (Rosenshine, 2012).

INTRODUCING NEW MATERIAL IN STEPS AND USING EXAMPLES MAKES IT MORE MANAGEABLE

Checking pupil prior knowledge and explicitly linking new ideas to what has previously been learned makes it less likely pupils working memory will be overloaded (Deans for Impact, 2015). Ms Sterling could use several instructional principles to support pupils in this way (Rosenshine, 2012):

- Briefly reviewing what pupils have already learned.
- Introducing new material in small steps.
- Checking pupil understanding of the new knowledge regularly.
- Allowing pupils to practise using this new knowledge in steps whilst providing models and scaffolds for this practice.

Introducing new materials in steps like this helps make new material more manageable, making it more likely pupils will persist with the task.

GUIDES AND SCAFFOLDS ALSO HELP PUPILS THINK ABOUT KEY IDEAS TO BE LEARNED

Learning can also be made more manageable by providing pupils with 'scaffolding'. This can be tools that complete part of the task for the students, or a model of the completed task itself (Rosenshine, 2012). In the early years, scaffolds might even be physical objects such as counters and toys (EEF, 2017); among older pupils they could be cue cards or checklists (Rosenshine, 2012).

Scaffolding simply means providing pupils with support to tackle a problem or demonstrate their learning (Rosenshine, 2012). By making the task more manageable, Ms Sterling can avoid overwhelming her pupils' working memories and make it easier for them to focus attention on particular aspects. For example, worked examples can be particularly helpful for Ms Sterling's pupils as these stop pupils searching for any possible answer to a task. This reduces distractions by supporting pupils to focus only on each step of a successful solution (Deans for Impact, 2015).

Scaffolded tasks should be challenging as well as manageable. Making learning manageable doesn't mean lowering expectations of all or some pupils. Where this balance isn't achieved, pupils may become frustrated or bored, as the task can be perceived to be beyond (or beneath) their capability (van de Pol et al., 2015). This frustration or boredom can then result in low-level disruption. Scaffolding should therefore be used in a targeted way and be removed when pupils show they are able to be successful at a task, supporting pupils to become independent (Rosenshine, 2012).

NUANCES AND CAVEATS

Ensuring pupil working memory doesn't become overloaded doesn't mean setting unchallenging work – it means helping pupils to think hard about what they have just learnt by providing structured support as appropriate (Deans for Impact, 2015).

While teachers provide pupils with temporary 'scaffolds', it is important that these are withdrawn once pupils are experiencing success, as scaffolds inhibit independent practice once pupils have mastered the material taught (Rosenshine, 2012).

While good task and lesson design can help pupils to focus, ultimate responsibility for a pupil's behaviour rests with the pupil, not with the teacher. If a pupil is unfocused, a teacher may wish to consider whether a change to the task design might avoid this in future. But this does not mean that the solution to pupils' lack of focus is always the teacher's lesson design.



CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. Which of the following are reasons learning might be unmanageable?

- a.) Pupils are not given adequate support.
- b.) Expectations aren't kept as low as possible.
- c.) The task is not broken down into manageable steps.

2. What impact do teacher high expectations have on pupil behaviour?

- a.) Providing temporary scaffolding for tasks.
- b.) Introducing pupils to the full complexity of ideas as soon as possible.
- c.) Introducing material in small steps.

3. What is scaffolding?

- a.) Changing the objectives of the lesson for some pupils to better match pupils' knowledge and skill level.
- b.) Providing pupils with support to tackle a problem or demonstrate their learning, before removing this support as pupils become more proficient.
- c.) Giving different tasks to different pupils based on their prior attainment.

FURTHER READING

Rosenshine, B. (2012). Principles of Instruction: Research-based strategies that all teachers should know. American Educator. bit.ly/ecf-ros

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Ms Sterling can make learning more manageable for pupils by understanding that:

- > When academic demands are not well matched to pupil capabilities, pupils' working memory can become overloaded, causing them to stop trying or go off-task.
- > Introducing new material in steps, building on prior knowledge and using guides and scaffolds all help to avoid overloading pupils' working memory and make it more likely that pupils will stay on-task.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014). What makes great teaching. Review of the underpinning research. Durham University. bit.ly/ecf-coe
- Deans for Impact (2015). The Science of Learning. bit.ly/ecf-dea
- EEF (2017). Improving Mathematics in Key Stages Two and Three Guidance Report. bit.ly/ecf-eef4
- Gathercole, S., Lamont, E., & Alloway, T. (2006) Working memory in the classroom. Working memory and education, 219-240.
- IES (2008). Reducing Behavior Problems in the Elementary School Classroom. bit.ly/ecf-ies
- Kluger, A. N., & DeNisi, A. (1996). The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. Psychological Bulletin, 119(2), 254–284.
- Rosenshine, B. (2012). Principles of Instruction: Research-based strategies that all teachers should know. American Educator. bit.ly/ecf-ros
- Van de Pol, J., Volman, M., Oort, F., & Beishuizen, J. (2015). The effects of scaffolding in the classroom: support contingency and student independent working time in relation to student achievement, task effort and appreciation of support. Instructional Science, 43(5), 615-641. bit.ly/ecf-van

QUIZ ANSWERS

1. a, c
2. a, c
3. b

B9 | BEHAVIOUR: CHALLENGE

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

While pupils in Ms Sterling's class are generally keen to give tasks a go, they often take the safe option and seek support from their teacher or peers whenever possible. How can Ms Sterling help pupils to adopt behaviours that make them more open to challenge?

KEY IDEA

Pupils who experience success are more likely to be motivated, resilient and open to challenge.

KEY TAKEAWAYS:

Ms Sterling can support pupils to be more open to challenge if she understands:

- > Pupil motivation is driven by intrinsic and extrinsic factors, prior experiences and perceptions of success.
- > Teachers who give pupils experiences of success build not only motivation but also resilience and belief in their ability to succeed.
- > Teachers with knowledge of how pupils learn can better balance challenge and support and promote pupil success, which makes them open to challenge.

THE ROLE OF SUCCESS

Part of Ms Sterling's job is to maximise pupil learning – this means providing the right level of challenge. However, as well as offering challenge, it is also important that tasks enable pupils to experience a high success rate. This balance is a tricky one to strike.

Evidence suggests that if pupils struggle but are ultimately successful with a task, it is more likely they will remember the material (EEF, 2017). Where pupils have experienced success, they are likely to put in more effort, be more motivated and show more confidence in the future (Coe et al, 2014). This is because where pupils believe in their abilities to complete a specific task, they are more persistent at that task. Their investment is driven by their perceptions of success and failure, particularly if they have limited experience of meaningful success in the past (Gutman & Schoon, 2013).

ESTABLISHING HIGH EXPECTATIONS OF SUCCESS

Research suggests that teachers should aim for pupils to be successful around 80% of the time (Rosenshine, 2012). Ms Sterling can build pupil expectations that they will succeed in a task by:

- > **Offering rewards and praise:** Providing extrinsic motivation when pupils attempt challenging work. Using positive reinforcement more than negative works best (IES, 2008).
- > **Attribution:** Linking effort and success for pupils when introducing or framing tasks (Coe et al., 2014).
- > **Avoiding lavish praise:** If used without merit, praise can lower pupil confidence in their own ability (Coe et al., 2014).

These strategies rely on a combination of intrinsic and extrinsic motivation. It is worth noting that while teachers can harness extrinsic motivation to help get pupils started, intrinsic motivation is likely to get pupils to stick at tasks, particularly when things get tricky (Lazowski & Hulleman, 2016).

EFFECTIVE TEACHING RAISES SUCCESS RATES

Ms Sterling can increase the chance pupils succeed at challenging tasks by using her emerging expertise in:

- > How pupils learn (Deans for Impact, 2015), for example taking care not to overload their working memories.
- > Her phase or subject specialism (Rosenshine, 2012; Coe et al., 2014), for example ensuring pupils have had enough input before they attempt challenging tasks, especially with specific barriers they might experience if the topic is particularly tricky, or they have special educational needs.

Her classroom climate is also crucial: when Ms Sterling sets challenging work, there will be times when pupils

fail. Building a classroom where pupils trust that failure is okay is therefore important to help pupils deal with failure as a natural part of learning.

NUANCES AND CAVEATS

The relationship between teacher expectations and pupil outcomes is indirect. Teachers can best convey high expectations by getting the balance of challenge and support right. This will ensure pupils experience success, which should increase their motivation and sense of self-worth, also supporting their resilience (Coe et al., 2014).

When engineering a high success rate for pupils, Ms Sterling must be careful not to remove challenge altogether. Setting pupils up for success in unchallenging tasks does not build motivation and can embed low expectations if pupils interpret this as low teacher expectations (Coe et al., 2014). Instead, Ms Sterling should ensure she provides enough scaffolding for pupils to be successful and withdraw the scaffolding as pupils get better at a task (Rosenshine, 2012). She can also explain why she is withdrawing scaffolding.

Pupil success at a task is an indication that they have successfully learnt lesson content, but not a sure sign – 'learning' and 'performance' are different.



CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. What role does success play in pupil motivation?

- a.) Experiencing success makes it more likely pupils will put forth effort, be more motivated and show more confidence.
- b.) Failure motivates pupils to try even harder.
- c.) If pupils believe they will be successful, they are more persistent at that task.
- d.) Previous experiences of success and failure influence pupils' future investment.

2. How can teachers set high expectations of pupil success?

- a.) Offering lavish praise.
- b.) Championing challenge – showing how effort will lead to future success.
- c.) Offering praise and reward to extrinsically motivate pupils.
- d.) Helping pupils to attribute effort to success when framing tasks.

3. How do teachers convey their expectations?

- a.) Nothing, the point of the task is to challenge pupils.
- b.) Consider whether the task will overload pupils' working memories.
- c.) Tell pupils that they are very clever if they succeed.
- d.) Consider whether pupils have been given enough guidance and support to be successful, particularly if the topic is tricky.

FURTHER READING

Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014). What makes great teaching. Review of the underpinning research. Durham University. bit.ly/ecf-coe

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Ms Sterling can support pupils to be more open to challenge if she understands:

- > Pupil motivation is driven by intrinsic and extrinsic factors, prior experiences and perceptions of success.
- > Teachers who give pupils experiences of success build not only motivation but also resilience and belief in their ability to succeed.
- > Teachers with knowledge of how pupils learn can better balance challenge and support and promote pupil success, which makes them open to challenge.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014). What makes great teaching. Review of the underpinning research. Durham University. bit.ly/ecf-coe.
- Deans for Impact (2015). The Science of Learning. bit.ly/ecf-dea.
- Education Endowment Foundation (2017). Metacognition and Self-regulated learning Guidance Report. bit.ly/ecf-eef.
- Gutman, L. & Schoon, L. (2013). The impact of non-cognitive skills on the outcomes of young people. bit.ly/ecf-eef2.
- Institute of Education Sciences (2008). Reducing Behavior Problems in the Elementary School Classroom. bit.ly/ecf-ies.
- Lazowski, R. A., & Hulleman, C. S. (2016). Motivation Interventions in Education: A Meta-Analytic Review. *Review of Educational Research*, 86(2), 602–640.
- Rosenshine, B. (2012) Principles of Instruction: Research-based strategies that all teachers should know. *American Educator*, 12–20. bit.ly/ecf-ros

QUIZ ANSWERS

1. a, c, d
2. b, c, d
3. b, d

B10 | BEHAVIOUR: INDEPENDENT PRACTICE

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Ms Silva feels that her pupils are now more open to challenge and will sometimes try to work without scaffolding. However, they still prefer to work with teacher or peer support and may be reluctant to work on their own. Ms Silva finds pupils engage well in helping her solve a tricky problem on the board, but when she says, “your turn”, there are some blank faces. How can she get pupils to adopt behaviours that support independent practice?

KEY IDEA

Regular, purposeful practice is vital for pupil learning, so teachers need to develop routines and behaviours that support independent practice.

KEY TAKEAWAYS:

Ms Silva can promote behaviours that support independent practice if she understands that:

- > Pupils need to understand the long-term benefits of practice, even if it feels hard.
- > To practise independently, pupils need enough support and clear behavioural expectations. Teachers also need to check pupil understanding of support and expectations.
- > Pupils need to be held to account to practise independently.

THE BENEFITS AND CHALLENGES OF GETTING PUPILS TO PRACTISE

Independent practice is vital to pupil learning and success. To learn, pupils need to think hard about the content they have been taught (Coe, 2013). Effective teachers give plenty of class time for independent practice (Rosenshine, 2012). It has clear benefits for pupils learning in terms of:

- > **Developing pupil fluency:** When pupils practise, their understanding becomes more fluent and automatic, making it easier for pupils to apply their knowledge and learn new material (Rosenshine, 2012).
- > **Helping pupils remember:** For example, retrieval practice (getting pupils to recall what they have learned) is one of the best ways to ensure pupils remember learning at a later date (Pashler et al., 2008).

Sometimes pupils avoid thinking hard – we all do. They also form unrealistic views of how much they know. Therefore, when given a choice, they often don't choose effective study approaches (Pashler et al., 2008). For example, re-reading their notes may feel easy. Trying to recall what they have learned without support from peers or scaffolding feels harder, but is far more effective (Dunlosky et al., 2013). As pupils are also easily distracted, Ms Silva can best ensure they think hard by insisting that pupils practise independently.

GETTING PUPILS READY FOR INDEPENDENT PRACTICE

Ms Silva should ask herself whether pupils are ready to practise independently. Do they realise why the effort of independent practice is important for their learning? Explaining the benefits of independent practice will help. For instance, she could explain that:

- > We learn what we think hard about.
- > Less support leads to better learning once pupils are ready to practise.
- > Effort makes success more likely (Coe et al., 2014).

She also needs ensure pupils practise successfully, as failure can damage pupil motivation and sense of self-worth (Coe et al., 2014). Independent practice is best done alone, so Ms Silva needs to provide enough support to ensure success. For example:

- > Introducing a manageable amount of new material.
- > Leading teacher-guided practice on the same material pupils will practise independently.
- > Providing scaffolding (Rosenshine, 2012).

CLEAR EXPECTATIONS AND ROUTINES ENHANCE INDEPENDENT PRACTICE

Ms Silva can set up independent practice consistently, in a way that develops routines over time. This is likely

to contribute to pupil success, helping pupils to value practice. So, Ms Silva should consider how she will consistently:

- > **Set clear behavioural and task expectations:** (Coe et al., 2014) This means outlining the behaviours she expects to see during independent practice: "I should see everyone focusing on their own work silently", and the task and support she expects pupils to use: "I want you to complete this exercise on the worksheet, without looking at the work we did last week".
- > **Check for understanding:** When introducing the independent practice tasks, teachers should ask specific, task-focused questions to get a clear sense of whether pupils have understood instructions (Rosenshine, 2012). Ms Silva should avoid questions like: "do we all understand this?", where pupils' default answer is "yes", even if they may not understand, or social pressure prevents them admitting to gaps in understanding (Rosenshine, 2012).
- > **Circulate:** Checking pupils are following instructions and holding them to account is distinct from supporting with work (Lemov, 2015). Research suggests that as teachers circulate, they should check in with individual pupils for no more than around 30 seconds (Rosenshine, 2012). Longer contacts could disrupt pupil independence by suggesting that teacher support is available.

If Ms Silva is finding many questions arise during independent practice, it might be that pupils are not ready or that they do not understand expectations. She might consider stopping practice, checking that enough support is in place and that pupils have understood her expectations.

NUANCES AND CAVEATS

Teachers should not set independent tasks when pupils have very little knowledge of a topic (Coe et al., 2014). Pupils will need to be built up and supported through teacher input first. Once this has happened, relevant homework can also be good independent practice of what has been learned, particularly for older pupils. For young pupils, playful practice can be led by pupil interest and teachers should provide just enough support for pupils to be successful (Deans for Impact, 2019).

Effective monitoring during independent practice is often non-verbal – for example, the teacher standing and visibly scanning the classroom. While the importance of reinforcing behaviours with public praise is well known (IES, 2008), during independent practice there is a risk of this distracting pupil attention.

There are also benefits of collaborative learning (Kirschner et al., 2018; Rosenshine, 2012), however Ms Silva might prioritise getting independent practice right first to make it more likely collaborative practice succeeds.

CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. Which of the following is a definition of independent practice?

- a.) When pupils follow along a teacher example without talking in pairs or small groups.
- b.) When pupils think hard in whatever context.
- c.) When pupils apply what they have learnt with support from their peers.
- d.) Pupils thinking hard, independently.

2. What strategies can teachers use to get pupils ready for independent work?

- a.) Rush on to independent practice to ensure there is enough time in the lesson.
- b.) Introduce a manageable amount of new material.
- c.) Be clear with pupils why independent practice is an important step in learning new content and will benefit them.
- d.) Lead teacher-guided practice on the same material that will be practised independently.
- e.) High expectations support positive behaviour for younger pupils

3. How can teachers enhance independent practice?

- a.) Circulating, limiting contacts and support of individual pupils, so that pupils can practice independently as much as possible.
- b.) Setting clear behavioural and task expectations.
- c.) Ignoring pupils and letting them get on with work independently.

FURTHER READING

Dunlosky, J., Rawson, K. A., Marsh, E. J., Nathan, M. J., & Willingham, D. T. (2013) Improving students' learning with effective learning techniques: Promising directions from cognitive and educational psychology. *Psychological Science in the Public Interest, Supplement, 14(1)*, 4–58. bit.ly/ecf-dun2

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Ms Silva can promote behaviours that support independent practice if she understands that:

- > Pupils need to understand the long-term benefits of practice, even if it feels hard.
- > To practise independently, pupils need enough support and clear behavioural expectations. Teachers also need to check pupil understanding of support and expectations.
- > Pupils need to be held to account to practise independently.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Coe, R. (2013). Improving Education: A triumph of hope over experience. Centre for Evaluation and Monitoring. bit.ly/ecf-coe2
- Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014). What makes great teaching. Review of the underpinning research. Durham University. bit.ly/ecf-coe
- Deans for Impact (2019). The Science of Early Learning. bit.ly/ecf-dea3
- Dunlosky, J., Rawson, K. A., Marsh, E. J., Nathan, M. J., & Willingham, D. T. (2013) Improving students' learning with effective learning techniques: Promising directions from cognitive and educational psychology. *Psychological Science in the Public Interest, Supplement*, 14(1), 4–58. bit.ly/ecf-dun2
- Institute of Education Sciences (2008). Reducing Behavior Problems in the Elementary School Classroom. bit.ly/ecf-ies
- Kirschner, P., Sweller, J., Kirschner, F. & Zambrano, J. (2018). From cognitive load theory to collaborative cognitive load theory. In *International Journal of Computer-Supported Collaborative Learning*, 13(2), 213-233.
- Lemov, D. (2015). *Teach Like a Champion 2.0*. Jossey-Bass. 2nd ed. Edition.
- Pashler, H., McDaniel, M., Rohrer, D., & Bjork, R. (2008). Learning Styles: Concepts and Evidence. *Psychological Science in the Public Interest*, 9 (3). bit.ly/ecf-pas
- Rosenshine, B. (2012) Principles of Instruction: Research-based strategies that all teachers should know. *American Educator*, 12–20. bit.ly/ecf-ros

QUIZ ANSWERS

1. d
2. b, c, d
3. a, b

B11 | BEHAVIOUR: PAIRS AND GROUPS

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Ms Silva can keep pupils on task when they practise independently. There are times when she feels it could be valuable for pupils to work in pairs or groups, but she is frustrated that pupils can go off task or produce poor work when she allows them to talk. How can she manage the way pupils conduct discussions so they get maximum learning benefit from collaboration?

KEY IDEA

Teachers need to prepare for and intentionally support behaviours that enable quality pupil talk.

KEY TAKEAWAYS:

Ms Silva can support talk that enables effective pair and group work by understanding that:

- > There are behavioural challenges particular to group and paired work. Teachers can pre-empt them by pre-planning groupings, and sharing and checking behavioural expectations and practice.
- > Effective talk tasks support pupils to talk successfully if they avoid overloading pupil working memory so pupils can articulate key ideas, consolidate understanding and extend their vocabulary.
- > Teachers can support pupils to manage their behaviour and learning during collaboration.

GETTING PUPIL BEHAVIOUR RIGHT IN TALK TASKS

At the heart of pair and group work is effective pupil talk. High-quality discussions help pupils better understand what they already know by articulating their thoughts more clearly (EEF, 2018). Peer discussion is also beneficial for building vocabulary, and aids social and linguistic development (Alexander, 2017).

However, when pupils work with their peers it can give rise to behavioural issues, as pupils may get distracted or be unable to complete a task. Just as when introducing other classroom routines, teachers should anticipate and plan to avoid behavioural problems (Kern & Clemens, 2007). To promote on-task talk, Ms Silva can:

- > **Outline behavioural expectations:** Where appropriate share specific words to try to use, time limits and rules for turn taking. The EEF (2018) provide an example of rules for discussion.
- > **Explain why these behaviours are important:** If pupils know why something is effective, they're more likely to do it properly and be more motivated to do the hard thinking expected of them (Coe et al., 2014; EEF, 2017).
- > **Check understanding:** To succeed, pupils need to understand behavioural expectations and task instructions (Rosenshine, 2012).
- > **Practise routines:** Pupils become more automatic and fluent through practice, so Ms Silva can ensure pupils talk successfully by regularly practising talk routines (Rosenshine, 2012).

Ms Silva should pre-plan groupings, as pupil groupings can affect pupil motivation and behaviour (Tereshchenko et al., 2018). She may wish to get pupils to work in pairs first, as this will help pupils to practise routines, behaviours and strategies of discussion, making it more likely pupils will talk successfully before working in larger groups. Once pupils are on task and thinking hard in pairs, she might start to trial group work – but only if she is confident that this will benefit learning. In short, Ms Silva should take an intentional approach to grouping pupils.

PREPARING TALK TASKS THAT SUPPORT PUPIL LEARNING

As well as getting the behaviour right, Ms Silva needs to ensure pupils have the best chance of learning successfully from talk. Pupils need to understand the goals of the task in relation to their learning. Because we 'learn what we think hard about' (Coe, 2013), Ms Silva's aim should be to get all pupils to think hard about important content during talk tasks. However, Ms Silva needs to balance this with ensuring that her pupils experience success, as this is critical for motivation and learning (Coe et al., 2014; Rosenshine, 2012).

A key factor in ensuring pupils think hard and experience success is teaching in ways that avoid overloading pupil working memory (Dean for Impact, 2015). Ms Silva's talk tasks are more likely to succeed if she:

- > Makes the tasks themselves simple, while keeping the content challenging (Gathercole et al., 2006). For example, using tasks with minimal steps.
- > Builds on existing pupil knowledge (Deans for Impact, 2015).
- > Provides enough guidance and support, for example, scaffolding (Rosenshine, 2012).

High-quality classroom talk can support pupils to articulate key ideas, consolidate understanding and extend their vocabulary. Knowledgeable pupils are likely to get more insights from discussing their existing knowledge than they could without discussion (Kirschner et al., 2018). Therefore, Ms Silva should consider when in the learning sequence she introduces talk tasks, as they are likely to be more effective after behavioural expectations become embedded and pupil knowledge increases.

SUPPORTING PUPILS TO MANAGE THEIR LEARNING IN TALK TASKS

Having prepared tasks that support on-task behaviour and learning, how can Ms Silva now manage pupils during talk tasks? She can:

- > **Circulate:** Ensuring pupils are on task and not struggling (Rosenshine, 2012).
- > **Support:** Directing pupil attention to available scaffolding (Van der Pol et al., 2015).
- > **Reinforce:** Using praise, rewards and sanctions to reinforce desired behaviours (IES, 2008).

The preparation Ms Silva has done should support pupils to self-manage their behaviour and learn more effectively. This will allow Ms Silva to focus more on supporting pupil learning and less on managing off-task behaviour during paired and group talk.

NUANCES AND CAVEATS

It is best when pupils are taught new knowledge before introducing pair or group work. They may struggle if peer collaboration is introduced too early in the learning sequence.

While it is possible for teachers to pick up on pupil misconceptions during pupil discussions, this is not likely to be the quickest or most efficient way of checking for understanding: strong whole-class questioning might be more effective. Discussions are best used to help pupils organise their knowledge.

Ability grouping shows limited evidence of impact on pupil outcomes (Coe et al., 2014). Ms Silva must ensure the groups pupils are placed in don't negatively affect pupil attainment, behaviour and motivation. Ms Silva should ensure her within-class pupil groups are flexible and that she continuously considers whether pupils are in a group because this is an effective way of tailoring support for an identified pupil need e.g. ensuring groups based on attainment are subject specific and changing groups regularly, avoiding the perception that groups are fixed.

CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. What are the benefits of classroom discussions for pupils?

- a.) Help pupils to articulate their thoughts more clearly.
- b.) Beneficial for building vocabulary and aiding social and linguistic development.
- c.) Helpful as a mechanism for pupils to teach each other new content.
- d.) Help pupils to better understand what they already know.

2. What strategies can you use to make classroom discussions successful?

- a.) Let pupils have a go and work out how to talk effectively – practice makes perfect!
- b.) Set clear rules for discussion and communicate these expectations.
- c.) Monitor the quality of discussions.
- d.) Decide what the purpose of each discussion is and communicate this to pupils.

3. Which of these are good reasons to get pupils discussing their knowledge in pairs or small groups?

- a.) To find out whether pupils have any misconceptions about the information they've been taught.
- b.) To allow pupils to explore and use knowledge they are comfortable with, and ask each other questions to help further organise knowledge in their mental models.
- c.) To help pupils verbally articulate their thoughts about content they are familiar with before writing, so that the quality of their writing is improved.
- d.) To motivate pupils; because pupils like talking to their peers they are likely to stay on task.

FURTHER READING

Education Endowment Foundation (2018). Sutton Trust-Education Endowment Foundation Teaching and Learning Toolkit. bit.ly/ecf-eef14. See entry on oral language interventions.

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Ms Silva can support talk that enables effective pair and group work by understanding that:

- > There are behavioural challenges particular to group and paired work. Teachers can pre-empt them by pre-planning groupings, and sharing and checking behavioural expectations and practice.
- > Effective talk tasks support pupils to talk successfully if they avoid overloading pupil working memory so pupils can articulate key ideas, consolidate understanding and extend their vocabulary.
- > Teachers can support pupils to manage their behaviour and learning during collaboration.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Alexander, R. (2017). *Towards Dialogic Teaching: rethinking classroom talk*. York: Dialogos.
- Coe, R. (2013). *Improving Education: A triumph of hope over experience*. Centre for Evaluation and Monitoring. bit.ly/ecf-coe2.
- Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014). *What makes great teaching. Review of the underpinning research*. Durham University. bit.ly/ecf-coe.
- Deans for Impact (2015). *The Science of Learning*. bit.ly/ecf-dea.
- Education Endowment Foundation (2017). *Metacognition and Self-regulated learning Guidance Report*. bit.ly/ecf-eef.
- Education Endowment Foundation (2018). *Sutton Trust-Education Endowment Foundation Teaching and Learning Toolkit*. bit.ly/ecf-eef14.
- Gathercole, S., Lamont, E., & Alloway, T. (2006). Working memory in the classroom. *Working memory and education*, 219-240.
- Kern, L., & Clemens, N. H. (2007). Antecedent strategies to promote appropriate classroom behavior. *Psychology in the Schools*, 44(1), 65-75.
- Kirschner, P., Sweller, J., Kirschner, F. & Zambrano, J. (2018). From cognitive load theory to collaborative cognitive load theory. *International Journal of Computer-Supported Collaborative Learning*, 13(2), 213-233.
- Rosenshine, B. (2012). Principles of Instruction: Research-based strategies that all teachers should know. *American Educator*, 12-20. bit.ly/ecf-ros.
- Tereshchenko, A., Francis, B., Archer, L., Hodgen, J., Mazonod, A., Taylor, B., & Travers, M. C. (2018). Learners' attitudes to mixed-attainment grouping: examining the views of students of high, middle and low attainment. *Research Papers in Education*, 1522, 1-20. bit.ly/ecf-ter.
- Van de Pol, J., Volman, M., Oort, F., & Beishuizen, J. (2015). The effects of scaffolding in the classroom: support contingency and student independent working time in relation to student achievement, task effort and appreciation of support. *Instructional Science*, 43(5), 615-641.

QUIZ ANSWERS

1. a, b, d
2. a, c, d
3. b, c

B12

BEHAVIOUR: UPHOLDING HIGH EXPECTATIONS

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Ms Mahrez has been working hard on conveying high expectations in her classroom, encouraging pupils to try hard and be open to challenge. However, she still occasionally struggles with low-level disruption and worries that her expectations may be unrealistic. On the other hand, when she looks at experienced colleagues' classrooms, they seem to achieve better behaviour and learning from the same pupils. What role do high expectations play in pupil success and how can Ms Mahrez build a classroom that consistently delivers high expectations?

KEY IDEA

Teachers can uphold high expectations by ensuring pupils are supported to achieve classroom success over time.

KEY TAKEAWAYS:

- > High expectations are achieved through learning environments which demand lots from pupils but also ensure they experience success.
- > Experiencing success improves pupil effort, confidence and motivation.
- > Pupils can improve their self-regulation and so their behaviour and learning.
- > Teachers who promote academic success also make pupil success beyond the classroom more likely.

THE ROLE OF TEACHER SUPPORT IN PUPIL SUCCESS

Ms Mahrez is determined to uphold high expectations but she worries that there is a gap between her ambitions and what her pupils can achieve. To close this gap, one of the most important things Ms Mahrez can do is create a learning environment where pupils experience a high success rate (Rosenshine, 2012). Over time, pupil success can unlock the other learning behaviours Ms Mahrez seeks to promote.

To promote pupil success, Ms Mahrez's classroom should demand a lot of pupils, but should also support pupils to meet these demands. To help with this, she can:

- > Celebrate pupil resilience to failures along the way.
- > Encourage pupils to attribute successes to their efforts and smart strategies rather than any innate 'ability' (Coe et al., 2014).

Ms Mahrez's role in securing success is partly about ensuring pupils have enough support, particularly with challenging tasks. If support is absent, pupils may fail to meet Ms Mahrez's high expectations which may damage pupil perceptions of self-worth. She also needs to take care not to inadvertently communicate low expectations, for example by setting tasks which are too easy, or by over-praising pupils for simply meeting expectations (Coe et al., 2014). Promoting success, including proactively highlighting success to parents and carers, will also improve pupil-teacher relationships as these are based on repeated interactions over time (Wubbels et al., 2014).

SUPPORTING PUPILS TO DEVELOP EFFECTIVE LEARNING BEHAVIOURS

Supporting success in this way also leads to pupils exhibiting more effective approaches to their learning. For example:

- > **Increased effort and confidence:** Pupils' perception of their ability, their expectations of future success and the extent to which they value an activity, influence their motivation and persistence, making improved academic outcomes more likely. This may be particularly important for low-attaining pupils who may have had limited experiences of success in the past (Gutman & Schoon, 2013).
- > **Growing intrinsic motivation:** 'Extrinsic' rewards like praise for pupils who are willing to try a difficult task can be useful to get pupils started. However, where pupils are motivated 'intrinsically' by their own goals (and the believe they can achieve them), pupils will be more persistent in the long term (Lazowski & Hulleman, 2016).

In sum, success over time supports the development of pupil effort, self-belief and intrinsic motivation which, in turn, drives further classroom success in a virtuous classroom cycle.

Ms Mahrez can also help pupils to understand and consciously cultivate these effective learning behaviours. Research suggests pupils can get better at self-regulating their behaviours and emotions (EEF, 2017), and pupils who do so are likely to attain more highly and succeed in the future (Gutman & Schoon, 2013). For example,

if pupils can identify the behaviours that underpin their success (such as perseverance), they can regulate emotional barriers (like impatience) that can prevent them from being successful. This makes it more likely they stay on task, which is a strong predictor of successful learning (Muijs & Reynolds, 2010).

Finally, pupils are influenced by the goals, values and behaviours of classmates (IES, 2008; Rathmann et al., 2018). Over time, individual pupils adopting effective behaviours can also create a classroom climate that promotes success for their peers.

THE LONG-TERM IMPACTS OF HIGH TEACHER EXPECTATIONS

Ms Mahrez is aware that her expectations are important for classroom behaviour (IES, 2008) and learning (Murdock-Perriera & Sedlacek, 2018). Teacher expectations influence whether pupils experience an effective classroom, where there is both the support and challenge to succeed at goals that stretch pupils (Coe et al. 2014). Also, teachers who add most value to academic outcomes also support pupil success beyond the classroom. Having an effective teacher, likely one who holds these high expectations, is also a factor making it more likely pupils will experience other forms of future success, including:

- > Attending university.
- > Earning a higher salary.
- > Avoiding having children as a teenager (Chetty, Friedman & Rockoff, 2014).

Pupils who perceive that their teachers are in control of the class and include them in activities are also more likely to feel satisfied in life and have better school outcomes (Rathmann et al., 2018). Moreover, lower-achieving pupils appear to benefit most from effective teaching (Slater et al., 2011). Ms Mahrez should be ambitious in her expectations for her pupils within her classroom. By developing her effectiveness as a teacher, she can be confident that she is also setting pupils up for wider success. In time, this should lead pupils to also have higher expectations of themselves.

NUANCES AND CAVEATS

Being an effective teacher requires strong knowledge of effective instruction and the subject being taught (Coe et al., 2014). Ms Mahrez needs to develop her practice in relation to the instruction and subject strands of this programme to have the best chance of translating high expectations into successful learning behaviours.

Conveying and upholding high expectations takes significant teacher effort and time. Improvements in pupil attitudes to learning may not be immediately visible, and there may be steps backwards as well as forwards. Ms Mahrez may feel like her colleagues' classrooms work as if by magic, but she needs to understand there is no shortcut. Her consistent efforts to support pupil success, and helping them understand the process behind this, is the best way she can support pupils in her classroom and set them up for success beyond it.

CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. What role can teacher support play in pupil success?

- a.) Ensuring pupils experience a high success rate at meaningful tasks.
- b.) Praise whatever work pupils produce, regardless of the quality, to ensure they feel valued.
- c.) Encouraging pupils to attribute success to effort and smart strategies.
- d.) Celebrating pupil resilience to failures along the way.

2. What effective learning behaviours can teachers cultivate?

- a.) Being aware of the requirements of exams and tests so pupils always attain highly.
- b.) Growing intrinsic motivation by helping pupils frame their own goals and believe that they can achieve them.
- c.) Increasing pupil perceptions that they will be successful, increasing their effort and confidence.
- d.) Competition, to prepare pupils for university and the world of work.

3. What long-term impacts can high teacher expectations have?

- a.) Pupils are less likely to attend university, earn a higher salary and avoid teenage pregnancy.
- b.) Pupils of effective teachers are also more likely to attend university, earn a higher salary and avoid teenage pregnancy.
- c.) Pupils of teachers perceived to be in control are more likely to feel satisfied in life and have better school outcomes.

FURTHER READING

Chetty, R., Friedman, J. N., & Rockoff, J. E. (2014). Measuring the Impacts of Teachers II: Teacher Value-Added and Student Outcomes in Adulthood. *American Economic Review*, 104(9), 2633–2679. bit.ly/ecf-che

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

- > High expectations are achieved through learning environments which demand lots from pupils but also ensure they experience success.
- > Experiencing success improves pupil effort, confidence and motivation.
- > Pupils can improve their self-regulation and so their behaviour and learning.
- > Teachers who promote academic success also make pupil success beyond the classroom more likely.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

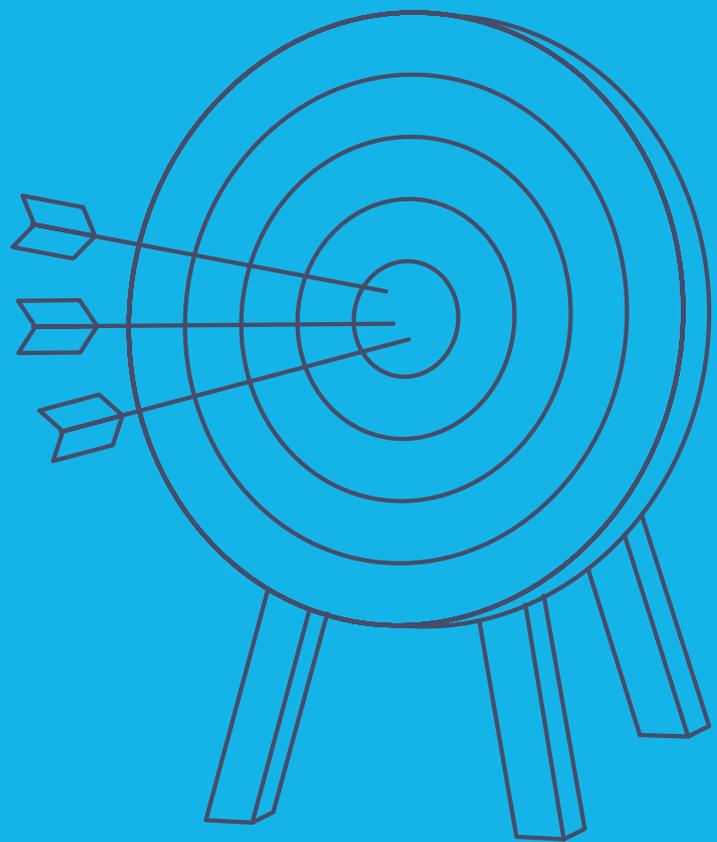
- Chetty, R., Friedman, J. N., & Rockoff, J. E. (2014). Measuring the Impacts of Teachers II: Teacher Value-Added and Student Outcomes in Adulthood. *American Economic Review*, 104(9), 2633–2679. bit.ly/ecf-che
- Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014). What makes great teaching. Review of the underpinning research. Durham University: UK. bit.ly/ecf-coe
- Education Endowment Foundation (2017). Metacognition and Self-regulated learning: Guidance Report. bit.ly/ecf-eef
- Gutman, L. & Schoon, L. (2013). The impact of non-cognitive skills on the outcomes of young people. bit.ly/ecf-eef2
- Institute of Education Sciences (2008). Reducing Behavior Problems in the Elementary School Classroom. bit.ly/ecf-ies
- Lazowski, R. A., & Hulleman, C. S. (2016). Motivation Interventions in Education: A Meta-Analytic Review. *Review of Educational Research*, 86(2), 602–640.
- Muijs, D. & Reynolds, D. (2010). *Effective Teaching*. London: SAGE Publications.
- Murdock-Perriera, L. A., & Sedlacek, Q. C. (2018). Questioning Pygmalion in the twenty-first century: the formation, transmission, and attributional influence of teacher expectancies. *Social Psychology of Education*, 21(3), 691–707.
- Rathmann K., Herke M., Hurrelmann K., & Richter M. (2018). Perceived class climate and school-aged children's life satisfaction: The role of the learning environment in classrooms. *PLOS ONE* 13(2): e0189335. bit.ly/ecf-rat
- Rosenshine, B. (2012). Principles of Instruction: Research-Based Strategies That All Teachers Should Know. *American Educator*, 36(1), 12–20. bit.ly/ecf-ros
- Slater, H., Davies, N. M., & Burgess, S. (2011). Do Teachers Matter? Measuring the Variation in Teacher Effectiveness in England. *Oxford Bulletin of Economics and Statistics*, 74(5), 629–645.
- Wubbels, T., Brekelmans, M., den Brok, P., Wijsman, L., Mainhard, T., & van Tartwijk, J. (2014). Teacher-student relationships and classroom management. In E. T. Emmer, E. Sabornie, C. Evertson, & C. Weinstein (Eds.). *Handbook of classroom management: Research, practice, and contemporary issues* (2nd ed. 363–386). New York, Routledge.

QUIZ ANSWERS

1. a, c, d
2. b, c
3. b, c

STRAND I: INSTRUCTION

Instruction boils down to what teachers know and how they put that knowledge into practice in their classrooms. The best teachers know their pupils, they know what they're teaching and they know how to help their pupils learn those things. But just knowing isn't enough. Great teachers put that knowledge into practice in their classrooms.



11 INSTRUCTION: STRAND OVERVIEW AND CONTRACTING

READ | STRAND INTRODUCTION

Welcome to the Instruction strand of the programme. This strand is composed of 12 modules and has been designed to last roughly a term. It is best completed during your second term as an NQT – typically the spring term.

By the end of this strand you will have an evidence-informed understanding of:

- > The link between effective instruction and pupil learning.
- > The elements of explicit instruction and the 'I-We-You' model as a useful way of approaching this.
- > How instruction can support more effective pupil thinking.

This programme has been designed to ensure that teachers develop a holistic understanding of effective teaching so, while the Instruction strand is mostly about instruction, it also incorporates insights from Behaviour and Subject, as these are also important to support pupil learning. When we say 'instruction' we mean the combination of teaching and learning, rather than just teacher input. We therefore define instruction as "any activity that is intended to create learning" (William & Black, 2009).

Furthermore, you'll notice that as the strand progresses modules will often touch on previously learned content. This is intentional and a crucial aspect of your learning experience. Some concepts on the programme are so important that they need to be revisited multiple times, to ensure you develop a deep and durable understanding.

This strand comprises 12 modules sequenced to work through the foundations of effective instruction,

its elements and how they support effective pupil learning, and then considers more complex instructional approaches.

- > **Module 1** explores the foundations of effective instruction.
- > **Modules 2-3** cover the links between effective instruction and pupil learning.
- > **Modules 5-8** cover the elements of effective instruction and their links to an explicit teaching approach.
- > **Modules 8-12** explore more complex ideas around certain practices that can support even more effective learning, incorporating and building on previous modules.

MAKING IT WORK

The features of effective instruction can vary slightly depending on the subject(s), phase(s) or community you teach. In addition, there are some elements of instruction, like the school teaching and learning policy, that you will have limited control over. This is why it's important that you work with subject and phase specialists in your school to help you identify the best ways to apply your learning. You have the responsibility to take ownership of your professional development and make it work, but also the right to support. Talking to your colleagues and your mentor about the ideas and practices you encounter, as well as seeking their assistance, challenge, feedback and critique, will help you to better understand what 'good' looks like for your particular context.

The evidence cited in the strand draws primarily from research on:

- > Cognitive science.
- > Classroom practices of effective teachers.

You might have come across some of the terminology explored before. However, some of the technical language used, particularly around cognitive science, may be new to you. Several key terms are explored further in the evidence summary below.

A REMINDER OF THE PROGRAMME PATTERN

Having worked through Behaviour, you will be familiar with how each week is structured. Instruction follows the same pattern for each module:

- > A 10-minute **video** shows what some of the key ECF ideas in the module look like in practice.
- > A 15-minute **evidence summary** provides an overview of key research to read relating to the key ECF ideas in the module.

- > 15 minutes of **quiz** and **reflection** enable you to check your understanding and consider the evidence in light of your knowledge and experiences.
- > Weekly **instructional coaching** that draws on this material and tailors the weekly focus to your specific context and needs, including the needs of your pupils, with built-in opportunities for practice. This is the main part of the mentoring process.

Year one of the programme has been designed with the intention of schools working through one module per week. However, the programme has been built in a flexible way so that schools can adapt it to their needs and work through it at a slower pace as required, while still ensuring they cover the ECF.

Now that we have introduced how the strand will work, it's time to dive into an evidence summary exploring some of some of the key ideas that underpin the strand.

WATCH



CLICK TO WATCH
MODULE VIDEO

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Ms Brophy is increasingly confident in her behaviour management. She's supported with pre-prepared schemes of work and lesson plans but sometimes struggles to make them work in her classroom. Pupils can become confused about what she wants them to do or struggle to remember what she has taught them. How can Ms Brophy make instructional decisions that maximise the learning of her class?

KEY IDEA

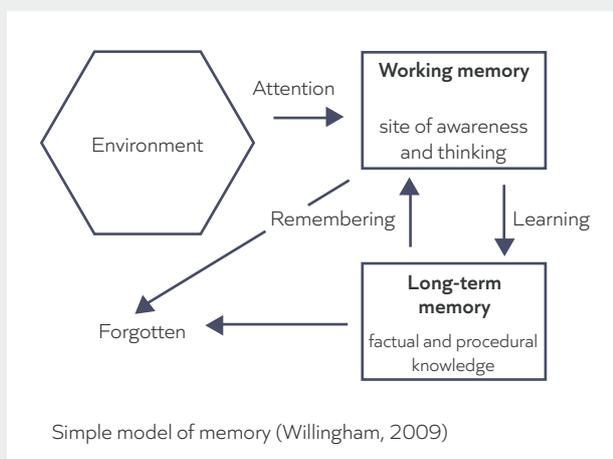
Making effective instructional decisions help lessons to go better and pupils to learn more.

LEARNING

Learning involves a lasting change in pupils' capabilities or understanding. Ms Brophy wants to ensure that pupils are able to remember what they learn. She also wants her pupils to be able to think creatively and problem solve. To be successful, she needs to understand the foundational role of 'memory' in learning.

A MODEL OF MEMORY

An important factor in successful learning is memory, which can be thought of as comprising two elements: working memory and long-term memory. Willingham's simple model of memory is one way to represent visually how the components relate to each other:



The main components in this model are:

- > **Working memory** which acts as the conduit between the information we attend to in our environment and our long-term memory (Sweller, 2016). It is also where we hold information we are thinking about in the moment (Willingham, 2009). It has a limited capacity: we can only think about a few things (two or three) at once (Cowan, 2008).
- > **Long-term memory** which can be considered as a store of knowledge that changes as pupils learn. This store of knowledge integrates new ideas with existing knowledge. We can also draw on knowledge from our long-term memory to support the processing of new information in working memory (Willingham, 2009). The capacity of long-term memory is vast (Cowan, 2008).

MENTAL MODELS

Simply giving pupils knowledge is not enough. Ms Brophy needs to make the knowledge useable, for example by connecting new knowledge to existing pupil knowledge. Mental models -- sometimes referred to as schema -- are how we all organise our knowledge. They are an internal representation of concepts (for example Earth) or a set of interrelated concepts (for example

the circulatory system) (Chi, 2009). Mental models are subject and topic specific, so to be successful Ms Brophy will also need to consider how to develop and convey subject knowledge to her pupils in the Subject strand.

MANAGING COGNITIVE LOAD

Teachers can change pupils' capabilities and understanding by increasing the knowledge in pupil long-term memory and constructing useful and well organised mental models (Sweller et al., 1998). However, when teaching, Ms Brophy notices that some of her pupils struggle when being introduced to new material. A key reason for this may be that their working memories are being overloaded.

The capacity of our working memory is limited. Complex activities that place a heavy burden on either processing or storage capacity can place excessive demands on working memory and are therefore likely to overload the system, resulting in task failure (Gathercole et al., 2006). Cognitive load refers to the amount of effort needed to process information in working memory (Sweller et al., 1998). Teachers like Ms Brophy need to manage the cognitive load pupils experience so that they can learn efficiently. She needs to ensure pupils experience enough new material to learn effectively but not too much, otherwise pupils working memory will become overloaded. She can do this through the instructional decisions she makes.

DRAWING ON PRIOR KNOWLEDGE

One way which Ms Brophy can manage the cognitive load her pupils experience is by drawing on their prior knowledge. The more prior knowledge pupils hold, the easier it is for them to process new information. Prior knowledge also plays a role in the development of their mental models, as existing pupils' knowledge influences how new knowledge is stored and organised (Deans for Impact, 2015).

Where prior knowledge is weak, pupils are more likely to develop misconceptions (Simonsmeier et al., 2018). This particularly applies if new ideas are not introduced in manageable steps. Ms Brophy knows that pupils will have different levels of prior knowledge and many will also hold misconceptions. On the other hand, as pupil knowledge develops, teachers need to reduce the support pupils receive, as support can get in the way of pupils using existing knowledge (Sweller et al., 1998). Therefore, Ms Brophy will need to consider how much prior knowledge pupils have when making instructional decisions.

MITIGATING EXTRANEOUS LOAD

Because working memory has a limited capacity, Ms Brophy needs to be intentional in how she introduces and explains content to her pupils. Extraneous load refers to ways in which instruction can make processing information unhelpfully challenging for pupils (for

example, giving complicated instructions to pupils who have limited prior knowledge, or redundant support to pupils who already have sufficient knowledge; Sweller, 2016). Ms Brophy can reduce extraneous load through the instructional decisions she makes.

EXPLICIT TEACHING

As we have seen, in order to ensure her pupils learn effectively, when making decisions about her instruction Ms Brophy needs to consider the limits of pupil memory. The knowledge Ms Brophy wants to teach is complex – in Subject she will consider how to develop her subject knowledge and what habits might support her to plan her own lessons. Initially, she should work with her mentor to get shared schemes of work and lesson plans to help her to identify and sequence relevant knowledge. For pupils to successfully learn this material, she needs to explicitly teach her pupils (Sweller, 2016).

Explicit teaching is a heavily ‘guided’ approach to orchestrating learning (EEF, 2017), in contrast to just letting pupils attempt to ‘discover’ new ideas by themselves. In general, less guided approaches to learning, such as discovery learning, have been shown to be ineffective (Coe et al., 2014). This doesn’t mean the teacher simply tells or lectures pupils; it can also include activities and discussion, as long as the relevant information is explicitly provided and practised. Successful explicit teaching breaks down learning, and provides pupils with the support needed to think successfully about content by taking into account:

- > The limits of working memory.
- > The complexity of the material to be taught.
- > The prior knowledge that pupils have.

I-WE-YOU

One suggested way to implement explicit teaching is to follow an ‘I do’, ‘We do’ then ‘You do’ approach (Lemov, 2015). I-We-You is a rule of thumb Ms Brophy can use to make decisions about her instruction. It involves reducing support over time so that pupils can increasingly accessing content independently. Fundamental to effective instruction is maintaining a high success rate while reducing this support as pupils’ knowledge increases (Rosenshine, 2012).

‘I DO’

The ‘I do’ refers to the early stages of learning where the teacher provides new information by modelling and/or explaining the facts and processes which pupils are to learn. Effective teachers ensure that pupils acquire, rehearse and connect knowledge by providing a good deal of instructional support. Pupils can go on to more independent activities but only after basic material is learned (Rosenshine, 2012).

There are numerous ways Ms Brophy’s ‘I do’ can explicitly convey content, including:

- > Explicitly linking new ideas to what has been previously studied and learned (Deans for Impact, 2015).
- > Explaining new concepts (such explanations are less effective for processes: Wittwer & Renkl, 2010).
- > Introducing materials in steps.
- > Modelling new processes and ideas (Rosenshine, 2012).
- > Providing concrete examples and worked examples of new problems (Pashler et al., 2007).

There are a variety of instructional strategies Ms Brophy can use to support her pupils when introducing new material. These supports are referred to as scaffolds. A scaffold is a temporary aid used to support pupils with their learning (Rosenshine, 2012). Just as with scaffolds around a house, they help us to reach areas which on our own we would struggle to get to. Once they have served their purpose, however, it is important they are removed.

‘WE DO’

The ‘We do’ is the ‘guided practice’ part of instruction where pupils gradually complete examples with less and less support on more and more of the task.

Ms Brophy has introduced her new material in small steps and provided scaffolds, such as modelling or worked examples, to support her pupils’ thinking. Because pupils learn at different rates and have different levels of prior knowledge, Ms Brophy knows that they will require different levels and types of targeted support.

She wants her pupils to grasp foundational concepts and knowledge before moving on. Questioning is an important tool for teachers to master which can be used to foster thinking and check pupil understanding (Coe et al., 2014). Furthermore, it can enable teachers to be responsive and better target support to pupils who are struggling (Black & Wiliam, 2009). Once she has used questioning to identify pupils, Ms Brophy could give more targeted input or regroup them so she can better support them.

‘YOU DO’

The ‘You do’ is the ‘independent practice’ part of the lesson, where pupils practise tasks of increasing difficulty on their own.

Over time, Ms Brophy wants to ensure that she provides her pupils with regular purposeful practice and the opportunity to retrieve information from memory. Practice is essential, but not all practice is equal (Deans for Impact, 2015). She needs to ensure her pupils think hard and provide enough scaffolding and feedback to ensure they achieve a high success rate (Rosenshine, 2012). Practice could be even more effective if it includes:

- > Spacing so that pupils revisit ideas after a gap.

- > Low-stakes quizzes to retrieve key content (Pashler et. al, 2007).

Effective practice supports automaticity and overlearning where pupils can complete tasks fluently without drawing on their working memory, freeing them to focus on more complex tasks (Rosenshine, 2012). For example, learning their times tables allows pupils to grapple with more complex long multiplication and division. Therefore, pupils need to practise beyond the point where they get something right to the point when they can no longer get it wrong.

HOMWORK

Homework can improve pupil outcomes, particularly for older pupils. But to be effective it needs to be of high quality and relevant to what is being taught in class (EEF, 2018). Considering the link to the instructional sequence above could increase the chance of homework being successful. For example, asking pupils to do further practise of something which has been taught in class, or perhaps reading with a parent to introduce a new idea that will be built upon in class. Making the purpose of the homework clear to pupils, ensuring that pupils have the resources to complete homework independently or that parents have the capacity to support homework effectively, are also likely to increase chances of success. It is also important that pupils get feedback on their homework. On the other hand, regular homework unconnected to class learning is less likely to be effective (EEF, 2018).

REFINING INSTRUCTION

As Ms Brophy improves at explicit teaching and develops her subject knowledge, various strategies can further refine her instructional decision making:

Questioning	Effective instruction checks for understanding and extends pupil thinking (Rosenshine, 2012). Ms Brophy can refine her questioning to ensure she gets quality answers from her pupils, helping her to decide whether to revisit content or go deeper into topics.
-------------	---

Talk	Pupils can refine their understanding and gain new insights from their knowledge through effective peer talk (Jay et al. 2017; Kirschner et al., 2018). Ms Brophy needs to check whether pupils have enough knowledge to talk effectively and use her instruction to facilitate successful talk.
------	--

Feedback	Good quality feedback is one the best-evidenced and most effective ways to improve pupil progress (EEF, 2018). Ms Brophy needs to practise 'decision-driven data collection': considering what kind of feedback she has the capacity to give and pupils have the capacity to act upon, and how she can do this in a way which supports pupils to manage their own learning.
----------	---

Throughout the Instruction strand Ms Brophy needs to keep two questions in mind:

- > How can my instructional decisions best support pupil learning?
- > How can I best support a high pupil success rate?

NUANCES AND CAVEATS

A common misconception is that I-We-You should only be used in individual lessons. In fact, I-We-You can be used several times within a lesson, or spread over longer instructional sequences.

CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. What do we mean by the term instruction?

- a.) The instructions that we give to pupils showing them how to complete a task.
- b.) All activity that takes place in a classroom.
- c.) What the teacher says to their pupils.
- d.) Any activity that is intended to create learning.

2. What is the definition of working memory?

- a.) Working memory is all of the things that the brain is in the process of forgetting.
- b.) Working memory acts as the conduit between the information we attend to in our environment and our long-term memory.
- c.) Working memory can be considered to be all of the things that we know about a topic.
- d.) Working memory can be considered as a store of knowledge that changes as pupils learn. This store of knowledge integrates new ideas with existing knowledge.

3. What is a mental model or schema?

- a.) A mental model is the scaffolding that teachers use to help pupils learn new material.
- b.) A mental model is our working memory of a topic.
- c.) Mental models, sometimes referred to as schema, are how we all organise our knowledge. They are an internal representation of concepts or a set of interrelated concepts.
- d.) A mental model contains all the information we have ever encountered.

4. What is explicit teaching?

- a.) Allowing pupils to discover new ideas for themselves.
- b.) A guided approach to orchestrating learning where relevant information is explicitly provided and practised.
- c.) Gradually withdrawing teacher support and facilitating pupils to work successfully independently as pupils gain knowledge and understanding, for example using the I-We-You instructional sequence.
- d.) Lecturing pupils.

FURTHER READING

Rosenshine, B. (2012). Principles of Instruction: Research-based strategies that all teachers should know. *American Educator*, 36(1), 12–20. bit.ly/ecf-ros



REFLECT

KEY TAKEAWAYS:

Ms Brophy can make better instructional decision by understanding that:

- > Learning is a lasting change in pupil capabilities and understanding - if nothing is remembered, nothing has been learned.
- > Effective instruction takes pupil working and long-term memory into account.
- > Effective instruction involves explicitly teaching the knowledge and skills pupils need in small steps, ensuring a high success rate. Retrieval and practice help them remember what they have learnt.
- > The 'I-We-You' model is a useful rule of thumb for instructional decisions.
- > Pupils learn at different rates and have different levels of prior knowledge, so effective teachers guide practice and adapt instruction and pupil grouping to provide further support for these pupils.
- > Once explicit teaching has been mastered, instruction can be further refined through developing questioning, talk and feedback.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation and Accountability*, 21(1), 5-31.
- Chi, M. T. (2009). Three types of conceptual change: Belief revision, mental model transformation, and categorical shift. *International handbook of research on conceptual change*. USA: Routledge, 61-82.
- Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014). What makes great teaching. Review of the underpinning research. Durham University. bit.ly/ecf-coe
- Cowan, N. (2008). What are the differences between long-term, short-term, and working memory? *Progress in brain research*, 169, 323-338.
- Deans for Impact (2015). *The Science of Learning*. bit.ly/ecf-dea
- Education Endowment Foundation (2017). *Metacognition and Self-regulated learning Guidance Report*. bit.ly/ecf-eef
- Education Endowment Foundation (2018). *Teaching and learning toolkit*. bit.ly/ecf-eef14
- Gathercole, S., Lamont, E., & Alloway, T. (2006). Working memory in the classroom. *Working memory and education*. UK: Academic Press, 219-240.
- Jay, T., Willis, B., Thomas, P., Taylor, R., Moore, N., Burnett, C., Merchant, G. & Stevens, A. (2017) *Dialogic Teaching: Evaluation Report*. Bit.ly/ecf-eef13
- Kirschner, P., Sweller, J., Kirschner, F. & Zambrano, J. (2018). From cognitive load theory to collaborative cognitive load theory. *International Journal of Computer-Supported Collaborative Learning*. 13(2), 213-233.
- Lemov, D. (2015). *Teach Like a Champion 2.0* (2nd ed.). San Francisco: Jossey-Bass.
- Pashler, H., Bain, P. M., Bottge, B. A., Graesser, A., Koedinger, K., McDaniel, M., & Metcalfe, J. (2007). *Organizing Instruction and Study to Improve Student Learning*. US Department of Education. bit.ly/ecf-pas
- Rosenshine, B. (2012). Principles of Instruction: Research-based strategies that all teachers should know. *American Educator*, 36(1), 12–20. bit.ly/ecf-ros
- Simonsmeier, B. A., Flaig, M., Deiglmayr, A., Schalk, L., & Well-being, S. (2018). Domain-Specific Prior Knowledge and Learning: A Meta-Analysis Prior Knowledge and Learning. bit.ly/ecf-sim
- Sweller, J., van Merriënboer, J. J. G., & Paas, F. G. W. C. (1998). Cognitive Architecture and Instructional Design. *Educational Psychology Review*, 10(3), 251–296.
- Sweller, J. (2016). Working Memory, Long-term Memory, and Instructional Design. *Journal of Applied Research in Memory and Cognition*, 5(4), 360–367.

Wittwer, J., & Renkl, A. (2010). How Effective are Instructional Explanations in Example-Based Learning? A Meta-Analytic Review. *Educational Psychology Review*, 22(4), 393–409.

Willingham, D. T. (2009). *Why don't students like school?* San Francisco: Jossey-Bass.

QUIZ ANSWERS

1. d
2. b
3. c
4. b, c

12 | INSTRUCTION: IDENTIFYING LEARNING CONTENT

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Ms Stones wants to ensure pupils experience maximum learning in each lesson. She knows she needs to challenge pupils with new learning content but is unsure how to decide the right amount of content to do this. How could she identify and divide up content, and check if learning is taking place? How can she adapt others' plans for her own classes to achieve this?

KEY IDEA

Teachers can ensure pupils experience maximum learning by carefully identifying the content that pupils will think hard about at different points in a lesson, breaking this thinking down and checking learning along the way.

KEY TAKEAWAYS:

Ms Stones can deliver more effective instruction by identifying the learning content if she understands that:

- > Learning is a process leading to changes in pupils' capabilities or understanding that happens when pupils think hard.
- > Breaking learning down should make thinking manageable enough for pupils to experience a high success rate.
- > Identifying manageable steps is tricky, so teachers should check all pupils' key learning, and provide further support to ensure a high success rate.

IDENTIFYING KEY THINKING IN A LESSON

Learning involves processes leading to a lasting change in pupils' capabilities or understanding – if nothing changes, arguably nothing has been learned (Sweller, 2016). As time in lesson is limited, Ms Stones needs to prioritise a manageable amount of content for her pupils to learn about. Learning takes place when pupils think hard about something (Coe, 2013) so Ms Stones should consider and carefully specify what she wants her pupils to think hard about in each lesson.

BREAKING DOWN LEARNING

Like all of us, pupils find new academic ideas difficult, and will often avoid thinking hard wherever possible (Willingham, 2009). Pupils may also avoid tasks where they fear they will be unsuccessful (Kluger & deNisi, 1996). Ms Stones can help her pupils by breaking learning down, making thinking more manageable.

When learning is manageable, pupils will achieve a higher success rate. Effective teachers break learning down to make it more manageable by:

- > Introducing new material in small steps.
- > Sharing models (including solved problems) to illustrate each step.
- > Asking lots of questions and guiding pupils to practise each step successfully.

To support a high success rate, instruction should be aligned at different stages of teaching. For example, making sure that pupils practise the same material that has been introduced to them (Rosenshine, 2012). Therefore, when selecting the content pupils must think hard about, Ms Stones needs to consider, "what thinking do I want pupils to be successful with?" and "how can I break this thinking down to make success more likely?"

However, selecting appropriate steps is hard. Sometimes a step that will improve a final performance does not look like the final performance (Christodoulou, 2017). For example, a violinist might practise their scales to be fluent before attempting to improve at playing a piece, rather than just repeating the piece. Similarly, pupils might need to practise their vocabulary before attempting an essay. Ms Stones should seek support from her mentor and colleagues when breaking learning down into essential material – concepts, knowledge, skills and principles – that she wishes pupils to think about and remember.

Ms Stones wants to support a high success rate, so she also needs to understand how manageable pupils are finding the steps she has selected. However, predicting how manageable steps are can be uncertain. For example, how manageable a step is can depend on pupil prior knowledge (Willingham, 2009). Therefore, even if Ms Stones has carefully broken learning down, with support from colleagues, she still needs to assess pupils to check how successful they have been with each step.

CHECKING KEY LEARNING

Effective teachers regularly review learning, asking lots of questions which check pupil understanding (Rosenshine, 2012). The more precisely Ms Stones has identified what she wants pupils to be thinking hard about at various stages of the lessons, the more effectively she will be able to check for key learning. She needs to check the learning of as many pupils as possible.

Ms Stones wants to establish where all learners are in relation to the key content or steps she wants pupils to succeed at. An effective strategy for checking whole-class understanding of identified content is the use of 'exit tickets'. This is an end of lesson assessment that pupils need to be able to complete quickly and that teachers should be able to assess quickly. Getting every pupil to complete an exit ticket as a low-stakes assessment at the end of her lessons will help Ms Stones to gauge how successful pupils have been with these steps.

Ms Stones' assessment may pick up that pupils are not yet secure in their thinking about a particular step, for example if several pupils incorrectly answer a question or there is a common misconception or error in an exit ticket. If the success rate drops, Ms Stones should provide further support, for example breaking the learning steps down further in the next lesson.

NUANCES AND CAVEATS

One approach to breaking learning down could be to set steps which pupils can already easily do, to ensure success. However, setting easy work might suggest the teacher has low expectations, which is likely to negatively affect pupil confidence and motivation (Coe et al., 2014). Furthermore, if pupils are not set challenging enough tasks, they will not learn as much.

CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. According to Coe (2013), when does learning happen?

- a.) Learning happens when a pupil is active in a lesson.
- b.) Learning happens when a pupil can talk confidently about a topic to a partner in the same lesson as it was taught.
- c.) Learning happens when pupils write lots about a topic.
- d.) Learning happens when pupils think hard about something.

2. After deciding what you want to teach pupils, you can make it manageable for pupils by:

- a.) Establishing where pupils are going with their learning.
- b.) Establishing which tasks pupils enjoy the most.
- c.) Introducing new material in small steps.
- d.) Sharing models to illustrate each step.

3. How can teachers check key learning?

- a.) Designing low stakes assessment tasks to check key learning of all pupils in the lesson.
- b.) Provide models.
- c.) Get pupils to say how confident they are about a topic.
- d.) Break learning down into further steps.

FURTHER READING

Rosenshine, B. (2012). Principles of Instruction: Research-based strategies that all teachers should know. *American Educator*, 36(1), 12–20. bit.ly/ecf-ros

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Ms Stones can deliver more effective instruction by identifying the learning content if she understands that:

- > Learning is a process leading to changes in pupils' capabilities or understanding that happens when pupils think hard.
- > Breaking learning down should make thinking manageable enough for pupils to experience a high success rate.
- > Identifying manageable steps is tricky, so teachers should check all pupils' key learning, and provide further support to ensure a high success rate.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Christodoulou, D. (2017). *Making Good Progress: The Future of Assessment for Learning*. Oxford, OUP.
- Coe, R. (2013). *Improving Education: A triumph of hope over experience*. Centre for Evaluation and Monitoring. bit.ly/ecf-coe2.
- Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014). *What makes great teaching. Review of the underpinning research*. Durham University: UK. bit.ly/ecf-coe.
- Kluger, A. N., & DeNisi, A. (1996) The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. *Psychological Bulletin*, 119(2), 254–284.
- Rosenshine, B. (2012). *Principles of Instruction: Research-based strategies that all teachers should know*. *American Educator*, 36(1), 12–20. bit.ly/ecf-ros.
- Sweller, J. (2016). Working Memory, Long-term Memory, and Instructional Design. *Journal of Applied Research in Memory and Cognition*, 5(4), 360–367.
- Willingham, D. T. (2009). *Why don't students like school?* San Francisco, Jossey-Bass.

QUIZ ANSWERS

1. D
2. C,D
3. A

13 | INSTRUCTION: INSTRUCTION FROM MEMORY

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Mr Alexander has a clear idea of the content that he wants his pupils to learn. However, despite 'covering' the content in lessons, he still finds that many of his pupils struggle to remember it in future lessons. What can Mr Alexander do to help his pupils remember what they have been taught?

KEY IDEA

Memory plays an important role pupil learning. Teachers need to understand this and design instruction that is sensitive to the properties and limitations of memory to support remembering.

KEY TAKEAWAYS:

Mr Alexander can ensure his instruction supports pupil memory by understanding that:

- > Pupils remember content they think hard about, and they can't think if their working memory is overloaded.
- > Teachers can support thinking by introducing material which builds on prior knowledge, breaking it up into manageable steps and using worked and partially worked examples.
- > As pupil knowledge increases, support can get in the way of thinking and should be removed.
- > Opportunities to retrieve at increasingly spaced intervals promotes remembering.

PUPILS REMEMBER WHAT THEY THINK ABOUT

Memory plays an important role in pupil learning. Pupils use the store of knowledge in their long-term memory to make sense of new ideas and to help with higher order tasks like creativity and critical thinking (Willingham, 2009). Therefore, if pupils can't remember what has been taught previously, we might say that they haven't learnt it properly and, as a result, they are also unlikely to learn related new material or succeed at tasks that require higher order thinking. Mr Alexander needs to understand the link between memory and learning and adapt his instruction to make remembering more likely.

Mr Alexander's pupils may be struggling to remember material he has 'covered' if too many new ideas have been taught too quickly, exceeding the capacity of pupil working memory (Willingham, 2009). When this happens pupils might experience 'cognitive overload'.

Attempt the tasks below:

- > First try to work out in your head the sum 4×7 .
- > Now try to work out in your head the sum 14×273 .

Both sums require the same process, but the second sum is more complicated and requires more items to be held in working memory, causing cognitive overload for most people. We learn what we have thought hard about (Coe, 2013). However, when working memory is overloaded like this, pupils are unable to think sufficiently about any of the material and are therefore unlikely to be able to remember it. Some pupils with special educational needs or disabilities may experience particular challenges linked to working memory capacity (Gathercole et al., 2006) and are therefore likely to require additional or adapted support to successfully access material (Willingham, 2009). Conversations with colleagues, families and pupils may support teachers to identify effective strategies.

SUPPORTING PUPIL THINKING

Mr. Alexander can support pupils to remember taught material by ensuring his instruction supports effective thinking. The capacity of pupil working memory is limited to a few items, the exact number depends on pupil prior knowledge and the items' complexity (Cowan, 2008). Mr Alexander can support pupil thinking by explicitly linking new material to what has previously been learned and ensuring small steps are used (Rosenshine, 2012). If these steps are the right size, pupils can properly process new information and integrate it into their existing mental models.

Here are two approaches to introducing new material in ways that minimise overloading pupil working memory:

- > **Worked examples:** Showing all the steps of a process (for example long multiplication in sum two above) enables pupils to attend to one step at a time.
- > **Partially worked examples:** For example, completing the first step of the problem for pupils helps them focus on, and think more deeply about, fewer parts of the problem (Sweller et al., 1998).

However, as pupil knowledge develops, the support which initially helped pupils can get in the way of them using their growing knowledge (Sweller et al., 1998). For example, an explanation of a diagram might help a novice but may distract a pupil who already has the knowledge to interpret the same diagram. So, Mr Alexander gradually needs to remove support as pupil expertise increases.

The I-We-You model can be a useful approach to gradually removing support (Lemov, 2015):

- > **'I do':** Pupils need direct input to have enough knowledge to avoid their working memory becoming overloaded.
- > **'We do':** Pupils complete a worked or partially worked example using this knowledge, with teacher support.
- > **'You do':** Only when he has checked pupils can complete examples successfully with minimal support should Mr Alexander move to independent pupil practice.

RETRIEVAL FOR MEMORY OVER TIME

Having supported pupils to think successfully about new material, Mr Alexander needs to help pupils remember material over time. We have known for 100 years that without revisiting learning, people forget most material covered within a few days (Ebbinghaus, 1885 in Cowan, 2008).

A powerful way Mr Alexander can support pupils to remember learning is to get them to regularly 'retrieve' material covered. Retrieval is the act of recalling information from memory and is beneficial in itself because it helps to 'cement the information to memory' and makes forgetting less likely (Pashler et al., 2007).

Retrieval is most powerful when pupils have begun to forget material, as this makes pupils think harder when retrieving, strengthening their memories. So, to be most effective, retrieval practice should be spaced out over time (Pashler et al., 2007). For example, Mr Alexander could return to material in a few days and then a few weeks to support his pupils to remember it most successfully.

NUANCES AND CAVEATS

One challenge some pupils with special educational needs or disabilities may experience is limited working memory capacity (Gathercole et al., 2006). So, supporting pupil thinking may in itself support these pupils to be successful. However, pupils may have other barriers so teachers should always take care to find out about specific barriers (e.g. visual impairment) and support strategies (e.g. large font copy of class materials).

Individual differences may mean retrieval practice is not equally powerful for all pupils. Factors that affect the impact of retrieval practice on pupil memory include the intervals between teaching and recall, and whether feedback on pupil responses is provided (Agarwal et al., 2017).

CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. What is a worked example?

- a.) Giving pupils a worksheet with some clues to solving the problem.
- b.) Completing the first step of a problem or process to help pupils focus on a smaller manageable step within the problem.
- c.) Completing all but the final steps in a problem or process.
- d.) Showing all the steps of a process or problem to allow pupils to attend to a single process at a time.

2. What is a partially worked example?

- a.) Asking pupils to show their workings when completing a problem.
- b.) Asking pupils to show their workings when completing a problem mpleting some steps of a problem or process to help pupils focus on a smaller manageable step within the problem.
- c.) Talking pupils through all of the steps of a problem on the whiteboard.
- d.) Showing all the steps of a process or problem to allow pupils to attend to a single process at a time.

3. What is retrieval practice?

- a.) The act of recalling information from memory.
- b.) Re-teaching a topic a week later.
- c.) Re-teaching a topic a month later.
- d.) Testing pupils on the content at the end of the lesson.

4. What is the I do-We do-You do approach?

- a.) When pupils work in pairs to complete a task, the teacher checks for misconceptions before setting them up to work independently.
- b.) When the teacher models a task, then completes one with pupils together as a class, then pupils complete the task independently.
- c.) Re-teaching a topic a month later.
- d.) When the teacher models a task, then asks the pupils to complete the task independently.

FURTHER READING

Pashler, H., Bain, P. M., Bottge, B. A., Graesser, A., Koedinger, K., McDaniel, M., & Metcalfe, J. (2007). Organizing Instruction and Study to Improve Student Learning. US Department of Education. bit.ly/ecf-pas

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Mr Alexander can ensure his instruction supports pupil memory by understanding that:

- > Pupils remember content they think hard about, and they can't think if their working memory is overloaded.
- > Teachers can support thinking by introducing material which builds on prior knowledge, breaking it up into manageable steps and using worked and partially worked examples.
- > As pupil knowledge increases, support can get in the way of thinking and should be removed.
- > Opportunities to retrieve at increasingly spaced intervals promotes remembering.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Agarwal, P. K., Finley, J. R., Rose, N. S., & Roediger, H. L. (2017). Benefits from retrieval practice are greater for students with lower working memory capacity. *Memory*, 25(6), 764–771.
- Coe, R. (2013). Improving Education: A triumph of hope over experience. bit.ly/ecf-coe2
- Cowan, N. (2008). What are the differences between long-term, short-term, and working memory? *Progress in brain research*, 169, 323–338.
- Gathercole, S., Lamont, E., & Alloway, T. (2006). Working memory in the classroom. *Working memory and education*, 219–240.
- Lemov, D. (2015). *Teach Like a Champion 2.0*. San Francisco, Jossey Bass. 2nd Edition.
- Pashler, H., Bain, P. M., Bottge, B. A., Graesser, A., Koedinger, K., McDaniel, M., & Metcalfe, J. (2007). Organizing Instruction and Study to Improve Student Learning. US Department of Education. bit.ly/ecf-pas
- Rosenshine, B. (2012). Principles of Instruction: Research-based strategies that all teachers should know. *American Educator*, 36(1), 12–20. bit.ly/ecf-ros.
- Sweller, J., van Merriënboer, J. J. G., & Paas, F. G. W. C. (1998). Cognitive Architecture and Instructional Design. *Educational Psychology Review*, 10(3), 251–296.
- Willingham, D. T. (2009). *Why don't students like school?* San Francisco: Jossey Bass.

QUIZ ANSWERS

1. D
2. B
3. A
4. B

14 | INSTRUCTION: PRIOR KNOWLEDGE

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Ms McShane finds it hard to ensure all pupils understand the new ideas she teaches. She has noticed that many have gaps in prior knowledge, even if they have covered related topics in previous years, or the topic is one she taught them herself. Others struggle to link new ideas to their existing knowledge. How can she check and build upon pupil prior knowledge to help them understand new ideas?

KEY IDEA

Pupil learning is more successful if teachers check, activate and build on pupil prior knowledge.

KEY TAKEAWAYS:

Ms McShane can begin to improve her instruction by understanding that:

- > Drawing on existing mental models helps us to learn new information and solve new problems more effectively.
- > Weak prior knowledge can lead to misconceptions. Ms McShane must make the effort to diagnose what her pupils do know, don't know and misunderstand.
- > Ms McShane can build on this by reviewing pupil prior knowledge and introducing new material in steps while asking lots of questions.
- > By carefully activating pupil prior knowledge and challenging pupils' incorrect beliefs, she can support pupils to develop accurate mental models.

PRIOR KNOWLEDGE HELPS US TO MAKE SENSE OF MATERIAL

“The most important single factor influencing learning is what the learner knows already” (Ausubel, 1968 in Simonsmeier et al., 2018). This is because pupils “come to understand new ideas by relating them to old ideas” (Willingham, 2009). Existing knowledge (stored in long-term memory) is what makes new ideas meaningful.

We can illustrate this by looking at sentences we might ask pupils to understand. As you read the sentences below, consider what pupils need to know to make sense of each one:

1. To convert a decimal to a fraction, use place value.
2. Two households, both alike in dignity,
In fair Verona, where we lay our scene,
From ancient grudge break to new mutiny,
Where civil blood makes civil hands unclean.
3. Some say that Henry only made the break with Rome because the Pope would not let him have a divorce (Byrom et al., 1997).

For example, if pupils don’t know who Henry was, who the Pope was and why a divorce mattered to him, the sentence – and the topic – will make little sense.

Teachers can help pupils to learn by linking new ideas to prior knowledge. This makes it easier to process those new ideas. For example, if pupils have studied stories about adventures previously, they know what to expect in encountering a new adventure story. This then makes it easier to remember them, by connecting the new ideas to existing knowledge. The greater pupils’ prior knowledge, the easier learning becomes for them: “it is easier to learn new information... [and] to solve new problems when one has a rich, well-connected body of knowledge and strong ties and connections” (Rosenshine, 2012). Well-organised prior knowledge makes it even easier for pupils to learn new ideas.

WEAK PRIOR KNOWLEDGE CAN CAUSE PUPILS TO MISUNDERSTAND

For prior knowledge to help pupils, it needs to be complete and accurate: if pupil prior knowledge is weak, pupils can misunderstand new material. If pupils hold misconceptions or lack correct knowledge, they can form misconceptions. For example, knowing that the surface of the Earth appears flat may lead pupils to conclude that the Earth is a disc (Simonsmeier et al., 2018). If Ms McShane tries to introduce a new idea which does not fit into a pupil’s current mental model – particularly if the pupil’s mental model is inaccurate – that pupil may misunderstand or reject this idea (Chi, 2009).

ACTIVATING PRIOR KNOWLEDGE CAN HELP PUPILS TO SUCCEED

An effective starting point for teachers is to identify what pupils already know, and any gaps in their knowledge. Having done so, Ms McShane can seek to introduce new material in small enough chunks to be comprehensible, and to make explicit links between prior knowledge and the new ideas. Where pupils have missing or incomplete knowledge, adding new concepts will help pupils to develop more sophisticated mental models. However, where Ms McShane’s pupils already hold beliefs which happen to be wrong, she must focus on changing old concepts (Chi, 2009). When introducing new material, Ms McShane needs to develop pupils’ mental models by taking small steps and posing lots of questions which explicitly link pupil prior knowledge with the concepts being taught.

NUANCES AND CAVEATS

If pupils have lots of prior knowledge and are reminded of this, it can prevent them from looking for new or better problem solutions (Simonsmeier et al., 2018) – like a driver going into autopilot: they stop thinking hard and therefore don’t develop their mental model.

CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. Why is prior knowledge critical to new learning?

- a.) Pupils come to understand new ideas by relating them to old ideas.
- b.) Prior knowledge helps pupils be independent learners on a new topic from the start.
- c.) When a person's knowledge on a topic is large and well connected, it is easier to learn new information.

2. How can the teacher use prior knowledge when introducing new concepts?

- a.) The teacher can introduce ideas in small steps which explicitly link to prior knowledge of concepts being taught, to develop pupils' mental models.
- b.) The teacher can assume that pupils have remembered critical details from previous topics.
- c.) The teacher can assume that pupils don't need to be reminded of facts, saving planning and teaching time.

3. What problem(s) can misconceptions cause to new learning?

- a.) Misconceptions don't cause problems to new learning; all prior knowledge is a positive thing for a pupil and the teacher.
- b.) For prior knowledge to help pupils, it needs to be complete and accurate; if pupil prior knowledge is weak, pupils can misunderstand new material.
- c.) If a teacher introduces a new idea which does not fit into a pupil's current mental model – particularly if the pupil's mental model is inaccurate that pupil may reject it.

4. What are the caveats when considering the importance of prior learning?

- a.) It is best that the teacher assumes that pupils have no knowledge of the topic
- b.) If pupils have lots of prior knowledge and are reminded of this, it can prevent them from looking for new or better problem solutions.
- c.) Prior knowledge should only be related to new learning where it is logical to do so.

FURTHER READING

Simonsmeier, B. A., Flaig, M., Deiglmayr, A., Schalk, L., & Schneider, M. (2018). Domain-Specific Prior Knowledge and Learning: A Meta-Analysis Prior Knowledge and Learning. bit.ly/ecf-sim.

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Mr Price can use routines to begin to establish positive behaviour for learning by understanding:

- > Drawing on existing mental models helps us to learn new information and solve new problems more effectively.
- > Weak prior knowledge can lead to misconceptions. Ms McShane must make the effort to diagnose what her pupils do know, don't know and misunderstand.
- > Ms McShane can build on this by reviewing pupil prior knowledge and introducing new material in steps while asking lots of questions.
- > By carefully activating pupil prior knowledge and challenging pupils' incorrect beliefs, she can support pupils to develop accurate mental models.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Byrom, J., Stephens-Wood, P., Riley, M., & Counsell, C., (1998). *Changing Minds: Britain 1500-1750*. Oxford: Pearson.
- Chi, M. T. (2009). Three types of conceptual change: Belief revision, mental model transformation, and categorical shift. *International handbook of research on conceptual change*. 89-110. Routledge.
- Rosenshine, B. (2012). Principles of Instruction: Research-based strategies that all teachers should know. *American Educator*, 36(1), 12-20.
- Simonsmeier, B. A., Flaig, M., Deiglmayr, A., Schalk, L., & Schneider, M. (2018). Domain-Specific Prior Knowledge and Learning: A Meta-Analysis Prior Knowledge and Learning. bit.ly/ecf-sim.
- Willingham, D. T. (2009). *Why don't students like school?* San Francisco: Jossey-Bass.

QUIZ ANSWERS

1. A, C
2. A
3. B, C
4. B, C

15 | INSTRUCTION: TEACHER EXPOSITION

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Ms Thomas is confident about what her pupils should learn. However, when she tries to convey new content to pupils, she struggles to keep their attention: if she gives a quick explanation, she gets lots of questions and confusion, but if she goes into a lot of detail, she fears pupils will stop listening. How can Ms Thomas most efficiently support her pupils' thinking when conveying new ideas in her lessons, and get a sense of whether pupils have understood?

KEY IDEA

Effective exposition uses models, concrete examples and is matched to pupils' needs.

KEY TAKEAWAYS:

Ms Thomas's expositions will better match pupil needs if she understands:

- > The importance of preventing pupil overload by first building on prior knowledge.
- > The 'I-We-You' approach helps her to ensure she manages pupil thinking and working memory effectively.
- > Using concrete and abstract examples, modelling, and worked examples in expositions support pupils when introducing new concepts and processes.
- > Checking pupil understanding prior to letting them practise independently can be a powerful approach.

EFFECTIVE EXPOSITION

Effective teaching takes account of the limits of pupils' working memories. Pupils may struggle if they experience cognitive overload: this is particularly likely if pupils are exposed to too much new material at once. Ms Thomas can manage pupil thinking effectively by introducing material in stages by:

- Drawing on prior knowledge, explicitly linking to what pupils have already been taught.
- Breaking material up into smaller chunks when introducing it to reduce overload.
- Structuring her teaching around an 'I-We-You' model (Lemov, 2015). This should begin with what pupils already know; provide them with a clear explanation of the key ideas and demonstration of the task (I do); provide an opportunity to practise the task collectively and for the teacher to check pupil understanding (We do); and finally move to pupils working independently (You do) (Lemov, 2015).

The I-We-You structure provides multiple opportunities for teachers to convey new ideas by using concrete examples, modelling, and worked examples (Lemov, 2015). These place manageable demands on pupils' working memory, supporting them to actively process and understand new material (Deans for Impact, 2015).

EXPLANATIONS

When should Ms Thomas give explanations?

Explanations are more effective when teachers want to convey concepts rather than processes (Wittwer & Renkl, 2010). However, the examples teachers give are more important in pupils' understanding than the explanations accompanying them (Wittwer & Renkl, 2010). Ms Thomas wants her pupils to understand both concrete ideas (things they can visualise, like 'numbers as counters') and abstract ideas (things with fewer sensory properties such as 'multiplication of numbers').

She can best convey this to her pupils by using concrete examples in her exposition (ideally linked to current pupil understanding) and connecting them with more abstract ones, or by moving from concrete to abstract representations over time (Pashler et al., 2007). For example, she may introduce multiplication using counters and then remove these as pupils gain understanding of multiplication as an operation. Pupils find it easier to process an explanation where images are paired with spoken words, rather than where images are accompanied with extensive written text (Pashler et al., 2007).

MODELLING

Concrete examples can help Ms Thomas to introduce new concepts. What about new processes? When learning how to solve problems, pupils need support with their thinking through modelling. When teachers model and think aloud while demonstrating how to solve a problem,

this provides cognitive support (Rosenshine, 2012). Modelling can be done in a variety of ways; the goal is to give pupils a scaffold while they are a novice before gradually removing it as their mental model develops.

For Ms Thomas, modelling might involve talking her pupils through each step of a new problem in maths. For writing an essay it might involve talking through the decisions she would make in writing. A particularly powerful form of modelling for new processes is providing a worked example that the teacher walks the class through. Novices who are provided with worked examples when learning a new problem outperform those without them (Sweller, 2016).

Worked examples reduce cognitive load by providing scaffolding to help pupils break a problem into chunks, allowing teachers to introduce the problem step-by-step (Deans for Impact, 2015). Furthermore, providing worked examples can help pupils to focus on the relevant parts of the problem rather than wasting time looking at irrelevant solutions, or mismatching problems and solutions (Wittwer & Renkl, 2010). Worked examples provide scaffolding to help pupils master a particular part of the problem, both securing it within their mental model, and making it available to draw on it when required for the next part of the problem.

In sum, including concrete and abstract examples, and modelling by thinking aloud through worked examples, can effectively support pupils to understand new ideas without overloading their working memory.

CHECKING PUPIL UNDERSTANDING

In the opening problem, Ms Thomas also wanted to ensure that her pupils understood content. While examples and modelling can convey material, she will only know whether pupils have understood by checking their understanding. Pupils tend to believe that they understand something if it feels familiar, even if their understanding is superficial (Christodoulou, 2016). Formative assessments can help Ms Thomas gather information about what each of her pupils do and do not understand. After modelling how to complete a problem and before getting pupils to practise independently, Ms Thomas could ask questions to check pupil understanding.

NUANCES AND CAVEATS

While guided instruction through modelling is more effective for novices than other forms of instruction, removing cognitive supports as pupils gain expertise is vital. Where pupils already have a strong understanding of how to solve a problem, worked examples may distract them from a process which they are capable of completing independently (Pashler et al., 2007).



CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. What strategies can you use to make expositions effective?

- a.) What strategies can you use to make expositions effective?
- b.) Putting text up on the board and talking over it so pupils can read and hear it.
- c.) Limiting expositions to three minutes as pupils can't concentrate for long periods.
- d.) Using concrete examples in expositions and connecting them with more abstract ones.

2. When are explanations most effective?

- a.) Explanations are more effective when teachers want to convey concepts rather than processes.
- b.) Explanations are always the most effective way to convey new information whatever is being taught.
- c.) Explanations are more effective when teachers want to convey processes rather than concepts.

3. When are explanations most effective?

- a.) Questioning can help the teacher to gather information about what each of her pupils do and do not understand.
- b.) If pupils do not understand a topic, the teacher can tell pupils they should pay more attention next time.
- c.) Questioning can help the teacher expose misconceptions about the topic.

FURTHER READING

Deans for Impact (2015). The Science of Learning. bit.ly/ecf-dea1

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Ms Thomas's expositions will better match pupil needs if she understands:

- > The importance of preventing pupil overload by first building on prior knowledge.
- > The 'I-We-You' approach helps her to ensure she manages pupil thinking and working memory effectively.
- > Using concrete and abstract examples, modelling, and worked examples in expositions support pupils when introducing new concepts and processes.
- > Checking pupil understanding prior to letting them practise independently can be a powerful approach.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Deans for Impact (2015). *The Science of Learning*. bit.ly/ecf-dea1
- Lemov, D. (2015). *Teach Like a Champion 2.0*. Jossey-Bass, 2nd Edition.
- Pashler, H., Bain, P. M., Bottge, B. A., Graesser, A., Koedinger, K., McDaniel, M., & Metcalfe, J. (2007). *Organizing Instruction and Study to Improve Student Learning*. US Department of Education. bit.ly/ecf-pas
- Rosenshine, B. (2012). Principles of Instruction: Research-based strategies that all teachers should know. *American Educator*, 36(1), 12–20. bit.ly/ecf-ros1.
- Wittwer, J., & Renkl, A. (2010). How Effective are Instructional Explanations in Example-Based Learning? A Meta-Analytic Review. *Educational Psychology Review*, 22(4), 393–409. bit.ly/ecf-wit.

QUIZ ANSWERS

1. A,D
2. A
3. A, C

16 | INSTRUCTION: ADAPTING TEACHING

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Ms Garcia feels increasingly confident at identifying key content and presenting it effectively, building on pupil prior knowledge. However, she notices that sometimes pupils grasp key ideas quickly, while at other times pupils struggle to do so at all. Sometimes it is individuals or groups of pupils that struggle, at other times the whole class. How can she adapt her teaching to better meet the needs of all pupils?

KEY IDEA

Adapting teaching requires assessment of pupil needs and appropriate teacher responses, before the lesson and within it, to enable a high pupil success rate.

KEY TAKEAWAYS:

Ms Garcia can effectively adapt her teaching if she understands that:

- > Adapting teaching means identifying key adaptations and deploying them responsively to ensure pupils experience a high success rate.
- > Whole class questioning can expose what pupils understand to inform responsive teaching.
- > Teachers need to understand key pupil differences and potential barriers to learning, especially for pupils with special educational needs or disabilities, and prepare solutions before the lesson.
- > Worked examples and careful grouping can support pupils to fill knowledge gaps or correct misconceptions.

ADAPTING TEACHING AIMS TO SUPPORT ALL PUPILS TO BE SUCCESSFUL

Effective teachers adapt their teaching to respond to the needs of the class and individual pupils (OECD, 2015). This doesn't mean adapting lessons to different 'learning styles' such as 'visual' or 'kinaesthetic' as the evidence is unambiguous: while pupils have different learning preferences, they do not have distinct learning styles (Coe, 2013).

When pupils are introduced to new ideas, explicit guided teaching is more effective than pupils discovering new ideas without teacher support (Coe et al., 2014). However, pupils learn at different rates and have different levels of prior knowledge. Effective approaches to establishing pupils needs and adapting teaching are available. Teachers can check pupils' needs through gathering information on what pupils do and don't understand yet. Once they have, adaptations they could make include:

- New information broken down into smaller steps.
- Additional explanations and examples.
- Additional forms of teacher support (Gathercole et al., 2006)
- Additional stretch, for example through questions which extend pupil thinking, or removal of unnecessary support.

This is responsive teaching: using evidence of what pupils have understood to allow us to adapt our teaching to better meet pupils' needs (Wiliam, in Christodoulou, 2017).

Responsive teaching does not mean creating distinct tasks for different groups of pupils or setting lower expectations for some (Pashler et al. 2007). Instead it entails identifying key content pupils might struggle with and options to support or stretch them, to make sure all pupils are successful. To make the workload of adapting teaching manageable, teachers should focus on a few key barriers and key adaptations.

FIND OUT WHAT PUPILS KNOW, AND TEACH THEM ACCORDINGLY

Responsive teaching requires effective ways to monitor pupils' learning (Deunk et al., 2018). If what pupils learnt was the same as what they were taught, there would be no need for assessment at all; however, we know that what pupils remember from a lesson can vary enormously (Wiliam, 2010).

Ms Garcia needs to collect and use assessment information to inform her key instructional decisions (Wiliam & Leahy, 2015). She can either use information to decide whether to adapt teaching between lessons, or within a lesson. To adapt effectively, she needs to prepare assessments based on key information she needs pupils to understand, to show her which pupils lack key knowledge or hold misconceptions and which pupils have a firm grasp of key material (Christodoulou, 2017). For example, teachers can use a sequence of carefully crafted questions and collect whole class responses to detect misconceptions and so more precisely target their teaching (Christodoulou, 2017).

ADAPTING TEACHING BEFORE THE LESSON

Some adaptations can be planned before the lesson or unit begins. It is good practice for teachers to seek support and information in advance about specific barriers to learning and specific solutions to these for individual pupils, particularly for pupils with special educational needs and disabilities. A conversation with the SENCO or parents or referring to the SEND code of practice may help. For example, a teacher

may find out that a pupil's ability to write is impaired and print resources for them. Teachers can also draw on formative assessment data collected in a previous lesson to adapt teaching to either stretch or support pupils.

ADAPTING TEACHING WITHIN THE LESSON: WORKED EXAMPLES AND GROUPS

Pre-lesson preparation can also support responsive teaching within the lesson, guided by the I-We-You instructional approach to get the right balance of stretch and support (Lemov, 2015). Teachers can prepare adaptations in advance and deploy them responsively if assessment reveals pupils need them.

If in lesson assessment reveals the majority of pupils have struggled with a specific idea or question, teachers can use worked examples to illustrate correct solutions. Worked examples reduce the cognitive burden that pupils feel when learning a new skill by breaking it down into smaller sections, allowing pupils to master the foundations before moving onto more complex parts (Deans for Impact, 2015). Ms Garcia may choose to use an additional worked example with pupils who have not yet grasped a particular skill; or break down a worked example even further for certain pupils while ensuring all work towards the same endpoint. Pupils benefit from explicit teaching and hearing many examples and questions (Rosenshine, 2012) so, if in doubt, giving a further example will often be helpful, even if assessment suggests some pupils have understood the idea.

Ms Garcia may also want to consider how to adapt groupings within her classroom to ensure that she can best tailor support to individuals' needs. Grouping pupils within a class based on their current level of understanding could help Ms Garcia more precisely target support. Doing so relies on assessing pupils' needs accurately, providing all groups with sufficient support and maintaining high expectations for everyone (Coe et al., 2014). For example, assessment may reveal most pupils are ready for independent practice, but a few still need teacher support, in which case Ms Garcia may create a small focus group to support once the class is practising independently – though she must be careful to make clear that this group is based on attainment and change it regularly. However, this may be tricky to achieve without embedded routines and behaviour expectations (IES, 2008).

NUANCES AND CAVEATS

Grouping pupils by ability has a limited impact on pupil outcomes (Coe et al., 2014) so care should be taken to monitor the impact of groupings on pupil attainment, behaviour and motivation.

The aim of responsive teaching is to support pupil success. If pupils are practising independently and struggling, Ms Garcia should still stop the class (or intervene with particular pupils) to provide further support. Similarly, if Ms Garcia's assessment suggests pupils need stretching, she can let pupils move on to more challenging work, while monitoring carefully to ensure they are successful, in case support is needed.

Teaching assistants can adapt teaching for assigned pupils, for example pupils with special educational needs or disabilities. However, they need to be prepared for the lesson by the teacher, and supplement not replace teacher support (EEF, 2018). For example, providing they can further break down tasks during guided practice.

CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. What is responsive teaching?

- a.) Setting different tasks for different pupils based on their prior attainment.
- b.) Choosing tasks that pupils enjoy, supporting engagement.
- c.) Using evidence of what pupils have learnt to adapt teaching to meet pupils' needs.

2. How can worked examples be used to respond to pupil needs?

- a.) You can break a worked example into smaller steps to help pupils who have not yet grasped a key idea.
- b.) You can't use worked examples to respond to different pupil need as the worked example is the same for the whole class.
- c.) Using an additional worked example with groups of pupils who have not yet grasped a particular skill.

3. Teachers can effectively group pupils by...

- a.) Grouping pupils within a lesson based on their level of understanding.
- b.) Putting pupils in a seating plan based on their surname.
- c.) Grouping pupils with other pupils they like and want to work with for a particular topic.

FURTHER READING

Deunk, M. I., Smale-Jacobse, A. E., de Boer, H., Doolaard, S., & Bosker, R. J. (2018). Effective differentiation Practices: A systematic review and meta-analysis of studies on the cognitive effects of differentiation practices in primary education. *Educational Research Review*, 24, 31–54. bit.ly/ecf-deu.

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Ms Garcia can effectively adapt her teaching if she understands that:

- > Adapting teaching means identifying key adaptations and deploying them responsively to ensure pupils experience a high success rate.
- > Whole class questioning can expose what pupils understand to inform responsive teaching.
- > Teachers need to understand key pupil differences and potential barriers to learning, especially for pupils with special educational needs or disabilities, and prepare solutions before the lesson.
- > Worked examples and careful grouping can support pupils to fill knowledge gaps or correct misconceptions.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Christodoulou, D. (2017). *Making Good Progress: The Future of Assessment for Learning*. Oxford: OUP.
- Coe, R. (2013). *Improving Education: A triumph of hope over experience*. bit.ly/ecf-coe2
- Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014). What makes great teaching. Review of the underpinning research. Durham University. bit.ly/ecf-coe
- Deans for Impact (2015). *The Science of Learning*. bit.ly/ecf-dea
- Deunk, M. I., Smale-Jacobse, A. E., de Boer, H., Doolaard, S., & Bosker, R. J. (2018). Effective differentiation Practices: A systematic review and meta-analysis of studies on the cognitive effects of differentiation practices in primary education. *Educational Research Review*, 24, 31–54. bit.ly/ecf-deu
- Education Endowment Foundation (2018). *Teaching and learning toolkit*. bit.ly/ecf-eef14
- Gathercole, S., Lamont, E., & Alloway, T. (2006). Working memory in the classroom in Pickering, S. (Ed.) *Educational Psychology, Working memory and education*, 219–240.
- IES. (2008). *Reducing behavior problems in the elementary school classroom*. bit.ly/ecf-ies
- Lemov, D. (2015). *Teach Like a Champion 2.0* (2nd ed.). San Francisco: Jossey-Bass.
- OECD (2015). *Pisa 2015 Result: Policies and Practices for Successful Schools*. bit.ly/ecf-oecd
- Pashler, H., Bain, P. M., Bottge, B. A., Graesser, A., Koedinger, K., McDaniel, M., & Metcalfe, J. (2007). *Organizing Instruction and Study to Improve Student Learning*. US Department of Education. bit.ly/ecf-pas
- Rosenshine, B. (2012) Principles of Instruction: Research-based strategies that all teachers should know. *American Educator*, 36, 12–20. bit.ly/ecf-ros.
- Wiliam, D. (2010). What Counts as Evidence of Educational Achievement? The Role of Constructs in the Pursuit of Equity in Assessment. *Review of Research in Education*, 34, 254–284.
- Wiliam, D., & Leahy, S., (2015). *Embedding Formative Assessment*. Florida: Learning Sciences International.

QUIZ ANSWERS

1. C
2. A, C
3. A

17 | INSTRUCTION: PRACTICE AND SUCCESS

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Mr Andrews is getting better at identifying and conveying what he wants his pupils to learn. But while his checks for understanding reveal pupils have understood what he has taught, he notices that pupils are not yet able to securely grasp and apply key ideas independently. How can his instruction support pupils to consolidate their learning?

KEY IDEA

Providing opportunities for purposeful practice supports pupils to consolidate and secure what they have learned.

KEY TAKEAWAYS:

Mr Andrews can support successful practice if he understands that:

- > Learning is about remembering and connecting information through thinking hard.
- > Purposeful practice which causes pupils to think hard improves their retention.
- > Effective instruction includes purposeful practice and regular retrieval.

LEARNING IS ABOUT REMEMBERING AND CONNECTING INFORMATION

Mr Andrews now understands that ‘learning is the residue of thought’ (Willingham, 2009). In particular, what people have thought hard about (Coe, 2013). Thinking takes place in working memory where people combine knowledge from their long-term memory with new information (Willingham, 2009). To commit new information to long-term memory, pupils must have a strong foundation of prior knowledge.

Pupils consolidate their existing knowledge by retrieving it from long-term memory and using it to answer questions or solve problems (Roediger & Butler, 2011). This allows them to process new information faster and more accurately (Sweller, 2016). For example, they can comprehend new information by linking it with familiar words or ideas. What can Mr Andrews do to support pupils to successfully consolidate material?

PRACTICE SUPPORTS SUCCESSFUL REMEMBERING AND CONNECTING

Regular purposeful practice consolidates pupils’ understanding and helps them remember key ideas. Practice can happen in the ‘We do’ as well as the ‘You do’ parts of instruction (Lemov, 2015). Initially, teachers should scaffold practice as part of ‘We do’, for example by solving problems with pupils, to show them how to complete problems. Over time, teachers can decrease the support they offer to help pupils practise independently (IES, 2008).

Independent practice tasks (‘You do’) should relate closely to those covered in guided practice (Lemov, 2015). Otherwise pupils may struggle and waste time identifying what to do (Kirschner et al., in Christodoulou, 2017). This also allows pupils to focus on becoming more fluent at solving a problem or recalling information (Rosenshine, 2012). For example, if the guided practice has been about adding fractions, this should also be the focus of independent practice, rather than adding and subtracting fractions.

Over time, practice should support the development of expertise by consolidating mental models, as thinking hard secures memories and makes new connections. This helps pupils to free up their working memory to tackle more complicated problems (Sweller, 2016). For example, practising times tables allows pupils to tackle more advanced maths problems more easily.

For practice to be effective, teachers need to ensure pupils achieve a high success rate, ideally of around 80% (Rosenshine, 2012). Mr Andrews needs to ensure that where pupils are not regularly successful in their practice, he intervenes with feedback which pupils can act on. He can also acknowledge and praise pupil effort and emphasise progress made toward eventual success. High levels of success also improve pupils’ motivation (Coe et al., 2014).

EFFECTIVE APPROACHES TO INDEPENDENT PRACTICE

After introducing content in small steps, supported through models and guided instruction, Mr Andrews now needs to get his pupils to practise independently. How should he organise and ‘space’ this practice over time?

- > Spacing practice over time (or ‘distributing’ it) makes learning feel harder but improves pupils’ retention because they have to think harder about it (Dunlosky et al., 2013).
- > Assuming pupils are getting questions right, teachers can increase the intervals between practice (Dunlosky et al., 2013).

Mr Andrews should be intentional in not just how he spaces practice but what he includes in practice. He should consider not just what he has recently taught but also supporting pupils to master challenging content which builds towards long term goals. Therefore, pupils should practise skills and knowledge from previous weeks and months. He can increase the challenge by removing scaffolding, lengthening spaces or introducing interacting elements, for example a more complicated problem where one step relies on a previous step.

While practice matters, “not all practice is equivalent” (Deans for Impact, 2015). Setting up pupils for independent practice might involve Mr Andrews giving his pupils a set of problems to solve but it could also involve teaching them to self-quiz. Testing is among the most effective techniques for supporting pupils to remember what they have learned (Pan et al., 2018). Retrieval is also more effective than other independent study activities such as re-reading and highlighting (Dunlosky et al., 2013) because it requires pupils to think hard.

NUANCES AND CAVEATS

While increasing time gaps between practice is beneficial for learning, this is not always practical. It depends how long pupils need to recall this information for. For example, to remember something for one week, practice should be spaced 12 to 24 hours apart. Whereas, to remember something for five years, practice should be spaced 6 to 12 months apart (Dunlosky et al., 2013).

Lots of practice at once (cramming) can be effective if pupils know very little and want to pass an exam – however, this is not an appropriate strategy if we want them to remember these ideas the following year or beyond.

Homework might be a good opportunity for further practice of what has been learnt in class. Homework can improve pupil outcomes, particularly for older pupils, but it is likely that the quality of the homework and its relevance to main class teaching is more important than the amount set (EEF, 2018)



CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. What is consolidation?

- a.) Consolidation is when the teacher re-teaches a topic.
- b.) Consolidation is when the teacher models an activity effectively.
- c.) Consolidation is when pupils can remember and connect their prior knowledge from long-term memory.
- d.) Consolidation is when pupils are in the first stages of understanding a topic.

2. When practising independently, the content or problem pupils face should be...

- a.) Not related at all to the one they worked on during guided practice.
- b.) It does not matter if it is closely related or not.
- c.) Closely related to the one they worked on during guided practice.

3. Practice supports the development of expertise through...

- a.) Consolidating mental models.
- b.) Effective teacher modelling.
- c.) Collaboration with peers.

4. Why is retrieval more effective as an independent study activity?

- a.) Retrieval means that the pupils don't go off task.
- b.) Retrieving information increases recall at a later date.
- c.) Retrieval requires pupils to think hard.

FURTHER READING

Deans for Impact (2015). The Science of Learning. bit.ly/ecf-dea

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Mr Andrews can support successful practice if he understands that:

- > Learning is about remembering and connecting information through thinking hard.
- > Purposeful practice which causes pupils to think hard improves their retention.
- > Effective instruction includes purposeful practice and regular retrieval.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Coe, R. (2013). Improving Education: A triumph of hope over experience. Centre for Evaluation and Monitoring. bit.ly/ecf-coe2
- Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014). What makes great teaching. Review of the underpinning research. Durham University. Bit.ly/ecf-coe
- Deans for Impact (2015). The Science of Learning. bit.ly/ecf-dea
- Dunlosky, J., Rawson, K. A., Marsh, E. J., Nathan, M. J., & Willingham, D. T. (2013). Improving students' learning with effective learning techniques: Promising directions from cognitive and educational psychology. *Psychological Science in the Public Interest, Supplement*, 14(1), 4–58.
- Education Endowment Foundation (2018). Sutton Trust-Education Endowment Foundation Teaching and Learning Toolkit. bit.ly/ecf-EEF12
- Lemov, D. (2015). *Teach Like a Champion 2.0* (2nd ed.). San Francisco: Jossey-Bass.
- Pan, S. C., & Rickard, T. C. (2018) Transfer of test-enhanced learning: Meta-analytic review and synthesis. *Psychological Bulletin*, 144(7), 710–756.
- Roediger, H. L., & Butler, A. C. (2011) The critical role of retrieval practice in long-term retention. *Trends in Cognitive Sciences*, 15(1), 20–27.
- Rosenshine, B. (2012) Principles of Instruction: Research-based strategies that all teachers should know. *American Educator*, 12–20. Bit.ly/ecf-ros
- Sweller, J. (2016). Working Memory, Long-term Memory, and Instructional Design. *Journal of Applied Research in Memory and Cognition*, 5(4), 360–367.
- Willingham, D. T. (2009). *Why don't students like school?* San Francisco: Jossey Bass.

QUIZ ANSWERS

1. C
2. C
3. A
4. B, C

18 | INSTRUCTION: EXPLICIT TEACHING

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Ms Sims understands that several strategies contribute to effective instruction. But sometimes, when considering how to use these strategies in combination, she notices that she is unsure how they fit together. When does pupil misunderstanding mean she should use more teacher talk? When do pupils need more practice? Is there an overall model of instruction which can help her review her lessons to decide if her instruction is supporting pupils to learn as effectively as they can?

KEY IDEA

Teachers should deploy instructional strategies that provide most teacher support early in the instructional sequence and gradually withdraw this support to ensure pupils successfully gain knowledge and skills.

KEY TAKEAWAYS:

Ms Sims can be more confident her instruction is effective if she understands that:

- > Explicit teaching of knowledge and skills can help form effective mental models.
- > Effective instruction is underpinned by what we know about how pupils learn and checking this through effective assessment.
- > Effective instruction often uses the I-We-You model to introduce new material in steps, using concrete examples and worked examples, gradually withdrawing support and promoting independent practice with a high success rate, both within lessons and over time (Lemov, 2015).

EXPLICIT TEACHING OF KNOWLEDGE AND SKILLS IS TEACHER-LED

Explicit teaching means teachers provide fully guided instruction to pupils when introducing new knowledge and skills (Sweller, 2016). Ms Sims chooses to pursue explicit teaching because it is the most efficient way to develop her pupils' mental models – the collection of concepts, knowledge, skills and principles which comprise their understanding of a topic or a subject. To build these mental models, Ms Sims can combine a variety of techniques.

One model which can be helpful when thinking about how to sequence these techniques is the 'I-We-You' approach (Lemov, 2015). When pupils begin learning a topic or skill, they benefit from first receiving guided instruction from the teacher, as opposed to discovering key ideas for themselves (Coe et al., 2014).

One reason this approach is effective is because working memory is limited. If pupils have to discover the key ideas themselves, or complete a complicated process with limited guidance, they will find it difficult to do and to remember. However, teachers can make this process easier through an effective 'I do', for example linking to pupil prior knowledge, addressing common misconceptions and introducing material in steps through explanations and models. As pupils acquire knowledge and skills, their expertise increases, and Ms Sims can encourage them to work increasingly independently, first with teacher support ('We do') and then practising alone ('You do') to gain mastery (Lemov, 2015). Such a sequence makes it more likely pupils will be successful (Rosenshine, 2012).

'I DO' - EFFECTIVE TEACHER EXPOSITION

So how can Ms Sims provide adequate guidance to pupils when introducing new material? During the 'I do' section of the lesson, Ms Sims can help her pupils grasp new ideas by introducing new material in steps and crafting careful explanations (Lemov, 2015; Wittwer & Renkl, 2010) using worked and partially worked examples or models (Pashler et al., 2007; Rosenshine, 2012).

However, it would be a mistake for Ms Sims to believe teacher guided instruction means no thinking or input from pupils. During the 'I do', reviewing previous learning both helps pupils recall useful prior knowledge and helps her to decide how much guidance pupils need and in which areas (Rosenshine, 2012). She should allow pupils to practise after each new step has been introduced and ask questions to help students process new material from her exposition. This will ensure pupils are thinking hard about new knowledge and skills and connecting them to previous learning (Rosenshine, 2012). For practice to be effective, teachers need to ensure pupils achieve a high success rate, ideally of around 80% (Rosenshine, 2012). Mr Andrews needs to ensure that where pupils are not regularly successful in their practice, he intervenes with feedback which pupils can act on. He can also acknowledge and praise pupil effort and emphasise progress made toward eventual success. High levels of success also improve pupils' motivation (Coe et al., 2014).

ASSESSING BEFORE MOVING ON

Explaining, modelling and questioning pupils – developing their mental models – before individual practice, tends to be most effective (Rosenshine, 2012). However, if Ms Sims wants her pupils to learn efficiently, she must balance the risks of

falling into two opposite traps: spending too long explaining ideas to pupils ('I do') or moving too quickly to practice ('We do' or 'You do') without first assessing whether pupils need further guidance (Lemov, 2015).

This can be tricky because we cannot see mental models developing. Just because a pupil looks busy or writes lots, it does not necessarily mean that they have learnt something (Coe, 2013). Learning something can also take time, with pupils typically benefiting more from experiencing multiple exposures to information, ideally spaced out over time (Pashler et al., 2007).

Ms Sims can use diagnostic assessments to inform her decisions about teaching. She can do this by thinking carefully about the specific knowledge and skills she wants her pupils to acquire and using questions to which all or most pupils to respond. This will enable her to get an impression of whether pupils have acquired the intended knowledge and skills (Christodoulou, 2017), and what to do next with them.

'WE DO, YOU DO' - GUIDED PRACTICE, INDEPENDENT PRACTICE

When Ms Sims transitions to the 'We do' section, she should avoid removing all support immediately (Lemov, 2015). Her key consideration should be that pupils obtain a high success rate, ideally of around 80%: initially, she can provide scaffolds to achieve this and check for understanding (Rosenshine, 2012). For example, Ms Sims could invite students to rehearse new material by rephrasing, elaborating or summarising (Rosenshine, 2012). She can also provide guides and scaffolds for trickier tasks to ensure pupils do not become overwhelmed by trying to practise too much complex material too soon (Rosenshine, 2012).

But the 'You do' stage of independent practice is also important for pupil learning. Ms. Sims should continue to check for understanding and, when appropriate, remove scaffolds and guidance so that pupils can practise independently (Lemov, 2015; Pashler et al., 2007). A key goal of independent practice is for pupils to gain automaticity so they can effortlessly use their knowledge and skills (Rosenshine, 2012). Ms Sims may tell pupils that they need to 'practise beyond the point when they get it right, to the point where they can't get it wrong'.

NUANCES AND CAVEATS

I-We-You offers valuable guidance for sequencing learning, but it is not a rule: it is not equally appropriate across all subjects and phases (Lemov, 2015). An I-We-You structure supports learning across individual lessons but can also be used in shorter cycles within a lesson, or over several lessons.

The expertise reversal effect (Kalyuga, 2007) means that as pupils gain knowledge and skills, too much support can stop them using what they already know. As a result, it is important that teachers check for understanding to ensure they are not 'over-scaffolding' learning, withdrawing support as appropriate.



CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. What does the term explicit teaching mean?

- a.) Explicit teaching is when the teacher is really clear in the planning stage what they want the pupils to learn.
- b.) Explicit teaching is when pupils teach each other in a really clear way.
- c.) Explicit teaching means teachers initially provide full instructional guidance to pupils.
- d.) Explicit teaching is when pupils are guided to discover learning for themselves or in groups.

2. What techniques might a teacher deploy during the 'I do' section of a lesson?

- a.) Introducing material in small steps.
- b.) Providing models.
- c.) Asking questions to help pupils process this new information.
- d.) Rehearsing their exposition before the lesson starts.

3. What is the expertise reversal effect?

- a.) Novices are often better at explaining concepts than experts.
- b.) As pupils gain expertise, too much support becomes a hindrance, not a help.
- c.) Pupils don't need to practise material once they have become experts.

FURTHER READING

Rosenshine, B. (2012). Principles of Instruction: Research-based strategies that all teachers should know. *American Educator*, 36(1), 12–20. bit.ly/ecf-ros.

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Ms Sims can be more confident her instruction is effective if she understands that:

- > Explicit teaching of knowledge and skills can help form effective mental models.
- > Effective instruction is underpinned by what we know about how pupils learn and checking this through effective assessment.
- > Effective instruction often uses the I-We-You model to introduce new material in steps, using concrete examples and worked examples, gradually withdrawing support and promoting independent practice with a high success rate, both within lessons and over time.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Christodoulou, D. (2017). *Making Good Progress: The Future of Assessment for Learning*. Oxford: OUP.
- Coe, R. (2013). *Improving Education: A triumph of hope over experience*. Centre for Evaluation and Monitoring, Durham University, UK. bit.ly/ecf-coe2
- Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014). What makes great teaching. Review of the underpinning research. Durham University. bit.ly/ecf-coe
- Kalyuga, S. (2007) Expertise reversal effect and its implications for learner-tailored instruction. *Educational Psychology Review*, 19(4), 509-539.
- Lemov, D. (2015). *Teach Like a Champion 2.0* (2nd ed.). San Francisco: Jossey-Bass.
- Pashler, H., Bain, P. M., Bottge, B. A., Graesser, A., Koedinger, K., McDaniel, M., & Metcalfe, J. (2007). *Organizing Instruction and Study to Improve Student Learning*. US Department of Education. bit.ly/ecf-pas
- Rosenshine, B. (2012). Principles of Instruction: Research-based strategies that all teachers should know. *American Educator*, 36(1), 12–20. bit.ly/ecf-ros
- Sweller, J. (2016). Working Memory, Long-term Memory, and Instructional Design. *Journal of Applied Research in Memory and Cognition*, 5(4), 360-367.
- Wittwer, J., & Renkl, A. (2010). How Effective are Instructional Explanations in Example-Based Learning? A Meta-Analytic Review. *Educational Psychology Review*, 22(4), 393–409.

QUIZ ANSWERS

1. C
2. A, B, C
3. B

19 | INSTRUCTION: SCAFFOLDING

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Mr Jones is increasingly confident at using the I-We-You model to lead sequences of instruction. But he finds that some of his pupils become overwhelmed by new content and many pupils struggle when the ideas are abstract or complex. How can his instruction support pupils to be successful when tackling challenging material?

KEY IDEA

Effective scaffolding gives pupils the knowledge and guidance to access challenging content but should be removed once pupils are experiencing high rates of success.

KEY TAKEAWAYS:

Mr Jones can successfully scaffold his instruction if he understands that:

- > Pupils will struggle and working memory will become overloaded if they do not have relevant knowledge of new content – particularly if it is complex or abstract.
- > Scaffolding can provide knowledge to support pupils to access new content through modelling, worked examples and guides.
- > Scaffolding needs to be removed over time as it can become a barrier once pupil knowledge is developed. However, a high success rate should be maintained.

KNOWLEDGE, NEW CONTENT AND THE ROLE OF SCAFFOLDING

Mr Jones now understands that to learn new content pupils need to be able to process it in their working memory, but that working memory capacity is limited and varies between pupils (Gathercole et al., 2006). Related knowledge helps pupils make sense of new content (Willingham, 2009). For example, pupil vocabulary knowledge allows them to process strings of letters as sentences when reading and knowledge of phonics helps them when they encounter an unfamiliar word, reducing the demands on working memory. Prior knowledge reduces the burden on working memory and frees it up to think about more challenging concepts. Where prior knowledge is lacking, further support through scaffolding can help, for example by providing a definition and pronunciation of an unfamiliar key word. But where pupils already have this knowledge, scaffolding can get in the way of pupils using their prior knowledge (Pashler et al., 2007).

Prior knowledge helps us to grasp related new ideas more easily, particularly if the new ideas are concrete, as most of the things we know are concrete. However, many of the ideas encountered at school are abstract, and distant from pupils' everyday experiences (Willingham, 2009). When introducing abstract ideas, teachers can provide related scaffolds that make the ideas more concrete. This reduces the chances of working memory becoming overloaded, increasing the chances of pupil success. For example, the idea of adding fractions can be abstract, but we can make it more concrete by using objects or diagrams (Pashler et al., 2007).

INTRODUCING SCAFFOLDING

Scaffolding can be introduced to support pupils to succeed with difficult tasks where they lack sufficient prior knowledge. Scaffolding involves breaking down tasks into manageable steps and providing temporary supports. This enables pupils to focus on and think about only certain aspects of the task at any one time, reducing the chances of working memory being overloaded.

Mr Jones should try to anticipate what his pupils will struggle with most, break down the task into manageable steps, and then decide what kinds of scaffolding he might put in place.

He can draw on a few different types of scaffold to support pupil thinking and make his 'expert thinking' explicit:

- > **Modelling:** For example, sharing an excellent piece of work or 'thinking aloud' through a problem (Rosenshine, 2012). Mr Jones can reduce the cognitive burden his pupils feel by directing pupil attention towards the key features of a problem or example. This can help them to break down a complex task into more manageable parts.

> **Worked examples:** When introducing a new type of problem in maths, Mr Jones could break the problem down into steps instead of getting his pupils to attempt it in one go. He could then guide them through each step by providing prompts or explanations which would help the pupils succeed at each step. Worked examples reduce the number of options pupils need to think about by pointing them directly to successful approaches (Sweller, 2016).

> **Guides:** Teachers can also anticipate common pupil mistakes and misconceptions and provide guides such as checklists as support to overcome these (Rosenshine, 2012). For example, when teaching his pupils creative writing, Mr Jones could give his pupils a checklist of things they should include. This means that pupils do not have to simultaneously think about both what they want to write and the complex devices they need to use. Checklists also support them to review their work to avoid common errors like leaving out full stops and misconceptions like every 's' should have an apostrophe.

REMOVING SCAFFOLDING

Scaffolds need to be temporary to successfully support learning. As pupil knowledge develops, using fewer examples and more problem solving appears to improve learning, rather than continuing to provide high levels of guidance (Pashler et al., 2007). As pupils develop more knowledge, trying to process the scaffolding at the same time as drawing on their existing knowledge can overload working memory. As a result, scaffolding is best removed as pupils' knowledge grows. Rather than removing all the scaffolds at once, however, Mr Jones can gradually 'fade' them out by removing support gradually, as pupils begin to experience higher success rates (Rosenshine, 2012).

Effective scaffolding increases the chances of pupils experiencing success and improves pupil motivation (Coe et al., 2014). Success should be a central guiding principle when deciding whether and when to remove scaffolding as pupil expertise increases.

NUANCES AND CAVEATS

Scaffolding alone cannot overcome limitations in pupil prior knowledge. Strategies like explicitly teaching content and allowing pupils to rehearse this new knowledge are necessary to ensure pupils have adequate knowledge (Rosenshine, 2012).



CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. What is a scaffold?

- a.) A scaffold is when the teacher gives the pupil the correct answer.
- b.) A scaffold is a temporary aid used to support pupils with their learning.
- c.) A scaffold is a different task as a result of prior attainment.
- d.) A scaffold is an aid that pupils will permanently use to support them with their learning.

2. Which of the following are examples of scaffolds?

- a.) Checklists.
- b.) Modelling.
- c.) Independent practice.
- d.) Worked examples.

3. Why should scaffolds be removed as pupils become more proficient?

- a.) Pupils who have high prior attainment never need scaffolding so therefore they should always be optional, rather than needing to be removed.
- b.) As pupils develop more knowledge, it becomes difficult for them to try and process the scaffolding they are being offered at the same time as drawing on their existing knowledge.
- c.) They shouldn't be removed; scaffolds are helpful whatever the expertise of the learner.

FURTHER READING

Rosenshine, B. (2012). Principles of Instruction: Research-based strategies that all teachers should know. *American Educator*, 12–20. bit.ly/ecf-ros.

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Mr Jones can successfully scaffold his instruction if he understands that:

- > Pupils will struggle and working memory will become overloaded if they do not have relevant knowledge of new content – particularly if it is complex or abstract.
- > Scaffolding can provide knowledge to support pupils to access new content through modelling, worked examples and guides.
- > Scaffolding needs to be removed over time as it can become a barrier once pupil knowledge is developed. However, a high success rate should be maintained.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014). What makes great teaching. Review of the underpinning research. Durham University: UK. bit.ly/ecf-coe.
- Gathercole, S., Lamont, E., & Alloway, T. (2006). Working memory in the classroom. *Working memory and education*, 219-240.
- Pashler, H., Bain, P. M., Bottge, B. A., Graesser, A., Koedinger, K., McDaniel, M., & Metcalfe, J. (2007) *Organizing Instruction and Study to Improve Student Learning*. US Department of Education. bit.ly/ecf-pas.
- Rosenshine, B. (2012). Principles of Instruction: Research-based strategies that all teachers should know. *American Educator*, 12–20. bit.ly/ecf-ros.
- Sweller, J. (2016). Working Memory, Long-term Memory, and Instructional Design. *Journal of Applied Research in Memory and Cognition*, 5(4), 360-367.
- Willingham, D. T. (2009). *Why don't students like school?* San Francisco: Jossey - Bass.

QUIZ ANSWERS

1. A, B
2. A, B, D
3. B

110 | INSTRUCTION: QUESTIONING

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Mr Aswin feels confident he can lead I-We-You sequences and help pupils access and practise complex content (Lemov, 2015). However, he notices that pupils are getting used to being 'spoon fed' and are quite dependent on him to do the 'hard thinking' before they get to independent practice. How can his instruction transfer more of the thinking onto pupils earlier in the learning sequence?

KEY IDEA

Effective questioning can guide pupil thinking through checking understanding, extending pupil thinking and fostering high-quality talk in a supportive classroom environment.

KEY TAKEAWAYS:

To use questioning to support pupil thinking, Mr Ashwin needs to understand that:

- > Questioning has many purposes for teachers, including checking pupil understanding, breaking down problems and extending and challenging pupil thinking.
- > Pupils need enough knowledge, guidance and thinking time to produce quality answers.
- > Questioning underpins quality pupil classroom talk, especially in the 'We do' part of instruction.

CHECKING FOR UNDERSTANDING

Questioning is an essential tool for teachers to master as it can be used for many purposes (Coe et al., 2014). For example, it is among the most effective ways for Mr Ashwin to elicit what his pupils are thinking (Black & Wiliam, 2009). Sometimes Mr Ashwin checks pupil understanding by asking questions which demand short, simple answers. For example, he may want to see if pupils have enough fluent prior knowledge by asking 'what is 8×7 ?' Targeting questions at several pupils could also help Mr Ashwin make an inference about current class understanding and any common misconceptions.

Such questioning is diagnostic: it is primarily about finding out what pupils know rather than building pupil knowledge (Black & Wiliam, 2009). However, things can go wrong if the questions don't check the right things or if only a few pupils are questioned and information from these answers determine the subsequent direction of the lesson. Teachers can also inadvertently ignore the information generated from questions if they have not planned carefully when to pose them and how to respond to them. When planning questions to check pupil understanding, Mr Ashwin should consider:

- > What is the key knowledge that I need to check in this lesson? What do pupils need to be secure in before I can move on? What will they say and do if they are secure with this?
- > What is the best way to get the widest sample of answers? For example, mini whiteboards, exit tasks or post-it notes cans help quickly gather information about most of the class.
- > What are the wrong answers and misconceptions that might arise in the lesson? How will I prepare to address them?

EXTENDING PUPIL THINKING

Questioning can help Mr Ashwin develop pupil thinking as well as check it. Studies have shown that more effective teachers ask more questions and often require pupils to give extended explanations of their thought process (Rosenshine, 2012).

Sequences of open questions can help to manage pupils' limited working memory. For example, when introducing a maths problem Mr Ashwin could ask:

'What would we do first?'

'Why would we do this first?'

'Once we have done that, what might we do next? Why?'

Such questions require pupils to explain their answers which encourages pupils to think about the underlying principles of learning, deepening and consolidating their knowledge (Pashler et al., 2007). These questions are more effective when pupils have grasped key ideas first (Coe et al., 2014).

Open ended questions can also help to extend pupil thinking. Pupils might be asked to make predictions about a book's story from its title or to reason about a story, for example 'why did Winnie-the-Pooh get stuck in the rabbit hole?' (EEF, 2018).

ENSURING QUALITY ANSWERS

To ensure quality answers, questioning should allow enough 'thinking time'. Research suggests that after asking a question many teachers wait less than one second and, if no answer is given, ask another question or answer the question themselves (Black et al., 2004). Pupils with lower working memory capacities are likely to struggle the most with limited time and preparation (Gathercole et al., 2006), making it more likely class contributions are from higher achievers. A longer wait and time to prepare an answer can lead to more detailed answers and higher-quality thinking from every pupil.

Mr Ashwin could also use questioning to encourage pupils to share answers with their peers, supporting them to articulate key ideas and extend their vocabulary. Effective teachers spend more time on questioning pupils and guiding practice in this way than their less effective peers (Rosenshine, 2012). Teachers who facilitate such talk increase pupil outcomes (Jay et al., 2017). For talk to be effective, Mr Ashwin needs to bear in mind:

- > **Pupils need enough knowledge for high-quality talk:** Questioning can offer pupils opportunities to practise new ideas, which can be particularly useful after teacher input and before independent practice, in the 'We do' section.
- > **Questions can increase the quality of pupil talk:** When conducting questioning, clear teacher expectations and scaffolding are important to support high-quality talk. Teachers can use questions to consolidate technical vocabulary, clarify how to structure answers and to encourage pupils to address other pupils' misconceptions. (Jay et al., 2017).
- > **The learning environment needs to be safe and secure:** Pupil behaviour and outcomes are affected by teacher expectations and what they see other pupils doing (IES, 2008). Mr Ashwin needs to ensure behavioural expectations are enforced to ensure pupils feel safe to contribute answers when called upon through questioning. He needs to insist on mutual trust and respect and be clear that his purpose of questioning is pupil learning, rather than, for example, to catch pupils out.

NUANCES AND CAVEATS

Great questioning is often delivered on the spot by experienced teachers and is the product of deep knowledge of their subject and their pupils. This knowledge takes time to acquire so, to be as effective, newer teachers can plan out some of their key questions in advance.

CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. When planning diagnostic questions, Mr Ashwin could consider...

- a.) What is the best way to get the widest sample of answers?
- b.) What are the key ideas that I need to check in each lesson?
- c.) What are the key misconceptions that might arise in the lesson?
- d.) How can I catch out pupils who are not paying attention?

2. What is think time in regards to questioning?

- a.) Think time is the amount of time the teacher gives the pupil to think about the question before expecting them to answer.
- b.) Think time is the amount of time planned in for questioning about hard problems during the lesson.
- c.) Think time is the amount of time the teacher requires to think of the appropriate question to ask the class to gain the understanding they need to make decisions. .
- d.) Think time is the amount of silent time during independent practice reserved for pupil thinking.

3. What needs to be in place to ensure high-quality talk?

- a.) Pupils need guidance for high-quality talk.
- b.) The learning environment needs to be safe and secure.
- c.) Pupils need enough knowledge for high-quality talk.
- d.) Pupils need to know everything about the topic before high-quality talk can happen.

FURTHER READING

Black, P., Harrison, C., Lee, C., Marshall, B., & Wiliam, D. (2004). Working inside the Black Box: Assessment for Learning in the Classroom. Phi Delta Kappan, 86(1), 8–21. bit.ly/ecf-wil9

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

To use questioning to support pupil thinking, Mr Ashwin needs to understand that:

- > Questioning has many purposes for teachers, including checking pupil understanding, breaking down problems and extending and challenging pupil thinking.
- > Pupils need enough knowledge, guidance and thinking time to produce quality answers.
- > Questioning underpins quality pupil classroom talk, especially in the 'We do' part of instruction.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation and Accountability*, 21(1), pp.5-31.
- Black, P., Harrison, C., Lee, C., Marshall, B., & Wiliam, D. (2004). Working inside the Black Box: Assessment for Learning in the Classroom. *Phi Delta Kappan*, 86(1), 8–21. bit.ly/ecf-wil9
- Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014). What makes great teaching. Review of the underpinning research. Durham University, UK. bit.ly/ecf-coe
- EEF (2018). Preparing for Literacy Guidance Report. bit.ly/ecf-eef6
- Gathercole, S., Lamont, E., & Alloway, T. (2006). Working memory in the classroom. *Working memory and education*, 219-240.
- Institute of Education Sciences (2008). Reducing Behavior Problems in the Elementary School Classroom. bit.ly/ecf-ies
- Jay, T., Willis, B., Thomas, P., Taylor, R., Moore, N., Burnett, C., Merchant, G., Stevens, A. (2017) Dialogic Teaching: Evaluation Report. bit.ly/ecf-eef13
- Lemov, D. (2015). *Teach Like a Champion 2.0* (2nd ed.). San Francisco: Jossey-Bass.
- Pashler, H., Bain, P. M., Bottge, B. A., Graesser, A., Koedinger, K., McDaniel, M., & Metcalfe, J. (2007). *Organizing Instruction and Study to Improve Student Learning*. US Department of Education. bit.ly/ecf-pas
- Rosenshine, B. (2012). Principles of Instruction: Research-based strategies that all teachers should know. *American Educator*, 36(1), 12–20. bit.ly/ecf-ros

QUIZ ANSWERS

1. A, B, C
2. A
3. A, B, C

I11 | INSTRUCTION: CLASSROOM TALK

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Ms Crosby is increasingly pleased that her questioning is prompting classroom talk but she is unsure how best to structure it to ensure it is having the intended effect. How can she keep pupils talking 'on-task' and what groups are best for pupils to learn in? How can Ms Crosby best support talk and thinking that underpins pupil learning?

KEY IDEA

Teachers can promote pupil learning by giving clear expectations and setting up routines for high-quality classroom talk in pairs and groups.

KEY TAKEAWAYS

Ms Crosby can facilitate high quality classroom talk if she understands that:

- > Classroom talk can support pupil learning and is a form of 'practising' new ideas.
- > Teachers can develop successful pupil talk by establishing clear routines and expectations.
- > Teachers can establish effective whole class, pair and group talk through pre-planning and supporting pupil groups.

CLASSROOM TALK SUPPORTS PUPIL LEARNING

When pupils have enough knowledge, high-quality talk can support them to articulate key ideas, consolidate understanding and extend vocabulary. Where pupils discuss concepts with peers, talk reduces individual cognitive load by distributing information across the group, making it more likely pupils will gain new insights into the discussed material (Kirschner et al., 2018).

Through talk, pupils refine their understanding of concepts they are learning about (Jay et al., 2017). It can also provide the opportunity for pupils to rehearse ideas and new vocabulary orally before committing them to paper. However, talk can only succeed where pupils have sufficient knowledge, skills and capabilities linked to a topic or problem, and where clear routines have been established. Talk tasks should not be introduced too early in an instructional sequence.

FACILITATING HIGH QUALITY CLASSROOM TALK

Opportunities to introduce classroom talk might include:

- > When checking pupil understanding, first giving pupils the chance to talk (for example pair talk) before taking a variety of pupil responses.
- > Posing challenging questions which might require pupils to explain something to the teacher or to their partners, deepening their understanding of the material discussed.
- > Guided discussions, for example during the 'We Do' part of the lesson, with teacher prompts guiding pupils' discussions so they elaborate on one another's ideas (Mercer & Dawes, in EEF, 2017).

High-quality talk is underpinned by clear behavioural expectations. By reinforcing and practising these, Ms Crosby can build positive habits for how pupils engage with one another, reducing the risk of inappropriate behaviour (IES, 2008). In addition to clear behavioural expectations, Ms Crosby should ensure talk is:

- > **Collective:** Teacher and all pupils are involved in the dialogue.
- > **Reciprocal:** Participants listen carefully to each other.
- > **Supportive:** Contributions are valued and respected.
- > **Cumulative:** Talk builds on others' contributions towards answering an open-ended question.
- > **Purposeful:** Building towards a meaningful learning goal (Alexander, 2018).

When pupils know the rules of engagement for classroom talk, for example how long they are to talk for and what each person should be doing, they are freed up to think about the material they are learning rather than behaviour.

WHOLE CLASS, PAIRED AND GROUP DISCUSSION

Ms Crosby may wish to start with whole class discussion so she can support pupils and embed her expectations. As a culture of effective talk develops, Ms Crosby may feel confident about setting up first pairs and then groups for pupils to discuss content together for increasing periods of time. Groupings can affect pupil behaviour and motivation (Tereshenko et al., 2018). Therefore, Ms Crosby should pre-plan groupings, but ensure that they are flexible, and monitor groups' impacts on pupil learning and motivation, particularly for low attaining pupils.

Some rules for pair and group work that Ms Crosby might consider introducing are:

- > **All group members must contribute:** This helps to avoid some pupils relying on others to complete group tasks. Team members should encourage those who are saying less (with the caveat being that teachers should monitor groups, as pupils who are not speaking may be doing so because they lack the foundational knowledge needed to contribute and therefore require further explicit teaching).
- > **Every contribution should be treated with respect:** Partners should listen thoughtfully and allow the speaker to finish.
- > **Each group must achieve consensus by the end of the activity:** Teachers may need to resolve differences.
- > **Every suggestion a member makes should be justified:** Pupils should say both what they think and why they think it (Mercer et al., 2004, in EEF, 2018).

As with all expectations, Ms Crosby should circulate to monitor and reinforce these rules (IES, 2008). Crucially, the success of classroom talk is reliant on ensuring several things: that pupils have enough knowledge to engage meaningfully in discussions, that they have the guidance and support to undertake meaningful talk tasks and opportunities to practise.

NUANCES AND CAVEATS

Pair and group work needs to be explicitly taught, scaffolded and practised like all effective learning (Rosenshine, 2012). Attempting to help pupils discover new ideas for themselves through talk without adequate support is likely to be ineffective (Coe et al., 2014).

CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. What are the benefits of effective classroom talk?

- a.) High-quality classroom talk has no benefits to pupils
- b.) High-quality classroom talk helps pupils learn how to articulate key ideas, consolidate understanding and extend vocabulary.
- c.) High-quality classroom talk can support pupils to practise new ideas.
- d.) High-quality classroom talk has no benefits to teachers.

2. Which of the following are practical features of effective talk?

- a.) Collective: teacher and all pupils are involved in the dialogue.
- b.) Reciprocal: participants listen carefully to each other.
- c.) Supportive: contributions are valued and respected.
- d.) Instructive: Pupils teach each other new concepts.

3. Which of the following are rules that the teacher might use for effective classroom talk?

- a.) Some pupils can listen and don't need to speak (this develops the confidence of quieter pupils).
- b.) Every suggestion a member makes has to be justified (say what you think and why you think it).
- c.) Each group must achieve consensus by the end of the activity and you may need to resolve differences.
- d.) Every contribution should be treated with respect, listened to thoughtfully and allowed to finish.

4. Which of the following are critical to the success of classroom talk?

- a.) Pupils enjoy talking in the classroom in front of others.
- b.) Ensuring pupils have enough knowledge to engage meaningfully in discussions.
- c.) Pupils know how to engage in meaningful talk.

FURTHER READING

Jay, T., Willis, B., Thomas, P., Taylor, R., Moore, N., Burnett, C., Merchant, G. & Stevens, A. (2017). Dialogic Teaching: Evaluation Report. bit.ly/ecf-eef13

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Ms Crosby can facilitate high quality classroom talk if she understands that:

- > Classroom talk can support pupil learning and is a form of 'practising' new ideas.
- > Teachers can develop successful pupil talk by establishing clear routines and expectations.
- > Teachers can establish effective whole class, pair and group talk through pre-planning and supporting pupil groups.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Alexander, R. (2018). Developing dialogic teaching: genesis, process, trial. *Research Papers in Education*, 33(5), 561-598.
- Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014). What makes great teaching. Review of the underpinning research. Durham University: UK. bit.ly/ecf-coe
- Education Endowment Foundation (2017). Metacognition and Self-regulated learning Guidance Report. bit.ly/ecf-eef.
- Education Endowment Foundation (2018a). Improving Secondary Science Guidance Report. bit.ly/ecf-eef5
- Institute of Education Sciences (2008). Reducing Behavior Problems in the Elementary School Classroom. bit.ly/ecf-ies
- Jay, T., Willis, B., Thomas, P., Taylor, R., Moore, N., Burnett, C., Merchant, G. & Stevens, A. (2017). Dialogic Teaching: Evaluation Report. bit.ly/ecf-eef13
- Kirschner, P., Sweller, J., Kirschner, F. & Zambrano, J. (2018). From cognitive load theory to collaborative cognitive load theory. *International Journal of Computer-Supported Collaborative Learning*. 13(2), 213-233.
- Rosenshine, B. (2012). Principles of Instruction: Research-based strategies that all teachers should know. *American Educator*, 12-20. bit.ly/ecf-ros
- Tereshchenko, A., Francis, B., Archer, L., Hodgen, J., Mazenod, A., Taylor, B. & Travers, M. C. (2018). Learners' attitudes to mixed-attainment grouping: examining the views of students of high, middle and low attainment. *Research Papers in Education*, 1522, 1-20. bit.ly/ecf-ter

QUIZ ANSWERS

1. B, C
2. A, B, C
3. B, C, D
4. B, C

112 | INSTRUCTION: FEEDBACK

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Ms Kearney is confident when leading the class in instructional sequences that support pupils to make sense of new material. However, pupils sometimes still need input to clarify misunderstandings and correct mistakes. How can Ms Kearney efficiently provide feedback through her instruction to support pupil learning?

KEY IDEA

Feedback helps pupils to improve and to manage their own learning. Effective feedback should be deployed after considering its benefits and costs and allow pupils the opportunity to respond.

KEY TAKEAWAYS

Ms Kearney can use feedback to support pupil learning by understanding that:

- > High-quality feedback, written or verbal, is ambitious and specific about how to improve.
- > Over time, feedback supports pupils to monitor and regulate their own learning.
- > Before setting an assessment, teachers need to decide whether feedback will be given and be able to justify their decision.

ACCURATE AND HELPFUL FEEDBACK

Used effectively, feedback can have a significant impact on pupil learning (EEF, 2018). However, it requires care and attention to ensure feedback is helpful. Done badly, teacher feedback can actually inhibit learning (Kluger & De Nisi, 1996).

There are many types of feedback, all of which have strengths and weaknesses. A key feature of effective feedback is that its content helps a pupil to answer at least one of three questions:

- > **Where am I going?** What does success look like in this problem or area?
- > **How am I doing?** Relative to success, where am I?
- > **Where to next?** What practical steps can I take to close the gap? (Hattie & Timperley, 2007).

While teachers often choose to give written feedback, we have little evidence that this is effective for long term pupil outcomes. It is also highly time consuming (EEF, 2016). Therefore, Ms Kearney should first use the questions above to ensure the content of feedback is useful. She can then decide the most time efficient method to deliver this feedback – written or verbal – rather than assuming written marking is best.

Self and peer feedback linked to these questions is far more time efficient than written teacher marking. However, it is difficult for novices to assess quality or give feedback on complex tasks (Christodoulou, 2017). Therefore, Ms Kearney might consider encouraging pupils to feed-back on more straightforward tasks and to scaffold this with a checklist to support those who need it.

Whole-class feedback involves teachers reviewing all pupils' work and identifying common misconceptions and errors, before feeding back to the whole class. It is not necessarily tailored to individual needs. However, addressing misconceptions is important for pupil learning and is significantly quicker than written marking (Quigley, 2018).

Ms Kearney must be careful not overwhelm pupils with too much negative feedback; if pupils do not believe they can be successful they may avoid the task completely (Kluger & de Nisi, 1996).

FEEDBACK SUPPORTS PUPILS TO MANAGE THEIR OWN LEARNING

Over time, effective feedback helps pupils to monitor and regulate their own learning (EEF, 2017). Feedback allows pupils to monitor their current performance and understanding. If pupils have a good grasp of their current performance and a clear sense of their goal, then they should increasingly be able to judge how well they are doing and to regulate their learning by identifying what they need to do to improve.

However, pupils can become dependent on feedback when it is given too frequently (Soderstrom & Bjork, in Hendrick & Macpherson, 2018). Additionally, where pupils are frequently given grades as part of their feedback, they

can become preoccupied with 'how I am doing?' over 'where to next?' (EEF, 2016). Finally, pupils will only act on feedback if they believe they can be successful (Kluger & De Nisi, 1996). Ms Kearney must not only provide accurate feedback but also create time in her lessons to ensure her pupils are able to act on it.

DECIDING WHETHER TO GIVE FEEDBACK

Feedback is part of effective assessment practice (Christodoulou, 2017). However, doing it properly can be time consuming so Mr Kearney must factor this into her decision about when and whether to give feedback.

If Ms Kearney decides she will give feedback, she needs to be clear what format it will take. For example, if she wants to provide individualised written feedback on extended writing, it will require a lot of her time. She might choose this approach if the feedback is very important but she should also plan significant time for pupils to respond. Dedicated feedback lessons can only be afforded sparingly as there is a curriculum to teach, so these may need to be identified in advance as good assessment practice always has a clear idea about the decision it will be used to support before assessment occurs.

A more efficient approach might be to assess pupil misconceptions through a short exit task. If designed well, analysing the proportion of correct responses could be much quicker and Ms Kearney can then decide to either feed-back by reteaching the content, or just move on. Ms Kearney could alternatively feed-back to individuals or small groups of pupils who answered incorrectly at an opportune moment during the next lesson.

Considering options for feedback before assessing pupils is effective practice (William & Leahy, 2015). Ms Kearney should ask herself the following questions in order to make good decisions about how and when to offer pupils feedback:

- > Before I set a task, what will my teaching options be? Is feedback appropriate?
- > If feedback is appropriate, what approaches are there?
- > Of these approaches, bearing in mind my limited time, which is the most efficient for pupil learning?

NUANCES AND CAVEATS

Feedback and marking are often conflated. Marking is only one type of feedback and has significant downsides in terms of teacher time and the ability of pupils to act on it (EEF, 2016). Marking should be thought of as only one of a number of teacher feedback strategies, each with particular pros and cons.

Data from feedback only needs to be recorded when it is useful for improving pupil outcomes. It is usually more beneficial to ensure pupils have received accurate and helpful feedback that they then act upon, well they are doing and to regulate their learning by identifying what they need to do to improve.

CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. Effective feedback helps a pupil to answer which of the following questions?

a.) Where am I going? (what does success with this problem or in this domain look like?)

b.) How am I doing? (relative to where that is, where am I?).

c.) How have I done? (relative to my peers).

d.) Where to next? (what practical steps can I take to close the gap between where I am now and where I am going?).

2. Which of the following are strategies a teacher can use to feedback to their pupils?

a.) Peer feedback.

b.) Computer generated feedback.

c.) Written feedback.

d.) Whole-class feedback.

3. In regard to high quality feedback, which of the following statements is true?

a.) High-quality feedback is always written.

b.) High-quality feedback can be written or verbal.

c.) High-quality feedback is always verbal.

4. When deciding whether to give feedback, what should teachers consider?

a.) Is feedback appropriate?

b.) What would the ideal feedback be to give, if time wasn't a problem?

c.) Given my limited time, which feedback approach is most effective for pupil learning?

d.) Teachers should always give feedback.

FURTHER READING

Black, P., Harrison, C., Lee, C., Marshall, B., & Wiliam, D. (2004). Working inside the Black Box: Assessment for Learning in the Classroom. Phi Delta Kappan, 86(1), 8–21. bit.ly/ecf-wil9

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Ms Kearney can use feedback to support pupil learning by understanding that:

- > High-quality feedback, written or verbal, is ambitious and specific about how to improve.
- > Over time, feedback supports pupils to monitor and regulate their own learning.
- > Before setting an assessment, teachers need to decide whether feedback will be given and be able to justify their decision.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

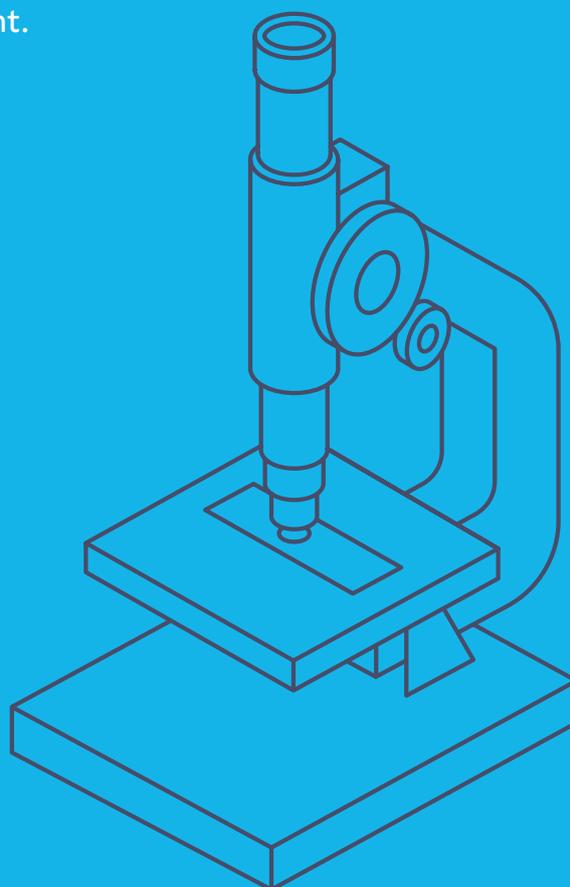
- Christodoulou, D. (2017). *Making Good Progress: The Future of Assessment for Learning*. Oxford: OUP.
- Education Endowment Foundation (2016). *A marked improvement? A review of the evidence on written marking*. bit.ly/ecf-eef8.
- Education Endowment Foundation (2017). *Metacognition and Self-regulated learning Guidance Report*. bit.ly/ecf-eef
- Education Endowment Foundation (2018). *Sutton Trust-Education Endowment Foundation Teaching and Learning Toolkit*. bit.ly/ecf-EEF12
- Hattie, J., & Timperley, H. (2007). The Power of Feedback. *Review of Educational Research*, 77(1), 81–112.
- Hendrick, C. & McPherson, R. (Eds.). (2018). *What Does This Look Like in the Classroom? Bridging the gap between research and practice*. Woodbridge: John Catt.
- Kluger, A. N., & DeNisi, A. (1996) The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. *Psychological Bulletin*, 119(2), 254–284.
- Quigley, A., (2018). *School improvement and taming the 'marking monster'*. Education Endowment Foundation Blog. bit.ly/ecf-qui2.
- Wiliam, D., & Leahy, S., (2015). *Embedding Formative Assessment*. Florida: Learning Sciences International.

QUIZ ANSWERS

1. A, B, D
2. A, C, D
3. B
4. A, C

STRAND S: SUBJECT

A deep understanding of your subject or phase is important. The better teachers know what they are teaching, how to teach it and what order to teach it in, the better they will support their pupils to develop their capabilities and understanding. This is what it means to understand your curriculum. But teachers also need to find ways to identify learning has happened and adapt their teaching in response. This is the role of assessment.



S1 | SUBJECT: STRAND OVERVIEW AND CONTRACTING

READ | STRAND INTRODUCTION

Welcome to the Subject strand of the programme.

This strand invites you to consider their planning and assessment through the lens of the subject or phase that you work in. It explores evidence and practice in curriculum and assessment in ways that will be of benefit now but will also be useful as your progress through your career.

By the end of this stand you will have explored:

- > The curriculum and what it demands of the individual teacher.
- > Your mental model of the subject/phase you teach – breaking down your own understanding – and its implications for your planning.
- > How we can know what pupils have understood, the barriers we face in doing so and how we respond to their needs.

In Instruction we asked you to explore some ‘rules of thumb’ of teaching. In Subject we will apply the same rules in more detail and look at how what you are teaching influences how you apply those rules – and when you might need to break them. As a result, this strand covers multiple ideas around curriculum, planning and assessment. In the classroom, these ideas will lead to practices that all blend into each other.

However, to help you develop a clear understanding, this strand begins with modules focussed on curriculum and planning, before shifting to looking at assessment:

- > **Module 1** explores the foundations of effective subject/phase teaching.
- > **Modules 2-6** cover the process of effective planning in your subject/phase.
- > **Modules 7-12** cover the process of effective assessment and how this can further enhance subject/phase teaching.

MAKING IT WORK

This strand will support you to think deeply about your subject and will support you to zoom in on how the nuances of your subject or phase influence your planning and assessment. As with Behaviour and Instruction, we also recognise that there may be aspects of this strand that you have less control over. This might include planning proformas or the frequency of your assessments. To make the most of this strand, we suggest that you use resources and materials aligned with your school curriculum and draw on your mentor and other experienced colleagues to support you in applying and adapting ideas for your classroom. Your growing expertise in your subject will also be of help.

As usual, we intentionally touch on content you’ve learned before. In particular, we will continue to prompt you to retrieve and apply your understanding of how pupils learn because it is so fundamental to effective teaching. Knowing how pupils learn is invaluable but it does not mean a ‘one size fits all’ approach will work across every subject or phase. The knowledge, skills and conceptual understanding in each subject or phase is unique. All subjects have their own way of structuring knowledge and curriculum planning differs by age.

While the Early Career Framework refers to ‘good subject and curriculum knowledge’, we know that some teachers – especially Primary and Early Years teachers – may refer to the content they teach as ‘phase’ or ‘topic’ knowledge, as the curriculum they teach includes multiple subjects. In line with the ECF, this strand uses the title ‘subject’ to encapsulate all of the content teachers might teach and recognises teachers might use other terms in their setting.

Whilst the Subject strand has attempted to explore

ideas and practices in ways that will be relevant to all subjects and phases, there will undoubtedly be specific things that just don't apply. For this strand more than the others, teachers and mentors will need to draw on their own subject and phase expertise to adapt the learning experience where required. You have the responsibility to take ownership of your professional development and make it work, but also the right to support. Talking to your colleagues and your mentor about the ideas and practices you encounter, seeking their assistance, challenge, feedback and critique, will help you to better understand what 'good' looks like for your particular context. Participating in wider networks can also strengthen your pedagogical and subject knowledge.

A REMINDER OF THE PROGRAMME PATTERN

The learning will be structured in the same way as Behaviour and Instruction, following a weekly rhythm:

- > A 10-minute **video** shows what some of the key ECF ideas in the module look like in practice.
- > A 15-minute **evidence summary** provides an overview of key research to read relating to the key ECF ideas in the module.

- > 15 minutes of **quiz** and **reflection** enable you to check your understanding and consider the evidence in light of your knowledge and experiences.
- > Weekly **instructional coaching** that draws on this material and tailors the weekly focus to your specific context and needs, including the needs of your pupils, with built-in opportunities for practice. This is the main part of the mentoring process.

Year one of the programme has been designed with the intention of schools working through one module per week. However, the programme has been built in a flexible way so that schools can adapt it to their needs and work through it at a slower pace as required, while still ensuring they cover the ECF.

Now that we have introduced how the strand will work, it's time to dive into an evidence summary, exploring some of some of the key ideas that underpin the strand.

WATCH



CLICK TO WATCH
MODULE VIDEO

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Mr Mohamed is feeling increasingly effective at managing behaviour and adapting lessons planned by others. In doing so, his subject knowledge has been growing. How can he best use his developing knowledge to plan and deliver effective lessons which develop pupils' mental models?

KEY IDEA

Understanding curriculum, planning and assessment, as well as the relationships between them, is an important foundation for effective subject teaching which develops pupil mental models.

THE POWER OF SUBJECT TEACHING

Mr Mohamed's teaching can make a big difference to pupils. It can transform both their academic results and life chances: increasing the likelihood that they attend university and have a higher salary and decreasing the chances they have children as teenagers (Chetty et al., 2014; Slater et al., 2011). Lower-achieving pupils appear to benefit most from effective teaching (Slater et al., 2011).

The expectations a teacher sets are likely to influence pupils' efforts and responses (Murdock-Perriera & Sedlacek, 2018). Where effective teaching helps pupils achieve success, pupils are likely to display greater subsequent motivation and thus greater effort (Coe et al., 2014). There is strong evidence that effective teaching is underpinned by teacher's knowledge of their subject(s) and how to teach it (Coe et al., 2014; Ball et al., 2008). To make a difference to his pupils Mr Mohamed needs to develop his subject knowledge.

Subject knowledge is organised in mental models in the mind of the learner – a collection of concepts, knowledge, skills and principles which fit together to provide an overall understanding of an idea (Sweller et al., 1998). Mr Mohamed needs to both develop his mental model of his subject and consider how to best organise and use this information to develop his pupils' mental models. For example, he can consider that a common misconception in history is that a church is a physical building rather than a group of people and target this misconception to ensure his pupils gain a correct mental model when he teaches this.

WHAT IS CURRICULUM?

A school's curriculum sets out its vision for the knowledge, skills and values that pupils will learn. There are many reasons for educating young people, and these inform which curriculum content is selected (Wiliam, 2013). Selection should also be guided by the National Curriculum. The overall aim should be that material is selected based on a coherent vision for pupils' success. This is curriculum intent: the content selected to be taught and the sequence in which it should be explored, including how content builds in complexity or is revisited (Wiliam, 2013).

The school establishes the curriculum, but every teacher must also think about curriculum because they are the people who are ultimately putting it into practice. Mr Mohamed might not be writing schemes of work but he can bring content to life for his pupils. This is curriculum implementation: the instructional approaches, activities and resources specified to teach curricular intent. Implementation is therefore seen in both medium-term planning, individual lesson planning and the 'lived' curriculum of the classroom (Wiliam, 2013).

Mr Mohamed aims to use his subject mental model to implement the curriculum in such a way that it develops

pupils' mental models of his subject and pursues the intended curriculum as closely as possible. This incorporates both the knowledge that he hopes pupils will gain, and the ways he hopes they will be able to use this knowledge. In doing so, understanding the school's vision and the reasoning behind its curricular choices will be useful.

WHAT IS PLANNING?

Planning takes the ideas of the intended curriculum and turns them into learning activities. It must therefore implement the curriculum choices the school has made, drawing on Mr Mohamed's subject knowledge. One way Mr Mohamed might effectively plan is by following five habits:

- > **Habit 1:** Break down your goal into the essential concepts, knowledge, skills and principles of the subject by analysing your assessment and wider curriculum goals for the unit.
- > **Habit 2:** Build on prior knowledge by linking what pupils already know to what is being taught and sequencing lessons so that pupils secure foundational knowledge before encountering more complex content.
- > **Habit 3:** Make the learning accessible by seeking to understand pupils' difference including potential barriers to learning and common misconceptions and discussing with experienced colleagues how to help pupils master important concepts.
- > **Habit 4:** Build lasting learning by planning for regular retrieval and spaced practice opportunities to build automatic recall of knowledge and supporting pupils to learn key ideas securely.
- > **Habit 5:** Increase complexity by providing opportunities for all pupils to learn and master essential concepts, knowledge, skills and principles of the subject, ensuring pupils link new ideas to existing knowledge, organising this knowledge into increasingly complex mental models through drawing explicit links between the new content and core concepts and principles and slowly withdrawing concrete examples and drawing attention to the underlying structures of the problem.

Mr Mohamed notices quite a lot of overlap between the habits of planning and content covered in the Behaviour and Instruction strands. There also don't appear to be clear-cut answers for how to implement these habits in his subject planning. He intends to discuss with his mentor what these might look like for his context, and how he can try these out of the next term.

WHAT IS ASSESSMENT?

To assess is to draw conclusions from evidence: inferences about what pupils have learned (Wiliam, 2010). Mr Mohamed might ask himself how much his pupils have understood in an activity, at the end of a



lesson or at the end of the year. Effective assessment practices allow him to make inferences which truly reflect pupils' understanding. Effective assessment builds on a well-specified curriculum so Mr Mohamed's efforts at planning will support his assessment to be more effective and efficient.

Making these inferences can be difficult. Mr Mohamed must be careful that the inference he is making reflects what he really wants to know and that he is not distracted by poor proxies for learning (Coe, 2013). For example, not assuming that just because pupils are busy that they are learning. It also means recognising that pupils may perform better in the short term but then forget what they studied (Soderstrom & Bjork, 2015). To help, he should choose, where possible, externally validated materials – such as standardised test created by external bodies or groups of schools and administered in controlled conditions, perhaps at the end of the year – if he needs to make a summative judgement about how much his pupils have learned over a period of time with greater confidence.

ASSESSMENT AND FEEDBACK

Effective assessment can also be used much more frequently to allow Mr Mohamed to adapt his teaching and respond to pupils' needs. This form of assessment is the main focus of the Subject strand. Teachers can regularly collect information on pupil learning in a lesson, for example through questioning a number of pupils to check for understanding after conveying new content. They can use their inferences from this data formatively to adapt their teaching and respond to pupils' needs where necessary (Christodoulou, 2017). Evidence suggests that among the most powerful ways to respond to pupil needs is to offer feedback. Effective feedback is motivating, guiding pupils on where they have succeeded and what they need to improve (Hattie & Timperley, 2007). It also leads pupils to act to close the gap (Sadler, 1989).

There are many ways to give effective feedback and Mr Mohamed's choices should reflect what his pupils need and the importance of taking a sustainable approach. For example, he might offer verbal feedback or give abbreviated feedback using a marking code (EEF, 2016). These approaches are quick to do while giving pupils valuable information, encourage pupil effort and improve their learning. Mr Mohamed can work with colleagues to think about how he could ensure his assessment and feedback are efficient. He hopes to use it to support his pupils to monitor and regulate their own learning (EEF, 2017), helping them to become successful independent learners.

LINKING CURRICULUM, PLANNING AND ASSESSMENT

For assessment, planning and curriculum to be effective, they must be coherent. For example, teaching resources

should align with assessments – the tests pupils sit should reflect what they have been taught – and both should align with the curriculum (Oates, 2011). Equally, Mr Mohamed should avoid letting summative assessments – like SATs and GCSEs – shape all his planning. Instead he should aim to use the knowledge of his subject to teach and assess a coherent, broad and balanced curriculum.

NUANCES AND CAVEATS

No exam can test everything that matters in a subject. Exams 'sample' from the subject: they choose a handful of questions to test key ideas. This is an effective and efficient way to assess but if this guides all of a teacher's planning, they are likely to overlook basic ideas (which are implicit in exam questions), broader ideas (which lay the foundations for future study) and interesting ideas (Christodoulou, 2017). Mr Mohamed must avoid the trap of letting assessment narrow his teaching.

CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. What powerful effects can effective subject teaching have?

a.) It can get pupils better jobs.

b.) It can improve pupils' effort and motivation.

c.) It can increase the chances pupils attend university, have a higher salary and decrease the chances pupils will be pregnant as teenagers.

d.) It benefits the achievement of lower-achieving pupils the most.

2. A curriculum sets out the vision for the knowledge, skills and values that pupils will learn in a school. What role should curriculum play in individual teachers' practice?

a.) Individual teachers should implement the curriculum through instructional approaches, activities and resources.

b.) Individual teachers should devise the curriculum's intent.

c.) Individual teachers should do curricular thinking using their subject mental models.

3. Why can making inferences about pupil learning be difficult?

a.) To be more confident in inferring what pupils have learned, teachers need to use externally validated materials in controlled conditions. Such exams cannot be done quickly or regularly.

b.) Pupils can look busy and produce a large amount of work but not have learned anything as a result.

c.) A change to pupil capability or understanding could be temporary.

d.) Making inferences about pupil learning is impossible.

4. What are the implications of basing lesson planning on past exam questions?

a.) It is good practice because it ensures pupils are taught things that have appeared on the exam.

b.) The teacher risks not teaching basic ideas that are implicit in exam questions.

c.) The teacher risks not teaching broader ideas which lay the foundation for further study.

d.) The teacher risks not teaching interesting subject ideas if they are not covered by the exam.

FURTHER READING

Ball, D. L., Thames, M. H., & Phelps, G. (2008). Content knowledge for teachers: What makes it special? *Journal of Teacher Education*. [bit.ly/ecf-bal](https://doi.org/10.1177/0022027208318181)



REFLECT

KEY TAKEAWAYS:

Teachers can be responsive subject teachers by understanding that:

- > Effective teaching develops pupils' mental models of the subject.
- > Effective planning is based on the school curriculum and the teacher's subject knowledge: this allows teachers to sequence and plan teaching carefully.
- > Effective planning uses and builds upon effective assessment: the information this provides guides teachers' planning and allows them to target support through responsive teaching.
- > Effective planning and assessment can be sustainable.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

Ball, D. L., Thames, M. H., & Phelps, G. (2008). Content knowledge for teachers: What makes it special? *Journal of Teacher Education*. bit.ly/ecf-bal

Chetty, R., Friedman, J. N., & Rockoff, J. E. (2014). Measuring the Impacts of Teachers II: Teacher Value-Added and Student Outcomes in Adulthood. *American Economic Review*, 104(9), 2633–2679.

Christodoulou, D. (2017). *Making Good Progress: The Future of Assessment for Learning*. Oxford: OUP.

Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014). What makes great teaching. Review of the underpinning research. Durham University. bit.ly/ecf-coe

EEF (2016). *A marked improvement? A Review of the Evidence on Written Marking*. London: Education Endowment Foundation. bit.ly/ecf-eef8

EEF (2017). *Metacognition and Self-regulated learning Guidance Report*. bit.ly/ecf-eef

Hattie, J., & Timperley, H. (2007). The Power of Feedback. *Review of Educational Research*, 77(1), 81–112.

Murdock-Perriera, L. A., & Sedlacek, Q. C. (2018). Questioning Pygmalion in the twenty-first century: the formation, transmission, and attributional influence of teacher expectancies. *Social Psychology of Education*, 21(3), 691–707.

Oates, T. (2011). Could do better: Using international comparisons to refine the National Curriculum in England. *Curriculum journal*, 22(2), 121-150.

Sadler, D. (1989). Formative assessment and the design of instructional systems. *Instructional Science*, 18(2), 119-144.

Slater, H., Davies, N. M., & Burgess, S. (2011). Do Teachers Matter? Measuring the Variation in Teacher Effectiveness in England. *Oxford Bulletin of Economics and Statistics*, 74(5), 629-645.

Soderstrom, N., Bjork, R. (2015). Learning Versus Performance: An Integrative Review. *Perspectives on Psychological Science*, 10(2), 176–199.

Wiliam, D. (2010). What Counts as Evidence of Educational Achievement? The Role of Constructs in the Pursuit of Equity in Assessment. *Review of Research in Education*, 34, 254-284.

Wiliam, D. (2013). *Principled Curriculum Design*. London: SSAT. bit.ly/ecf-wil7

QUIZ ANSWERS

1. b, c, d

2. a, c

3. a, b, c

4. b, c, d

S2 | SUBJECT: PLANNING BACKWARDS FROM LEARNING GOALS

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Ms Andrews is increasingly confident in managing behaviour and motivating students to participate in lessons. This gives her more time to think about lessons. She wants to ensure she is making the best use of the limited time she has with pupils: how can her planning best ensure pupils learn?

KEY IDEA

Effective teaching is planned backwards, breaking down and communicating ambitious learning goals set out in the curriculum.

KEY TAKEAWAYS:

Ms Andrews can begin to make a difference to pupils by:

- > Planning backwards from specific, ambitious goals for knowledge, skills and values: the learning goals set out in the curriculum.
- > Using her knowledge of the subject and topic and how pupils learn it to break big goals into smaller, more manageable ones and to sequence these goals logically.
- > Organising the lesson into a sequence of meaningful steps towards her learning goal.

BASING LEARNING ON THE CURRICULUM

Ms Andrews' planning begins with the curriculum. The curriculum sets out the learning to which all pupils are entitled (Wiliam, 2016). It determines the ideas pupils should encounter and the knowledge and skills they should acquire (Wiliam, 2018). This guides teachers to teach the most important knowledge, skills and values effectively. For example, a carefully designed maths curriculum (alongside effective teaching methods) appears to increase pupil learning (Jerrim & Vignoles, 2016).

Most schools base their curriculum on the national curriculum, with adaptations to suit pupils' needs and the school's vision. Individual teachers are not responsible for setting the curriculum: what they do, which no curriculum designer can do, is make the curriculum comprehensible. They do this by connecting what pupils are to learn with their existing knowledge and experience (Young et al, 2014). Ms Andrews' success relies on secure knowledge of the curriculum and her pupils in order to motivate and teach them effectively.

WHAT TEACHERS NEED TO KNOW ABOUT WHAT THEY TEACH

A challenge intrinsic to teaching is making complicated ideas in the curriculum comprehensible to pupils (Kennedy, 2015). In doing this, Ms Andrews must balance making ideas simple enough to understand, whilst remaining meaningful, and true to the curriculum. Ms Andrews' skill in doing this rests on her developing understanding of the knowledge, skills and values she teaches. As well as being guided by the school curriculum, she can use colleagues and shared resources to build this knowledge. When she does so, to translate curriculum goals into effective learning experiences, Ms Andrews needs to know:

- > **The topic:** What a non-specialist, but well-informed adult might know about it.
- > **Ways to introduce and sequence ideas:** In what order to introduce key ideas, and how best to explain them.
- > **Where pupils will struggle and what they might get wrong:** Allowing her to anticipate and overcome pupils' misunderstandings.
- > **Potential links:** How the current topic connects to past and future topics (Ball, Thames & Phelps, 2008).

Ms Andrews needs more than a knowledge of the topic: she needs to know how students learn it and how to make it comprehensible to them.

BREAKING LEARNING DOWN

This knowledge — of curricular goals and how pupils learn them — allows Ms Andrews to plan lessons which work towards her goals in logical, carefully-pitched steps.

Ms Andrews is aware of the need to break complicated ideas down to make them comprehensible: she designs tasks so that they do not provide too much new or complicated information at once.

However, she recognises a broader point about breaking learning down when she plans lessons which work towards learning goals. Rather than designing isolated tasks and fitting them into a lesson, she seeks to link tasks to form a sequence of meaningful steps towards learning goals across multiple lessons. To succeed she needs to make explicit links to what has been previously studied and learned as she goes. For example, when she introduces a new idea with concrete examples and highlights the underlying principles and offers practice, each activity is a step towards achieving the learning goal, building on previous study.

This approach allows her to organise her lessons around a narrative structure of steps towards understanding and achieving a learning goal: this approach is both more comprehensible and more memorable for pupils (Willingham, 2009, pp.66-9).

NUANCES AND CAVEATS

While schools establish what they will teach informed by the National Curriculum, teachers are always doing curricular thinking, as they find new and better ways to teach the school's curriculum. Their thinking then informs future revisions of the curriculum. Gaining this knowledge of how pupils learn a subject takes time. A new teacher would not be expected to achieve this depth immediately: the usefulness of these categories is in knowing what to think about in planning, and what to ask colleagues. High-quality curricular resources may also embody these forms of knowledge, for example textbooks or colleagues' shared resources aligned to the school curriculum.

CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. What is a class teacher's main role in relation to the curriculum?

- a.) The topic – what a non-specialist, but well-informed adult might know about it.
- b.) Where pupils will struggle and what they might get wrong – allowing them to anticipate and overcome pupils' misunderstandings.
- c.) Potential links – how the current topic connects to past and future topics.
- d.) Which is the best online lesson bank to download lessons from.

2. In order to translate curriculum goals into effective learning experiences, a teacher should know:

- a.) The topic – what a non-specialist, but well-informed adult might know about it.
- b.) Where pupils will struggle and what they might get wrong – allowing them to anticipate and overcome pupils' misunderstandings.
- c.) Potential links – how the current topic connects to past and future topics.
- d.) Which is the best online lesson bank to download lessons from.

3. What are the benefits of planning backwards from specific, ambitious goals for knowledge, skills and values?

- a.) It means the teacher does not have to explain why the learning is relevant.
- b.) It allows the teacher to ensure lesson activities work towards those goals.
- c.) Each lesson can stand alone, rather than being linked to other lessons, so if a pupil misses one lesson, they can easily catch up.

FURTHER READING

Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014). What makes great teaching: Review of the underpinning research. Durham University. bit.ly/ecf-coe

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Ms Andrews can begin to make a difference to pupils by:

- > Planning backwards from specific, ambitious goals for knowledge, skills and values: the learning goals set out in the curriculum.
- > Using her knowledge of the subject and topic and how pupils learn it to break big goals into smaller, more manageable ones and to sequence these goals logically.
- > Organising the lesson into a sequence of meaningful steps towards her learning goal.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Ball, D. L., Thames, M. H., & Phelps, G. (2008). Content knowledge for teachers: What makes it special? *Journal of Teacher Education*. bit.ly/ecf-bal
- Jerrim, J., & Vignoles, A. (2016). The link between East Asian "mastery" teaching methods and English children's mathematics skills. *Economics of Education Review*, 50, 29-44.
- Kennedy, M. (2015). Parsing the Practice of Teaching. *Journal of Teacher Education*, 67(1), 6-17.
- Wiliam, D. (2016). *Leadership for Teacher Learning: Creating a Culture Where All Teachers Improve So That All Students Succeed*. Learning Sciences International.
- Wiliam, D. (2018). *Creating the schools our children need: Why what we're doing right now won't help much and what we can do instead*. Learning Sciences International.
- Willingham, D. T. (2009) *Why don't students like school?* San Francisco, CA: Jossey Bass.
- Young, M., Lambert, D., Roberts, C. & Roberts, M. (2014). *Knowledge and the Future School: curriculum and social justice*. London: Bloomsbury.

QUIZ ANSWERS

1. b
2. a, b, c
3. b

S3

SUBJECT: TYPES OF KNOWLEDGE

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Mr Jones has reviewed the curriculum for his next topic: he is confident about the learning goals, has refreshed his knowledge of the key ideas and has talked to colleagues about how pupils can best learn them. However, the amount and range of content appears huge. He is unsure how he will find time to cover everything in depth. What should he prioritise teaching?

KEY IDEA

Teachers can develop pupils' mental models by identifying and ensuring they understand and retain critical subject content.

KEY TAKEAWAYS:

Mr Jones can help students to develop their mental models and think more effectively about his subject by:

- > Focusing on developing pupil knowledge in order to ultimately develop pupil capabilities and understanding.
- > Developing his mental model using available resources and reflecting on what this implies in terms of the important knowledge he wants to teach.
- > Prioritising types of knowledge and identifying which is critical subject content – concepts, knowledge, skills and principles – that he wants pupils to retain, while teaching enough supporting content to give pupils access to a broad and balanced curriculum.

MENTAL MODELS

Mr Jones is using guidance from the school curriculum, colleagues and curricular resources to build up an increasingly sophisticated mental model of the subject. A mental model is a structured body of knowledge. It is a collection of concepts, knowledge, skills and principles which fit together to provide an overall understanding of an idea (Sweller et al., 1998). For example, most adults have a mental model of a restaurant: this means they know what to do (more-or-less) in a new restaurant or an unfamiliar country (Sweller et al., 1998). Similarly, Mr Jones has a mental model of the topics he is teaching: both the content that he is going to teach about and how to teach it in a way that links to a subject – what makes this content historical or mathematical? He knows the key ideas, the underlying principles and how they fit together. For example, he knows the key events of the English Civil War, how they are linked and different ways in which they can be interpreted.

To achieve curricular goals, he must use his subject mental model to motivate pupils to develop increasingly complex mental models of the subject. The more complex a pupil's mental model, the better they can apply it to skills such as answering questions, solving problems or learning new ideas (Willingham, 2009). For example, a pupil whose mental model did not include the word "monarch", or the concept of "Parliament" would struggle to make sense of a text describing the causes of the Civil War. In contrast, a pupil with a complex mental model would move from attempting to understand the story of the Civil War to using historical reasoning as to which cause was most significant.

THE IMPORTANCE OF KNOWLEDGE

When pupils learn, they gain – and retain – deeper and more sophisticated knowledge in their mental models. Developing pupil knowledge is important as the more pupils know (and the better organised their knowledge), the better they can understand a new idea (by connecting it to their existing knowledge) and the better they can solve problems (by applying their knowledge). Their existing knowledge reduces the burden on pupils' working memory (Deans for Impact, 2015; Willingham, 2006).

Therefore, if Mr Jones is to help pupils achieve ambitious learning goals, his priority is teaching pupils knowledge in order to also develop their skills (Willingham 2009). He should focus on what he wants his pupils to know and be able to do. For example, a wide vocabulary will help pupils understand unfamiliar texts, while knowledge of long multiplication gives pupils the capability to solve previously unseen maths problems.

To develop pupils' mental models, Mr Jones must first identify their constituent parts: exactly what he wants pupils to know. This helps him to reduce his sophisticated knowledge into comprehensible building blocks for pupils: doing so reduces the risk of overestimating pupils' knowledge and underestimating how hard they will find new ideas (Wiliam, 2013). If he wants pupils to explain the causes of the Civil War, he can identify what he wants them to know about each cause, for example: "to know that King Charles I believed he ruled by Divine Right." If he wants pupils to complete long multiplication, he can identify that he wants them to know that a number can be partitioned into tens and hundreds.

PRIORITISING SUBJECT CONTENT

Having identified everything he wants pupils to know about a topic, Mr Jones is left with a problem: there is a huge amount of relevant and interesting knowledge. He can address this by identifying the essential concepts, knowledge, skills and principles – the 'critical' subject content that pupils need to remember in order to have a complete mental model (Counsell, 2018; Sweller et al., 1998). Critical content is what he hopes pupils will recall in one, three, or perhaps even ten years: Iago's jealousy, the causes of the English Civil War and how to design an experiment.

Mr Jones could also identify how he wants his pupils to organise what they remember. For example, concepts are organising ideas that allow us to categorise knowledge (Chi, 2009). Critical concepts, then, are important subject ideas Mr Jones will want to return to many times to help pupils develop organised mental models of his subject. Therefore, he can introduce the idea of the tragic form in English literature and teach Othello as an example of this. In science, he could teach the scientific method in biology, chemistry and physics and use experiments as examples of these. This content also will influence how he sequences what he teaches. He can plan how a new idea can be linked to previous and future learning (Wiliam, 2013) by asking: which content is foundational and why? Where relevant, he might also identify subject principles (Chi, 2009). Subject principles are rules or theorems that serve to apply across a whole field. They can be used to transcend specific examples. For example, in physics he might teach the Law of Conservation of Energy or Newton's Second Law ($F=MA$) and highlight when these principles are returned to, to help pupils organise their mental models. In an Early Years setting, teachers might return to the principle of synthetic phonics at different times as they teach reading.

The National Curriculum also calls for a 'broad and balanced curriculum'. So, in addition to 'critical' content, Mr Jones should select 'supporting' content: further examples, stories and illustrations that he won't necessarily expect his pupils to remember, but which will bring his teaching to life and support pupils to remember and understand the critical content. It is particularly effective if these examples explicitly link to pupils' knowledge and experiences. This supporting content helps pupils make sense of critical content: Othello wouldn't make sense without all its characters; getting the equipment wrong means an experiment will not work. So, while Mr Jones is teaching these topics, he wants pupils to know, understand and recall supporting content as well as the critical content. However, after teaching the topic, he will accept that he does not need to revisit supporting content (since not every item of information can be recalled and his time is limited); but he will want to ensure critical content is revisited to strengthen it.

NUANCES AND CAVEATS

Developing pupils' knowledge does not just mean teaching isolated facts: mental models are organised collections of concepts, knowledge, skills and principles.

While it is important that supporting content brings critical content to life and makes it meaningful, teachers need to be careful that it does not distract from pupils remembering critical content.



CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. What impact does a teacher's mental model have on their ability to break down a topic for pupils?

a.) Teachers with developed mental models of the topic can easily overestimate pupils' knowledge unless they break it down.

b.) Teachers with limited mental models of the topic find it easy to break down a topic because they are coming at it from the same perspective as pupils.

c.) Teachers with developed mental models of the topic can motivate pupils by selecting and breaking down important knowledge that will help pupils to be successful.

2. Identifying exactly what pupils should learn is valuable because it...

a.) Helps the teacher to reduce their sophisticated understanding to comprehensible building blocks.

b.) Allows the teacher to focus teaching on repetition of basic facts.

c.) Helps the teacher to know what will be on their assessments.

3. What is 'critical' subject content?

a.) Content that the teacher hopes that pupils will recall in one, three, or perhaps even ten years.

b.) Knowledge which is unimportant.

c.) Knowledge which matters in understanding a topic, but less so once the topic is complete.

FURTHER READING

Deans for Impact (2015). The Science of Learning. bit.ly/ecf-dea

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Mr Jones can help students to develop their mental models and think more effectively about his subject by:

- > Focusing on developing pupil knowledge in order to ultimately develop pupil capabilities and understanding.
- > Developing his mental model using available resources and reflecting on what this implies in terms of the important knowledge he wants to teach.
- > Prioritising types of knowledge and identifying which is critical subject content – concepts, knowledge, skills and principles – that he wants pupils to retain, while teaching enough supporting content to give pupils access to a broad and balanced curriculum.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Chi, M. T. (2009). Three types of conceptual change: Belief revision, mental model transformation, and categorical shift. *International handbook of research on conceptual change*, 89-110. Routledge.
- Counsell, C. (2018). The indirect manifestation of knowledge. The dignity of the thing [blog]. bit.ly/ecf-cou
- Deans for Impact (2015). *The Science of Learning*. bit.ly/ecf-dea
- Sweller, J., van Merriënboer, J. J., & Paas, F. G. (1998). Cognitive Architecture and Instructional Design. *Educational Psychology Review*, 10(3), 251–296.
- William, D. (2013). Principled curriculum design. *Redesigning Schooling* 3, SSAT. bit.ly/ecf-wil4
- Willingham, D.T. (2006). How knowledge helps. *American Educator*. bit.ly/ecf-wil2
- Willingham, D. T. (2009) *Why don't students like school?* San Francisco, CA: Jossey Bass.

QUIZ ANSWERS

1. a, c
2. a
3. a

S4 | SUBJECT: GAPS AND MISCONCEPTIONS

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Ms Brown is confident about what she wants pupils to learn. However, she is often surprised by the gaps in pupils' knowledge and the misconceptions they sometimes hold. How can she plan to address gaps and misconceptions so all pupils can access the curriculum?

KEY IDEA

Teachers should proactively find out about pupil prior knowledge and deliberately address common misconceptions and pupil knowledge gaps.

KEY TAKEAWAYS:

Ms Brown can better tackle pupil knowledge gaps and misconceptions by understanding that:

- > A key reason for differing pupil needs is their different levels of prior knowledge.
- > Pupils may have – or develop – misconceptions: incorrect beliefs about a topic or subject.
- > Teachers can identify and overcome these incomplete mental models by using knowledge of subject and common misconceptions, for example to generate analogies based on existing knowledge.

GAPS IN PUPIL PRIOR KNOWLEDGE AND IMPLICATIONS FOR INDIVIDUAL NEEDS

Pupils enter the classroom with different prior knowledge. For example, some may have been exposed to a concept intentionally the previous school year, while other teachers did not prioritise the same concept; some may have been introduced to it at home or through personal interest, while others may not. These knowledge gaps have consequences for pupils' understanding: for example, if they lack important vocabulary, they may not be able to read a text, or may simply misunderstand it (Willingham, 2006). Ms Brown needs to identify who knows what if she is to make new ideas comprehensible by linking them to pupils' existing knowledge.

WATCHING OUT FOR MISCONCEPTIONS

Misconceptions are potentially more problematic than knowledge gaps. Misconceptions are distinct from knowledge gaps (where pupils know nothing about a topic) and from errors (for example, a spelling mistake): they are beliefs which conflict with what is to be learned (Chi, 2009). A knowledge gap or an error can be addressed relatively simply but a misconception, whether held by pupils already or developed during a topic, may be harder to address. For example, if pupils believe that an apostrophe should be added whenever they see a plural 's', this is harder for Ms Brown to influence than if a pupil forgot or had never been introduced to the rule.

Most misconceptions are specific to the topic being taught. For example, a common misconception in adding fractions is that pupils should add the numerators and the denominators together. Ms Brown needs to identify common misconceptions: her more-experienced colleagues may have valuable knowledge here. Once Ms Brown has identified likely misconceptions in an upcoming topic, she can check whether pupils have those misconceptions and can seek to overcome them.

RESPONDING TO PUPIL NEEDS

Ms Brown can anticipate and respond to pupils' knowledge gaps and misconceptions. Once she has identified the knowledge pupils need to understand a new idea, and the potential misconceptions they may hold or develop, she can design checks of pupil understanding to uncover these barriers for this knowledge (Christodoulou, 2017).

Where she identifies knowledge gaps, she can address them by explicitly teaching anything pupils must know to understand a topic, for example, prerequisite vocabulary, or knowledge which has been introduced in previous years. Where she identifies misconceptions, she can address them by offering analogies which bridge between pupils existing knowledge and their misconception (Luciarelllo & Naff, n.d.). For example, if pupils believe objects sink because they are heavy (a misconception which confuses weight with density), she

can give the example of a ship – which is obviously heavy, but floats – and use this to help pupils appreciate their misconception.

Developing pupils' subject knowledge also helps all pupils in two ways:

- > By ensuring pupils have increasingly developed and organised mental models upon which they can draw.
- > By reducing the new information actively being processed in pupils' limited working memory (Sweller et al., 1988).

NUANCES AND CAVEATS

While there is much overlap between what pupils know, each pupil will also have unique areas of prior knowledge (and lack of knowledge), based on individual experiences. Identifying exactly what each pupil knows would be impossible for Ms Brown: it's more important that she identifies the most important knowledge for a topic and whether all pupils know that, than that she identifies everything they do and don't know (Christodoulou, 2017).

CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. What is a misconception in learning?

- a.) A lack of knowledge about a topic.
- b.) A mistake such as a spelling error.
- c.) A belief which conflicts with what is learned.

2. How will identifying differences in pupil prior knowledge support the teacher and pupils?

- a.) Reducing the load new information places on pupil working memory, by avoiding introducing too much new information to pupils who have knowledge gaps.
- b.) Teachers can adapt teaching for pupils with knowledge gaps.
- c.) Teachers can pre-empt pupil misconceptions, which are more likely to form when pupil prior knowledge is weak.
- d.) Identifying differences in prior knowledge isn't important. Teachers should just teach what they want pupils to learn.

3. How should a teacher approach pupil misconceptions?

- a.) Identify potential key misconceptions linked to a topic in conversation with more experienced colleagues.
- b.) Use check for understanding questions to check whether pupils hold particular misconceptions.
- c.) Teach pupils effectively as effective teaching will show pupils that their misconception is incorrect.
- d.) Use explicit teaching and analogies to bridge between pupil current understanding and correct understanding.

FURTHER READING

Ball, D. L., Thames, M. H., & Phelps, G. (2008). Content knowledge for teachers: What makes it special? *Journal of Teacher Education*. bit.ly/ecf-bal

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Ms Brown can better tackle pupil knowledge gaps and misconceptions by understanding that:

- > A key reason for differing pupil needs is their different levels of prior knowledge.
- > Pupils may have – or develop – misconceptions: incorrect beliefs about a topic or subject.
- > Teachers can identify and overcome these incomplete mental models by using knowledge of subject and common misconceptions, for example to generate analogies based on existing knowledge.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Chi, M. T. (2009). Three types of conceptual change: Belief revision, mental model transformation, and categorical shift. In *International handbook of research on conceptual change*, 89-110.
- Christodoulou, D. (2017). *Making Good Progress: The Future of Assessment for Learning*. Oxford: OUP.
- Lucariello, J. & Naff, D. (n.d.). How Do I Get My Students Over Their Alternative Conceptions (Misconceptions) for Learning? American Psychological Association. bit.ly/ecf-luc
- Sweller, J., van Merriënboer, J. J., & Paas, F. G. (1998). Cognitive Architecture and Instructional Design. *Educational Psychology Review*, 10(3), 251–296.
- Willingham, D.T. (2006). How knowledge helps. *American Educator*. bit.ly/ecf-wil2

QUIZ ANSWERS

1. c
2. a, b, c
3. a, b, d

S5 | SUBJECT: ACQUISITION BEFORE APPLICATION

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Ms Smith has a clear sense of her learning goals and is confident at breaking the curriculum down into small, meaningful components. However, she struggles to know how quickly can she get pupils doing complicated thinking and when should she introduce more sophisticated tasks.

KEY IDEA

Students must develop solid foundations of knowledge through carefully sequenced teaching and practice if they are to develop and apply sophisticated mental models.

KEY TAKEAWAYS:

Ms Smith can help pupils to acquire and apply ideas by:

- > Sequencing subject knowledge and concepts and linking them to pupil prior knowledge.
- > Modelling new processes and ideas, linking concrete and abstract models.
- > Checking pupil understanding before encouraging independent practice.

MASTERING FOUNDATIONAL KNOWLEDGE AND LINKING USING CORE CONCEPTS

Ms Smith is already aware of the value of building her pupils' subject knowledge, the risks of pupils' misconceptions and the potential for knowledge gaps. She wants her students to solve problems and think critically, but they cannot do so if they have critical knowledge gaps and she has noticed that weak prior knowledge leads to misconceptions. This is because pupils use knowledge integrated in their long-term memory to learn more complex ideas and successfully apply what they have learned (Deans for Impact, 2015).

This implies that:

1. The sequence in which knowledge is introduced is crucial. For example, pupils are likely to struggle to evaluate the effectiveness of international aid if they are unclear about the challenges facing developing countries. They are likely to struggle to master algebra if their grasp of number is weak. This means Ms Smith needs to sequence the introduction of new ideas carefully so that foundational knowledge is introduced first. It also means she needs to check pupils have relevant prior knowledge before she introduces new ideas.
2. Ms Smith needs to highlight the link between past learning and new ideas to pupils – or help pupils to make those links themselves – so that they gain a deeper and better organised understanding of the subject. Pupils learn new ideas with reference to what they already know (Deans for Impact, 2015), but Ms Smith cannot be sure they will make these links unprompted. Using core concepts help with these links.

Having broken down the knowledge she hopes pupils will gain and sequenced this carefully through one or more lessons, she can identify effective ways to introduce these ideas.

TEACHING ABSTRACT IDEAS

Ms Smith needs to ensure pupils acquire foundational knowledge and core concepts successfully, and that she does not begin more complicated activities too soon. It's easy for a relative expert in a topic – like Ms Smith – to grasp the abstract concepts and apply them. For example, she sees ongoing struggles over how much power ordinary people have throughout the political events of the nineteenth century; she uses symbolic representations of chemical reactions to understand what is happening in an (invisible) chemical reaction; and she can use the slope and intercept within a line graph to write an equation for that graph. However, for novices, abstract ideas can be particularly hard to grasp. If Ms Smith opens each of these topics with the abstract ideas, pupils may struggle to grasp them.

Concrete examples are much easier to understand (Willingham, 2009): in each case, pupils are likely to find it easier to first encounter the concrete example then

to identify the underlying abstract principle. For pupils to be able to use both, Ms Smith needs to connect and integrate abstract and concrete ideas, and show the links between them (Pashler et al., 2007). An understanding of the abstract features allows pupils to successfully apply subject knowledge and concepts in new situations: for example, an understanding of the structure of a narrative can help them comprehend a new text.

CHECKING PUPIL UNDERSTANDING AND OFFERING OPPORTUNITIES FOR PRACTICE

Ms Smith needs to check pupil understanding before beginning tasks which ask pupils to apply their new learning. She could use diagnostic questions, presenting pupils with several options, working with colleagues to identify answers which are either correct or common misconceptions. Pupils responses allow her to identify pupils who hold misconceptions and ensure they have grasped key ideas before continuing (Christodoulou, 2017). Ms Smith needs to ask herself, "how would I know pupils have acquired enough knowledge to practise successfully?"

Once pupils have enough knowledge, Ms Smith can ensure pupils practise applying it through meaningful tasks which promote their learning of new ideas (Willingham, 2009). Although pupils will initially have inflexible knowledge – knowledge which they struggle to apply to new contexts – through continued thinking and processing of new ideas, they will come to use this knowledge increasingly flexibly (Willingham, 2002).

NUANCES AND CAVEATS

Ensuring pupils have mastered foundational knowledge and core concepts depends on first identifying what is core – fundamental to understanding the topic and discipline – which she will return to many times to ensure pupils have successfully acquired them.



CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. What makes knowledge foundational?

- a.) Pupils learn it early on in their school career.
- b.) Pupils have to understand it in order to access subsequent learning.
- c.) It is tested as part of national testing or exams.
- d.) Pupils should start school knowing it.

2. Having identified foundational knowledge in a topic, a teacher should:

- a.) Introduce it briefly, then move on to more complex tasks.
- b.) Keep testing pupils on it indefinitely.
- c.) Ensure pupils grasp it before attempting more complex tasks.

3. Which do pupils find easier to understand?

- a.) Abstract ideas.
- b.) Concrete examples.
- c.) It depends on the topic.
- d.) Both are equally complex for pupils when studying a new topic.

FURTHER READING

Pashler, H., Bain, P. M., Bottge, B. A., Graesser, A., Koedinger, K., McDaniel, M., & Metcalfe, J. (2007). Organizing Instruction and Study to Improve Student Learning. US Department of Education. bit.ly/ecf-pas

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Ms Smith can help pupils to acquire and apply ideas by:

- > Sequencing subject knowledge and concepts and linking them to pupil prior knowledge.
- > Modelling new processes and ideas, linking concrete and abstract models.
- > Checking pupil understanding before encouraging independent practice.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Christodoulou, D. (2017). *Making Good Progress: The Future of Assessment for Learning*. Oxford: OUP.
- Deans for Impact (2015). *The Science of Learning*. bit.ly/ecf-dea
- Pashler, H., Bain, P. M., Bottge, B. A., Graesser, A., Koedinger, K., McDaniel, M., & Metcalfe, J. (2007). *Organizing Instruction and Study to Improve Student Learning*. US Department of Education. bit.ly/ecf-pas
- Willingham, D. T. (2002). Inflexible Knowledge: The First Step to Expertise. *American Educator*, 26 (4), 31-33. bit.ly/ecf-wil5
- Willingham, D. T. (2009). *Why don't students like school?* San Francisco, CA: Jossey Bass.

QUIZ ANSWERS

1. b
2. c
3. b

S6

SUBJECT: PROMOTING DEEP THINKING

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Mr Jones has worked to identify and convey the key ideas in each topic to his pupils. However, he wants pupils to develop more than a basic, inflexible knowledge of the facts: he wants them to develop sophisticated mental models of the subject which allow them to apply what they have learnt to new and complex problems. How can he support his pupils to develop the kind of mental model which makes this deep thinking possible?

KEY IDEA

Teachers can develop increasingly complex pupil mental models by promoting practise of thinking which supports pupils to access and apply their subject knowledge flexibly; carefully sequencing teaching to facilitate this process is important.

KEY TAKEAWAYS:

Mr Jones can promote deep thinking by:

- > Seeing deep thinking as an extension of pupils' mental models of the subject.
- > Helping pupils access knowledge more flexibly.
- > Showing pupils how to apply knowledge to new problems and contexts and supporting them to practise this.

DEEP THINKING REQUIRES BACKGROUND KNOWLEDGE

Mr Jones wants his pupils to be able to tackle new problems, to think critically and to be creative. Pupils must have good mental models to do so. Mr Jones cannot simply ask his pupils to think critically about a source, a problem or an image. This is because pupils need background knowledge, an understanding of how to think critically in the subject and the habits of doing so (Bailin et al., 1999). For example, to think critically about the design of an experiment, pupils need to know what effective experiment design looks like, what equipment is available, the goal of the experiment and so on. In the same vein, they rely on existing mental models to solve problems and come up with ideas which are creative but also feasible.

DEEP THINKING RELIES ON FLEXIBLE KNOWLEDGE

The first step in developing mental models to permit deep thinking is moving from inflexible to flexible knowledge. When pupils learn about a new idea, their knowledge is inflexible: tied to the context in which it was learned. This cannot be avoided, it is how new information enters long-term memory: “a natural step on the way to the deeper knowledge that we want our students to have” (Willingham, 2002). For example, if Mr Jones introduces addition through an example about a child collecting feathers, pupils will associate it initially with feathers.

Having gained inflexible knowledge, pupils’ knowledge can become more flexible if they access it through different cues: increasingly varied and difficult questions with decreasing amounts of scaffolding and hints.

Effective forms of variation include:

- > **Contextual variation:** Encountering the same knowledge in different contexts.
- > **Conceptual variation:** Presenting examples and non-examples to refine understanding.
- > **Situational variation:** Providing a broad range of application problems in pursuit of a more generalised understanding of a concept (Pan & Rickard, 2018).

By doing this, Mr Jones balances the desire to make the task more difficult – increasing the level of thinking required – and the wish to ensure pupils’ continued success, for its own sake and to maintain their motivation.

TRANSFER IS MORE LIKELY IF PUPILS ARE PROFICIENT AT ACCESSING THEIR KNOWLEDGE

Mr Jones also wants pupils to be able to transfer what they learn to new topics, and even to other subjects within and beyond school. Transfer means being able to apply existing knowledge to new questions and situations (Barnett & Ceci, 2002). For example, he may

want pupils to recognise that they can use a previously learned technique to answer a new question – using the idea of perimeter in a more complex maths problem, or maybe an everyday problem they need to solve. He may want them to see similarities between topics or ideas and themes across lessons, topics, or subjects. However, transfer is difficult and does not come naturally – pupils are likely to struggle to transfer what has been learnt in one discipline to a new or unfamiliar context.

Transfer can be supported by retrieval practice – the act of recalling prior knowledge. After completing a unit, pupils can be asked to retrieve core knowledge and concepts frequently to ensure they retain them (Pashler et al., 2007). This makes it more likely that pupils will be able to transfer knowledge to new contexts (Pan & Rickard, 2018). When planning, teachers should think about which aspects of subject knowledge are most significant for pupils – ideas and concepts that are pre-requisite to developing knowledge in other topics – and build in retrieval practice to ensure that these are readily accessible.

PUPILS MUST PRACTISE DEEP THINKING

Regular purposeful practice of what has previously been taught can help pupils to develop and consolidate their mental models (Pashler et al., 2007). If Mr Jones wants pupils to transfer ideas to new or unfamiliar contexts, or to think deeply, he must show them how to do so and offer opportunities to practise. Mr Jones should seek to show pupils the links between topics he hopes they will make. He might say: “we can use what you have learned in English about paragraph structure and grammar when writing in history. You have also been studying Victorian novels which you can use to illustrate what some Victorians might have thought about the Industrial Revolution, as long as you make clear it’s fiction. What other learning can we use to make our historical writing better?”. Likewise, if he wants them to think critically about a topic, he has to offer practice in this kind of thinking, he cannot rely on the accumulation of factual knowledge to lead to critical thinking automatically.

NUANCES AND CAVEATS

Transfer and critical thinking are both hard: neither of them come naturally – if teachers want pupils to think critically and to transfer knowledge to new contexts, they must teach this explicitly and allow pupils to practice doing so.

Pupils cannot exercise critical thinking without a strong knowledge of the thing about which they are being invited to think critically: teachers are unlikely to experience success if they teach critical thinking skills in isolation or expect pupils to transfer knowledge from one context to another without practise and models.

CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. How do pupils move from having inflexible, to flexible knowledge?

- a.) Flexible knowledge will naturally develop over time.
- b.) Flexible knowledge needs to be taught from the start.
- c.) Flexible knowledge develops as pupils access it through varied questions.
- d.) Not all pupils can develop flexible knowledge.

2. Which kinds of variation can a teacher use to help pupils transfer knowledge?

- a.) Contextual variation: the same knowledge encountered in different contexts.
- b.) Classroom variation: changing the physical context in which pupils are working on a problem.
- c.) Situational variation: providing a broad range of application problems in pursuit of a more generalised understanding of a concept.
- d.) Conceptual variation: presenting examples and non-examples to refine understanding.

3. In order to think critically about a topic, pupils need:

- a.) Background knowledge.
- b.) An understanding of how to think critically in the subject.
- c.) To have been taught and practised the habits of thinking critically within the subject.
- d.) To have thought critically in other contexts other than school.

FURTHER READING

Willingham, D. (2002). Inflexible Knowledge: The First Step to Expertise. American Educator. bit.ly/ecf-wil5

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Mr Jones can promote deep thinking by:

- > Seeing deep thinking as an extension of pupils' mental models of the subject.
- > Helping pupils access knowledge more flexibly.
- > Showing pupils how to apply knowledge to new problems and contexts and supporting them to practise this.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Bailin, S., Case, R., Coombs, J. & Daniels, L. (1999). Conceptualizing critical thinking. *Journal of Curriculum Studies*, 31(3), 285-302.
- Barnett, S. & Ceci, S. (2002). When and where do we apply what we learn? A taxonomy for far transfer. *Psychological Bulletin*, 128(4), 612-637.
- Pan, S. & Rickard, T. (2018). Transfer of Test-Enhanced Learning: Meta-Analytic Review and Synthesis. *Psychological Bulletin*.
- Pashler, H., Bain, P. M., Bottge, B. A., Graesser, A., Koedinger, K., McDaniel, M., & Metcalfe, J. (2007). Organizing Instruction and Study to Improve Student Learning. US Department of Education. bit.ly/ecf-pas
- Willingham, D. (2002). Inflexible Knowledge: The First Step to Expertise. *American Educator*. bit.ly/ecf-wil5

QUIZ ANSWERS

1. c
2. a, c, d
3. a, b, c

S7

SUBJECT: DEVELOPING PUPILS' LITERACY

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Mr Jones is increasingly successful in developing pupils' mental models and helping them to grasp crucial ideas. However, he has become concerned that their written work is not keeping pace with their understanding. He notices pupils struggling to master and use technical vocabulary, and to articulate key ideas clearly. How can Mr Jones improve pupils' literacy within his subject, and more generally?

KEY IDEA

Teachers can improve pupils' literacy – in general and specific to their subject – through explicit teaching, modelling and carefully-planning reading, writing and speaking activities.

KEY TAKEAWAYS:

Mr Jones can help pupils to improve their literacy by:

- > Identifying literacy goals for a topic, such as vocabulary to use, challenging texts to read, and forms of writing to practise.
- > Sharing and breaking down models of the reading and writing he hopes pupils will master.
- > Planning opportunities for high-quality talk, which use key vocabulary to articulate crucial ideas.

EVERY LESSON IS A CHANCE TO IMPROVE PUPILS' LITERACY

To understand a text, pupils must both recognise the words (by decoding what sounds the letters make in this combination) and comprehend their meaning (EEF, 2018). English and literacy lessons support pupils to improve in both.

However, Mr Jones sees every lesson as a chance to improve pupils' literacy. Partly, this is because every lesson is a chance to reinforce and build upon what pupils learn in English and literacy lessons. Pupils benefit from additional opportunities to increase their vocabulary, to read and to practise articulating their thoughts; this may also help them to grasp the underlying principles better. In particular, additional opportunities to read are one of the most powerful ways to encounter new knowledge and to increase their vocabulary (Willingham, 2009).

Moreover, English and literacy lessons do not teach the technical terms and styles of writing specific to different subjects (Scott et al., 2018): each teacher must teach the vocabulary and writing structures specific to their subject.

DEVELOPING PUPILS' VOCABULARY

Mr Jones plans to improve pupils' vocabulary in the same way he plans other aspects of the lesson. He identifies critical words – high frequency words that pupils will use often and high utility words that are particularly important in his subject – and introduces them explicitly. He finds it useful to distinguish between:

- > **Tier 1 vocabulary:** Everyday words, which might need to be taught explicitly, such as 'good', 'child' or 'Sunday'.
- > **Tier 2 vocabulary:** Words which appear across the curriculum but less commonly in everyday speech, such as 'examine', 'deceive' or 'forthright'.
- > **Tier 3 vocabulary:** Words which are specific to a subject: for example, in science, pupils need to grasp the scientific meaning of terms such as 'evaporation' (Beck et al., 2002; EEF, 2018).

His focus is on teaching Tier 2 words – which pupils are unlikely to pick up without teaching – and Tier 3 words, which they are unlikely to encounter outside his lessons.

MODELLING READING AND WRITING

Models are a powerful way to show pupils how to articulate key ideas. Models help pupils understand new processes and ideas by making them more concrete and accessible (Willingham, 2009). For any written task, pupils need to see an example – or ideally more than one – and break it into its constituent parts: this may mean examining examples of coherent sentences, clear reports or well-structured essays. Pupils can use these as models to guide their own writing. Likewise, teachers can model the process of reading and writing: for example, articulating their own thinking such as the questions

and predictions they are making, or showing pupils how expert readers comprehend texts (EEF, 2016).

TALKING IS PREPARATION FOR WRITING

Classroom dialogue is an opportunity for pupils to practise articulating ideas clearly: this is both valuable for its own sake and to consolidate pupils' understanding in preparation for their writing. Promoting better talk practices in classrooms directly improves pupils' outcomes in core subjects and appears to improve their confidence and participation (Jay et al., 2017). For example, Mr Jones might model accurate use of terminology and the language structures he hopes pupils will use. He could also invite pupils to articulate their ideas fully and accurately in speech. Doing so is an opportunity for them to practise and refine how they express ideas, making subsequent writing easier.

NUANCES AND CAVEATS

While literacy development can be a feature of every lesson, some will lend themselves to this better than others. All subjects have specialist vocabulary which pupils should be taught to use accurately; likewise, all subjects can promote high-quality talk during discussion.

However, if the key learning goal is practical – learning to pass a football correctly, shade accurately or master times tables – teachers should not feel that they are expected to create written activities solely to promote generic literacy.

Promoting literacy might also look different at different ages. For example, for younger pupils, a priority is reading fluently and writing fluently and legibly, whereas once pupils have mastered this they may benefit from improving their reading comprehension skills, or from more time planning, drafting and editing their writing (EEF, 2018).

Promoting reading for pleasure, by using a range of whole class reading approaches and regularly exposing pupils to high quality texts, can also support literacy development (EEF, 2016).

CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. To read a text, pupils need to be able to do which of the following?

- a.) Summarise the text's meaning.
- b.) Identify the key words.
- c.) Recognise the words.
- d.) Comprehend the meaning of the language used.

2. Pupil literacy is the responsibility of...

- a.) Their English/Literacy teacher.
- b.) All teachers.
- c.) No teacher.
- d.) EY and Primary school teachers only.

3. Teachers should primarily focus on teaching pupils...

- a.) Tier 1 vocabulary – everyday language.
- b.) Tier 2 vocabulary – language used in texts across subjects.
- c.) Tier 3 vocabulary – language used only in their subject.
- d.) All types of vocabulary.

4. Generally, it's better to...

- a.) Give pupils a model, then ask them to write.
- b.) Ask pupils to write, then give them a model.
- c.) Not model writing at all for pupils.

FURTHER READING

EEF (2018). Preparing for Literacy Guidance Report. bit.ly/ecf-eef6

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Mr Jones can help pupils to improve their literacy by:

- > Identifying literacy goals for a topic, such as vocabulary to use, challenging texts to read, and forms of writing to practise.
- > Sharing and breaking down models of the reading and writing he hopes pupils will master.
- > Planning opportunities for high-quality talk, which use key vocabulary to articulate crucial ideas.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Beck, I., McKeown, M., and Kucan, L. (2002). *Bringing words to life*. New York: Guilford.
- EEF (2016). *Improving Literacy in Key Stage One Guidance Report*. bit.ly/ecf-eef3
- EEF (2018). *Preparing for Literacy Guidance Report*. bit.ly/ecf-eef6
- Jay, T., Willis, B., Thomas, P., Taylor, R., Moore, N., Burnett, C., Merchant, G., & Stevens, A. (2017). *Dialogic Teaching Evaluation Report and Executive Summary*. London: Education Endowment Foundation.
- Scott, C. E., McTigue, E. M., Miller, D. M., & Washburn, E. K. (2018). The what, when, and how of preservice teachers and literacy across the disciplines : A systematic literature review of nearly 50 years of research. *Teaching and Teacher Education*, 73, 1–13.
- Willingham, D. T. (2009). *Why don't students like school?* San Francisco, CA: Jossey Bass

QUIZ ANSWERS

1. c, d
2. b
3. b, c
4. a

S8 | SUBJECT: SHARING ACADEMIC EXPECTATIONS

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Mr Jones is gaining confidence in his planning and wants to assess his pupils' progress. However, he is unsure how to give them the best opportunity to perform well and demonstrate their understanding. He finds that describing the components of a strong piece of work is useful but often insufficient to convey the key ideas. How can he share his academic expectations for pupils concretely and clearly?

KEY IDEA

Effectively directing pupil attention to high quality models helps pupils succeed by clarifying subject goals. Practise and metacognition help them apply these to their own work.

KEY TAKEAWAYS:

Mr Jones can show pupils how to succeed by:

- > Constructing models which show pupils what a good response or performance looks like.
- > Directing pupils' attention to the critical aspects of those models.
- > Using those models to promote metacognition and for feedback.

EVERY LESSON IS A CHANCE TO IMPROVE PUPILS' LITERACY

Conveying academic expectations to pupils is challenging. Effective teachers set goals that challenge and stretch pupils, while providing enough support to make it likely pupils will succeed (Coe et al., 2014). Previously, Mr Jones has focused on describing to pupils what they need to do to succeed. However, he has found this problematic: he invites pupils to structure sentences "carefully", to select the "most telling quotations" and to approach their work "methodically". Some pupils seem able to do this but for others his advice appears not to help. Mr Jones realises that these concepts may be too abstract to be easily applied by many pupils so he needs a better way to convey them (Christodoulou, 2017).

Models can show what pupils need to do to succeed. Mr Jones has already encountered the power of a concrete example in making abstract curricular concepts and ideas accessible. He realises that they can also be used to show pupils how to succeed in a specific task. He can use models to demonstrate the components of a good response and the process behind constructing one. One approach is to show pupils completed models, such as a finished calculation, sentence, or essay paragraph. He can also show pupils the process of creating an answer, either by showing finished worked examples (Sweller et al., 1998) – for example, the stages of a sum or an edited document – or by live modelling: completing a task or editing an answer in front of pupils and talking about his thinking process (EEF, 2017). This is a chance for Mr Jones to share his subject expertise with pupils, by describing the choices he is making and the reasons for them as he is making them.

HOW TEACHERS USE THEIR MODELS MATTERS

Mr Jones recognises that the design of the model is important but insufficient in helping pupils identify crucial features as pupils may be tempted to skip over examining them (Sweller et al., 1998). Effective modelling involves directing pupils' attention to the most important aspects. Some specific tasks appear to help pupils engage with models and identify their critical features. These include:

- > **Completion problems:** Partially completed examples which pupils finish (Sweller et al., 1998).
- > **Example-problem pairs:** An example with an equivalent problem, for the pupil to complete.
- > **Examples contrasted with non-examples:** Helping pupils contrast strong and weak responses allows them to identify the crucial features of good answers and those which are less important (Lin-Siegler et al., 2015; EEF, 2018).

The crucial point which Mr Jones appreciates is that just producing a model is insufficient to ensure pupils benefit: he must also design a task which ensures pupils engage

with it, effectively modelling the features he wishes to convey.

Mr Jones can also use models to provide feedback and help pupils to improve. For example, once pupils have completed a task, Mr Jones can invite them to return to the model and identify the similarities and differences between their approach and the one illustrated by the model. Alternatively, he can construct a new model which incorporates the strongest (or weakest) features of pupils' answers, and then invite them to review it and identify its strengths and weaknesses. Pupils can then be invited to revise their own work with the model in mind.

PROMOTING METACOGNITION

Models can also promote pupils' metacognition by helping them to get a clear sense of what their work should look like. This makes it easier for them to plan and monitor their work – comparing what they are doing to the model – and to evaluate their approach by making adaptations if they notice that their work does not exhibit key features shown in the model (EEF, 2017). This may be particularly important where a teacher anticipates common misconceptions may arise about a topic. Pupils may have acquired ideas, either in school or from everyday experience, that are 'in conflict with' the to-be-learned concepts (Chi, 2009).

Mr Jones can use his models to draw pupil attention to misconceptions as well as ways to overcome them. For example, as he models how to complete a problem, he might ask pupils "What trap are we going to avoid falling into here?" and emphasise that "I'm going to avoid falling into this trap", showing them what he wants them to do instead. Knowing what is expected of pupils and what they should avoid is therefore a powerful way to help pupils to monitor and evaluate their own work.

NUANCES AND CAVEATS

When sharing academic expectations, it is important both to select a high-quality model and use effective instructional approaches when modelling, drawing pupil attention to specific aspects of the model to develop their subject knowledge.

Mr Jones can discuss with experienced colleagues what important misconceptions are to help identify them.



CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. Which of the below describes live modelling?

- a.) Showing pupils a completed version of the task or problem.
- b.) Showing pupils a partially completed version of the task or problem.
- c.) Showing pupils the process of completing the task or problem.

2. Which of the following tasks can help to pupils engage with models and identify their critical features?

- a.) Completion problems: partially completed examples which pupils finish.
- b.) Examples contrasted with non-examples: helping pupils contrast strong and weak responses allows them to identify the crucial features of good answers and those which are less important.
- c.) Example-problem pairs: an example with an equivalent problem for the pupil to complete.
- d.) Independent problems: pupils attempting the problem first before any teacher modelling so they can see where they struggle.

3. Why are models a good way to promote pupils' metacognition?

- a.) Models help the teacher identify steps in the task or process that pupils have misunderstood.
- b.) Models help pupils to understand the task or problem more quickly.
- c.) Models don't promote pupils' metacognition.
- d.) Models help pupils to gain a clear sense of what their work should look like making it possible for them to monitor their work.

FURTHER READING

EEF (2017). Metacognition and Self-regulated learning Guidance Report. bit.ly/ecf-eeef

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Mr Jones can show pupils how to succeed by:

- > Constructing models which show pupils what a good response or performance looks like.
- > Directing pupils' attention to the critical aspects of those models.
- > Using those models to promote metacognition and for feedback.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Christodoulou, D. (2017). *Making Good Progress: The Future of Assessment for Learning*. Oxford: OUP.
- Chi, M. T. (2009). Three types of conceptual change: Belief revision, mental model transformation, and categorical shift. *International handbook of research on conceptual change*, 89-110. Routledge.
- EEF (2017). *Metacognition and Self-regulated learning Guidance Report*. bit.ly/ecf-eef
- EEF (2018) *Improving Mathematics in Key Stages Two and Three: Evidence Review*. bit.ly/ecf-eef18
- Lin-Siegler, X., Shaenfield, D., & Elder, A. D. (2015). Contrasting case instruction can improve self-assessment of writing. *Educational Technology Research and Development*, 63, 1-21. bit.ly/ecf-lin
- Sweller, J., van Merriënboer J. J., & Paas F. G. (1998). Cognitive architecture and instructional design. *Educational Psychology Review*, 10, 251-296.

QUIZ ANSWERS

- c
- a, b, c
- d

S9

SUBJECT: ASSESSING FOR FORMATIVE PURPOSES

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Mr Jones feels his lessons are increasingly clearly designed and convey the key ideas to his pupils. However, he often feels unsure how much pupils have understood during the lesson or by the end. Sometimes, end-of-unit assessments suggest that pupils have failed to grasp key ideas. How can Mr Jones develop ways to identify what pupils are thinking – and what they have misunderstood – in order to ensure they are all meeting the learning goals?

KEY IDEA

Effective formative assessment shows the teacher what pupils are thinking: this makes it possible to meet pupils' needs, making it more likely they will meet learning goals.

KEY TAKEAWAYS:

Mr Jones can check pupils' developing understanding by:

- > Recognising that summative assessment has value but that it cannot provide rapid, detailed information about pupil understanding.
- > Formative assessment practices can provide valuable information about what pupils have understood and gaps in their knowledge.
- > Formative assessment should be designed around how the information it provides will be used.

THE ROLE OF SUMMATIVE ASSESSMENT

Mr Jones encounters many forms of external assessment on a regular basis in school. Often, pupils complete practice versions of external exams or commercially-developed tests in order to demonstrate progress or highlight gaps in their knowledge. However, the information this provides often comes too late to enable him to make the kind of changes he hopes to make. He is unwilling to wait until the end of the key stage to find out exactly how much pupils have understood.

Mr Jones' initial idea is that he will adapt these external assessments and use them in his lessons. However, this proves problematic. These assessments are designed to demonstrate what pupils have learned over a long period of time (William & Black, 1996). To do so, many questions integrate knowledge of multiple concepts: a question may ask pupils to draw on their knowledge of algebra and number, to write a paragraph or to compare different concepts. Errors may not tell him whether a pupil lacks basic knowledge, misinterpreted the question or holds an underlying misconception (Christodoulou, 2017).

Creating exams and ensuring they are marked reliably is a complicated, intricate and time-consuming process: this is not something an individual teacher can easily simulate (Christodoulou, 2017). Mr Jones still wants his pupils to succeed in summative assessments and he uses them to help ensure he is teaching everything pupils need to know. Moreover, if he needs to make a summative judgement, he should choose these materials where possible and draw conclusions from patterns of performance over a number of these, while remembering that assessments draw inferences about learning from performance. However, his focus is identifying what pupils have learned - or misunderstood - in order to adapt his teaching accordingly. This means he focuses on using formative assessment.

THE ROLE OF FORMATIVE ASSESSMENT

An assessment is formative if it is designed to lead to a change in what the teacher (or the student) does (Black & William, 1998). Effective formative assessment practices help teachers collect evidence about pupil understanding and needs and adapt their teaching to support pupils to be more successful (Black & William, 1998; Speckesser et al., 2018). Mr Jones is aware of the risk of using 'poor proxies' for learning (Coe, 2013): of believing that students have understood because they are busy, engaged, working hard, or answering questions correctly even if they haven't fully understood or couldn't reproduce the work independently. All of these are valuable and desirable, but they do not show that pupils have understood the key ideas and avoided misconceptions.

DESIGNING FORMATIVE ASSESSMENT

Mr Jones' previous work identifying and setting clear learning goals proves useful in formulating precise assessment questions. He focuses on questions that show whether pupils have mastered the key idea in the lesson or whether they hold misconceptions – being particularly mindful of pupils with specific learning barriers linked to special educational needs or disabilities. It helps to design questions with data analysis in mind (William, 2014) and Mr Jones is mindful of this as he plans formative assessment.

For example, he knows that a fifty-question quiz will provide very detailed information about what every pupil understands but he also knows that he will not have time to review every pupils' quiz for at least a week. It is better to decide to choose one crucial question – and use the information he gains – than to choose several important questions and run out of time to ask them or assess students' answers. However, Mr Jones is aware that he will still need to be cautious about the conclusions he draws: pupils may produce correct answers now but struggle to recreate them in future (Coe, 2013; Christodoulou, 2017).

USING FORMATIVE ASSESSMENT

Once he has designed a formative assessment, Mr Jones applies it in class. He appreciates the need to gain a response from all pupils independently, since the answer of one pupil in discussion may influence that of other pupils. As a result, he gets his pupils to respond simultaneously, using whiteboards or on paper. Having collected the data, he is able to analyse it, adapt teaching and provide feedback as appropriate.

NUANCES AND CAVEATS

Formative assessment, such as end of class questioning, is a powerful way to identify what pupils have understood in the moment. However, getting an answer correct one day doesn't mean that pupils will recall it in future: they are very likely to forget some of it. Formative assessment is most useful for identifying pupils' misconceptions or knowledge gaps and addressing them.

Formative assessment is an approach, not a technique. Using mini-whiteboards, exit tasks or hinge questions does not mean a teacher is using formative assessment: what matters is why and how they are used: if they are used to find out what pupils understand and to improve their understanding, the teacher is using formative assessment and practising responsive teaching (Christodoulou, 2017).

CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. Which of the below statements describes formative assessment?

- a.) Formative assessments are designed to show SLT and Ofsted the progress pupils are making.
- b.) Formative assessments are designed to give a shared meaning to teachers, pupils and parents/carers of the pupil's progress, relative to others.
- c.) All assessments are formative.
- d.) An assessment is formative if it is designed to lead to a change in what the teacher (or the student) does.

2. Why can using practice external assessment questions be challenging for good formative assessment?

- a.) External assessment questions are the best questions to use for all types of assessment as they are the questions that pupils will ultimately face in the exam/assessment.
- b.) Pupils may have seen the questions before.
- c.) External assessments are designed to demonstrate what pupils have learned over a long period of time so many questions integrate knowledge of multiple concepts.
- d.) The questions in external assessments don't often break down the individual knowledge and skills that the class has been working on, allowing the teacher to identify misconceptions and gaps in knowledge.

3. When designing formative assessment questions, what should teachers focus on?

- a.) Questions that show whether pupils have mastered the key idea in the lesson or whether they hold misconceptions.
- b.) Questions that show if pupils hold misconceptions.
- c.) Questions that show if pupils have grasped the more complex ideas in the topic as this would show if the foundations are in place.
- d.) Questions that test every aspect of the curriculum to ensure that there are no gaps in understanding.

FURTHER READING

Black, P., Harrison, C., Lee, C., Marshall, B., & Wiliam, D. (2004). Working inside the Black Box: Assessment for Learning in the Classroom. *Phi Delta Kappan*, 86(1), 8–21. bit.ly/ecf-wil9

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Mr Jones can check pupils' developing understanding by:

- > Recognising that summative assessment has value but that it cannot provide rapid, detailed information about pupil understanding.
- > Formative assessment practices can provide valuable information about what pupils have understood and gaps in their knowledge.
- > Formative assessment should be designed around how the information it provides will be used.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Black, P. and Wiliam, D. (1998). *Inside the Black Box: Raising Standards Through Classroom Assessment*. London: GL Assessment.
- Christodoulou, D. (2017). *Making Good Progress: The Future of Assessment for Learning*. Oxford, OUP.
- Coe, R. (2013). *Improving Education: A triumph of hope over experience*. Centre for Evaluation and Monitoring. bit.ly/ecf-coe2
- Speckesser, S., Runge, J., Foliano, F., Bursnall, M., Hudson-Sharp, N., Rolfe, H., & Anders, J. (2018). *Embedding Formative Assessment: Evaluation report and executive summary*. Education Endowment Fund. bit.ly/ecf-eef17
- Wiliam, D. (2014). *Redesigning Schooling 8: Principled Assessment Design*. SSAT.
- Wiliam, D., Black, P. (1996) Meanings and Consequences: A Basis for Distinguishing Formative and Summative Functions of Assessment? *British Educational Research Journal*, 22(5) 537-548.

QUIZ ANSWERS

1. d
2. c, d
3. a, b

S10 | SUBJECT: EXAMINING PUPILS' RESPONSES

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Mr Jones is designing and using assessments frequently to check pupil understanding and misconceptions. However, he finds the amount of information they provide challenging to manage, particularly with so many pupil responses. He must decide what to do next rapidly, either during the lesson, or before the next. Doing this slowly during a lesson risks losing pupils' attention; doing this slowly after the lesson adds to his workload dramatically. How can he use the information available to identify rapidly what pupils have understood, their misconceptions and their knowledge gaps?

KEY IDEA

Teachers need a simple, systematic approach to decide how to respond to pupils' knowledge gaps and misconceptions.

KEY TAKEAWAYS:

Mr Jones can reach conclusions about next steps from formative assessment if he:

- > Takes a systematic approach to identify patterns of understanding.
- > Tries to understand pupils' thinking by seeking common misconceptions and knowledge gaps, rather than just looking for the correct answer.
- > Judges the prevalence and importance of misconceptions and knowledge gaps when deciding whether and how to adapt his teaching.

IDENTIFYING CRITICAL KNOWLEDGE GAPS AND MISCONCEPTIONS

When faced with an array of pupil responses, Mr Jones must be able to identify the crucial points rapidly. Since his goal is to develop pupils' mental models, his focus must be on what pupils are thinking, not just on whether they have got the correct answer. Understanding pupils' thinking allows teachers to recognise the strengths and gaps in their mental models, and to plan ways to respond (Wiliam, 2011). Mr Jones can do this best by taking a systematic approach. Teachers can use their knowledge of likely misconceptions and knowledge gaps (Ball et al., 2010) to design tasks which will reveal them. Similarly, they can analyse assessments with the most likely misconceptions and knowledge gaps in mind. Mr Jones' previous work with colleagues, breaking learning down, specifying goals, sequencing ideas and identifying misconceptions should allow him to look for evidence of their knowledge and understanding of the most fundamental and important ideas.

DECIDING ON NEXT STEPS

In reviewing pupils' work, Mr Jones must decide whether to revisit an idea or to move on. His decision will reflect the importance of the idea: if a pupil misconception is core to understanding the subject, or to understanding the current topic, it is worth reviewing immediately. If a misconception is peripheral to the subject or the topic, it may not be a priority (Wiliam, 2011). Mr Jones may also be influenced by the prevalence of the misconception or knowledge gap: the more pupils who hold it, the more important it is to address.

Having identified the prevalence and importance of the knowledge gap or misconception, he can choose how to adapt his teaching and/or how to provide feedback to pupils. For example, if an assessment activity shows him that a handful of pupils have retained a misconception from a previous unit, he may defer addressing it since it is not foundational to the subject or the current unit. Conversely, if pupils have a fundamental misconception, or many pupils have the same knowledge gap, he may offer a fresh explanation, a new learning task and then reassess pupils' understanding. His mental model of the subject and his sense of pupils' developing mental models should allow him to prioritise the most crucial barriers to their understanding, drawing on the support of colleagues and resources where necessary.

LEARNING AND PERFORMANCE ARE DISTINCT

Learning and performance are different things. Performance is a temporary change in behaviour or knowledge which can be measured immediately after acquisition; learning is a lasting change in behaviour or knowledge (Christodoulou, 2017). Pupils' responses during or after a lesson that introduced new information are an indication of their performance, not of their learning. For example, pupils may answer correctly

initially but subsequently forget new information. In analysing pupils' responses, Mr Jones prioritises using them to identify knowledge gaps and misconceptions, rather than seeing them as a guarantee that pupils will recall key ideas: his plans to revisit key ideas will check and support pupils' subsequent retention.

NUANCES AND CAVEATS

Whatever the process Mr Jones follows, it must be quick. Within a lesson, the process could take a few seconds; after the lesson, he needs to have enough time having examined pupil responses to plan a next step. Equally, it is difficult for teachers new to an idea to identify misconceptions or gaps in pupils' mental models immediately. Mr Jones may usefully review assessments and decide on next steps in collaboration with his mentor or a more experienced teacher. They can help him decide best what to do next and can model their approach to reviewing assessments.



CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. What is the most valuable information available from an assessment?

- a.) Whether pupils got the answer right.
- b.) Whether pupils tried their best.
- c.) Whether pupils have misunderstood a key idea.
- d.) Whether pupils have gaps in their knowledge.

2. What factors might influence how a teacher responds to a misconception they have uncovered?

- a.) All misconceptions should be addressed; therefore, the approach should not change.
- b.) Which activity the misconception is uncovered in.
- c.) How critical the misconception is to understanding the subject matter.
- d.) How prevalent is the misconception is across the class.

3. Learning is distinct from performance because learning is...

- a.) Everything that pupils can remember at the end of the lesson.
- b.) A temporary change in behaviour or knowledge which can be measured immediately after acquisition.
- c.) A lasting change in behaviour or knowledge.
- d.) The information that is taught across the curriculum.

FURTHER READING

Black, P., Harrison, C., Lee, C., Marshall, B., & Wiliam, D. (2004). Working inside the Black Box: Assessment for Learning in the Classroom. Phi Delta Kappan, 86(1), 8–21. bit.ly/ecf-wil9



REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Mr Jones can reach conclusions about next steps from formative assessment if he:

- > Takes a systematic approach to identify patterns of understanding.
- > Tries to understand pupils' thinking by seeking common misconceptions and knowledge gaps, rather than just looking for the correct answer.
- > Judges the prevalence and importance of misconceptions and knowledge gaps when deciding whether and how to adapt his teaching.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Ball, D. Thames, M. & Phelps, G. (2008). Content Knowledge for Teaching: What Makes It Special? *Journal of Teacher Education*, 59(5), 389-407.
- Christodoulou, D. (2017). *Making Good Progress: The Future of Assessment for Learning*. Oxford, OUP.
- Wiliam, D. (2011). *Embedded formative assessment*. Bloomington, Solution Tree Press.

QUIZ ANSWERS

1. c, d
2. c, d
3. c

S11

SUBJECT: ADAPTING LESSONS TO MEET PUPILS' NEEDS

WATCH



CLICK TO WATCH
MODULE VIDEO

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Mr Jones is using formative assessment regularly and becoming increasingly skilled in analysing what he learns from it. He is confident he can identify the knowledge gaps and misconceptions pupils face. However, he is uncertain how best to adapt lessons to meet pupils' needs. Should he create tailored activities and resources for individual pupils? How can he meet pupils' individual needs efficiently?

KEY IDEA

Teachers can use information about pupil understanding and needs to target support at the whole class, groups and individuals.

KEY TAKEAWAYS:

In considering how to adapt his teaching to meet pupils' needs, Mr Jones needs to know that:

- > The value of formative assessment is in allowing teachers to understand and respond to pupil needs.
- > Targeting learning styles is ineffective and individualised tasks for all pupils are prohibitively time-consuming.
- > Adaptations should focus on the misconceptions and knowledge gaps identified, particularly when they are common to many pupils.

USING INFORMATION FROM ASSESSMENTS TO ADAPT LESSONS

Mr Jones designs assessment tasks and analyses the information they provide to allow him to adapt his teaching to meet pupils' needs. When teachers know what their pupils have understood, and use this information to adapt their teaching, pupils' achievement increases (Speckesser et al., 2018). Mr Jones should also collect information about pupils needs and possible strategies, particularly for pupils with special educational needs and disabilities, by working closely with colleagues including the SENCO, families and pupils. However, using information on pupil needs to adapt teaching is challenging as it requires teachers to decide how to respond rapidly and there are no perfect solutions. Pupils learn at different rates and require different levels of support. In any class, when seeking to understand pupil differences including levels of prior knowledge and barriers to learning, at any one time some pupils will be ready to move on and others may need further support.

LEARNING STYLES AND INDIVIDUALISATION WILL NOT BE EFFECTIVE OR SUSTAINABLE

Mr Jones could design a different lesson or task for every pupil, but this would be a mistake. Pupils have distinct learning preferences: some prefer to read, some would rather listen, some might prefer group activities. Mr Jones could try to create distinct activities for different groups. However, no evidence exists that tailoring learning to pupils' preferred learning styles is effective (Pashler, et al., 2008). The authors of this study were adamant that "limited education resources would better be devoted to adopting other educational practices that have a strong evidence base, of which there are an increasing number" (Pashler, et al., 2008, p.105).

Similarly, Mr Jones might try to design individual activities around individual pupils' current knowledge gaps or misconceptions. The problem with this approach is that it requires Mr Jones to spend a huge amount of time planning and setting out activities for individual pupils. It also robs individual pupils of the chance to benefit from the teacher's expertise by forcing them to overcome their knowledge gaps and misconceptions individually (Sadler, 2010). Mr Jones is more likely to be successful if he prioritises designing tasks to support the whole class or groups within it first. Once the majority are experiencing success, he can then responsively support groups and individuals during the lesson where this is feasible.

COMMON TASKS AND FLEXIBLE GROUPING

Mr Jones can best meet the needs of individuals by identifying the needs which several pupils have in common. Mr Jones should still build relationships with individuals and seeks to support them with specific individual needs, such as seating visually impaired pupils at the front of the class and providing large print resources or providing a story about dinosaurs if he knows this will be particularly motivating for pupils who usually struggle to focus. However, many pupil needs are shared by the rest of the class: many misconceptions are common to pupils learning specific subjects so he can address them simultaneously.

For example, many pupils use apostrophes unnecessarily for words ending in a plural 's', add the numerators and denominators separately when adding fractions and believe that air tubes distribute air around the body. Likewise, Mr Jones is likely to find knowledge gaps which are shared

among many pupils since they are based on not having been introduced to (or not recalling) past content. While Mr Jones can look for opportunities to work with misconceptions or knowledge gaps held by all pupils, if one individual pupil has a specific need, he can dedicate individual time to them.

Having identified the need of several pupils, Mr Jones may decide to:

- > **Work with the whole class:** Planning new explanations and additional learning tasks for the whole class. This gives him the opportunity to reiterate key ideas and give all pupils additional practice.
- > **Group pupils:** Putting pupils together into small groups based on shared need. For example, all pupils who got question seven wrong or who missed the last lesson. This kind of within-class grouping tends to prove effective and to benefit pupils at all levels (Steenbergen-Hu, et al., 2016). It enables groups of pupils to benefit from more of Mr Jones's time and expertise as he can explain a misconception or overcome a knowledge gap with all pupils who hold it at once. This also makes it a more efficient way for him to use his time. If an individual pupil has a specific need perhaps linked to special educational needs or a disability, Mr Jones can devote additional time to them: his grouping of other pupils increases the time he can spend with the individuals who need it most.

NUANCES AND CAVEATS

In adapting lessons – and particularly when working with small groups with specific misconceptions – Mr Jones should continue to convey his high expectations of pupils (Murdock-Perriera & Sedlacek, 2018).

Pupils with special educational needs or disabilities are likely to need additional levels of support. Mr Jones should seek specific strategies to support these pupils with specific learning barriers where appropriate, such that they can meet these high expectations e.g. sitting a visually impaired pupil at the front of the class and providing large print resources so that they can complete common class tasks successfully.

Teaching assistants can provide further support but they need to be prepared for the lesson by the teacher and used to supplement, rather than replace, the teacher (EEF, 2018). For example, the TA could support pupils to successfully correct the apostrophes in their work after the teacher has explained correct usage.

An ongoing dilemma for Mr Jones will be when to review a topic and when to carry on. His work identifying the most important core ideas within a subject and a topic should make it easier for him to prioritise this.

Another dilemma for Mr Jones is whether to give pupils feedback. As pupils benefit from accessing material several times to learn it (Pashler et al, 2007; Dunlosky et al., 2013), it will often be more efficient to use strategies like modelling content, not least as written feedback adds to teacher workload leading to learning gains, especially if it is not acted upon (Gibson et al, 2015; EEF, 2016).



CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. Pupils have different preferences for how they learn. How should teachers respond?

- a.) Teach in the way which seems appropriate to the goal.
- b.) Bear the learning preferences in mind and tailor to them when they have more time.
- c.) Prepare a lesson for every individual pupil.
- d.) Prepare activities for groups of pupils based on their learning preferences.

2. The primary purpose of the design and analysis of formative assessment is...

- a.) To demonstrate pupils' progress.
- b.) To allow the teacher to adapt the lesson.
- c.) To keep senior leaders informed.

3. Which of the following are productive ways to address pupils' misconceptions?

- a.) Work with pupils individually to understand where they are in their understanding of a topic and address any misconceptions.
- b.) Focus on working with small groups of pupils with knowledge gaps or misconceptions in common.
- c.) Work with the whole class when they have knowledge gaps or misconceptions in common.

FURTHER READING

Black, P., Harrison, C., Lee, C., Marshall, B., & Wiliam, D. (2004). Working inside the Black Box: Assessment for Learning in the Classroom. *Phi Delta Kappan*, 86(1), 8-21. bit.ly/ecf-wil9

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

In considering how to adapt his teaching to meet pupils' needs, Mr Jones needs to know that:

- > The value of formative assessment is in allowing teachers to understand and respond to pupil needs.
- > Targeting learning styles is ineffective and individualised tasks for all pupils are prohibitively time-consuming.
- > Adaptations should focus on the misconceptions and knowledge gaps identified, particularly when they are common to many pupils.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Dunlosky, J., Rawson, K. A., Marsh, E. J., Nathan, M. J., & Willingham, D. T. (2013) Improving students' learning with effective learning techniques: Promising directions from cognitive and educational psychology. *Psychological Science in the Public Interest, Supplement*, 14(1), 4-58.
- Education Endowment Foundation (2016). A marked improvement? A review of the evidence on written marking. bit.ly/ecf-eef11.
- Education Endowment Foundation (2018). Teaching and learning toolkit. bit.ly/ecf-eef14
- Gibson, S., Oliver, L. & Dennison, M. (2015). Workload Challenge: Analysis of teacher consultation responses. Department for Education. bit.ly/ecf-gib.
- Murdock-Perriera, L. A. & Sedlacek, Q. C. (2018). Questioning Pygmalion in the twenty-first century: the formation, transmission, and attributional influence of teacher expectancies. *Social Psychology of Education*, 21(3), 691-707.
- Pashler, H., Bain, P. M., Bottge, B. A., Graesser, A., Koedinger, K., McDaniel, M. & Metcalfe, J. (2007). Organizing Instruction and Study to Improve Student Learning. US Department of Education. bit.ly/pas
- Pashler, H., McDaniel, M., Rohrer, D. & Bjork, R. (2008). Learning Styles: Concepts and Evidence. *Psychological Science in the Public Interest*, 9(3), 105-119.
- Sadler, D.R. (2010). Beyond feedback: developing student capability in complex appraisal. *Assessment & Evaluation in Higher Education*, 35(5), 535-550.
- Speckesser, S., Runge, J., Foliano, F., Bursnall, M., Hudson-Sharp, N., Rolfe, H., & Anders, J. (2018). Embedding Formative Assessment: Evaluation report and executive summary. Education Endowment Fund. bit.ly/ecf-eef17
- Steenbergen-Hu, S., Makel, M.C. & Olszewski-Kubilius, P., 2016. What one hundred years of research says about the effects of ability grouping and acceleration on K-12 students' academic achievement: Findings of two second-order meta-analyses. *Review of Educational Research*, 86(4), 849-899.

QUIZ ANSWERS

1. a
2. b
3. b, c

S12 | SUBJECT: FEEDBACK

WATCH



**CLICK TO WATCH
MODULE VIDEO**

Or go to ambition.org.uk/ecf

READ | EVIDENCE SUMMARY

TEACHING CHALLENGE

Mr Jones assesses pupils' work regularly and adapts his teaching in response to their needs. He wants to ensure that the feedback he offers pupils genuinely helps them to improve their work and deepen their understanding. He finds the variety of kinds of feedback available overwhelming and he worries that the amount of time it will take him to provide detailed feedback will be unsustainable in the long term.

KEY IDEA

Feedback can make a significant difference to pupils' understanding and outcomes if it guides pupils to improve and is sustainable for the teacher.

KEY TAKEAWAYS:

Mr Jones can help pupils to improve their work and deepen their understanding by:

- > Offering feedback which guides pupils on how to improve and gives them the opportunity to apply it.
- > Making his approach to feedback efficient and sustainable for him.
- > Encouraging pupils to monitor and regulate their own learning.

EFFECTIVE FEEDBACK IS SPECIFIC, USABLE AND ENCOURAGING

Mr Jones must ensure that his feedback offers pupils precise guidance about how they can improve. Often feedback focuses on the immediate task, but it is more helpful to link feedback about the immediate task to feedback about the subject or the process of learning. This ensures that pupils can apply it to future tasks (Hattie & Timperley, 2007). Feedback should provide specific guidance in how pupils improve their work: lengthy, complicated and excessively detailed feedback can be overwhelming to pupils and therefore counter-productive since they may be unable to act upon it (DFE, 2016).

Ensuring pupils respond to feedback is as important as the content of the feedback (Hattie & Timperley, 2007). Feedback may be ineffective if pupils find it discouraging or conclude that they are unable to act upon it (William, 2011). For example, pupils' responses to feedback can also vary depending on a range of social factors, including their age as well as the message the feedback contains. Realising this, Mr Jones needs to frame feedback in such a way as to ensure that pupils seek and welcome it, for example identifying specific strengths and encouraging pupils to keep up their effort in relation to these. Moreover, feedback should focus on improving pupils' work, for example "remember to write formally in business letters: check and remove any abbreviations in formal writing". In contrast, if it focuses on pupils' personal strengths and weaknesses ("you're usually good at writing letters"), this can lead them to worry more about how they are perceived by others than about how they can improve (Hattie and Timperley, 2007). He also needs to give them time and opportunities to act upon formative feedback, for example in the lesson after written feedback has been given.

Given the importance of these elements of feedback, Mr Jones realises he will need to be careful about his use of peer and self-generated feedback. If these strategies are to be effective, they need to meet the same criteria as any other feedback: offer specific guidance and encourage further effort. If they do not, they are likely to be ineffective.

In summary, feedback should:

- > Be specific.
- > Focus on immediate and subsequent improvements in work and effort.
- > Encourage pupils to act upon it.

FEEDBACK NEEDS TO BE SUSTAINABLE FOR TEACHERS

Mr Jones worries that providing detailed feedback could easily come to take up a huge amount of his time. He is reassured to learn that there is no specific evidence supporting the provision of extensive written feedback and very limited evidence about the effectiveness

of written marking as a specific means of providing feedback (Gibson et al., 2015). Within the limits of his school's marking and feedback policy, this frees him to provide the guidance that pupils need in the most efficient manner possible. He could work with colleagues to identify efficient approaches to marking and alternative approaches to feedback, for example, by giving pupils feedback through a model, through a verbal comment, or by providing feedback to the whole class. He should only record data from feedback when it is useful for improving pupil outcomes.

FEEDBACK AND SELF-REGULATION

Feedback can help pupils to take a greater role in their learning. Feedback allows pupils to better plan, monitor and evaluate their current performance and understanding. If pupils have a good grasp of their current performance and a clear sense of their goal, then they should increasingly be able to judge how well they are doing and regulate their learning by identifying what they need to do to improve.

Teachers can help by explicitly teaching pupils metacognitive strategies linked to subject knowledge. For example, helping pupils to effectively plan, monitor and evaluate their writing through sharing what an effective final piece of writing looks like and modelling the thinking and steps undertaken to produce it. Teachers can then facilitate feedback on how effectively pupils have planned, monitored and evaluated their work: "You missed out step two in the plan. Make sure you select three pieces of evidence you are going to use in your essay". This feedback develops pupil metacognition in relation to this particular task. These strategies can develop pupil independence and academic success (EEF, 2017).

NUANCES AND CAVEATS

Not all feedback is effective. Additional feedback may not support pupils to improve further: the crucial question when considering whether feedback is effective is whether it leads to the desired improvement. It is not about the quantity offered or the way it is delivered.

Feedback is just one way to help pupils improve: the priority is to teach effectively initially then to use feedback where pupils have struggled, rather than relying on feedback (Hattie and Timperley, 2007).

The evidence on feedback is sometimes inconclusive and even contradictory (Kluger & de Nisi, 1996). Mr Jones will need to adapt the guidance on effective feedback to suit the subject he is teaching and the needs of his class. It could be useful to speak to colleagues who teach the same subject about such adaptations.



CHECK

Answer the questions below to check your understanding of the evidence summary. Answers are available at the bottom of the 'Reflect' section.

1. Which of the following are barriers to pupils implementing feedback provided by the teacher?

- a.) Excessive detail.
- b.) Specific guidance.
- c.) Insufficient time to respond.
- d.) Focusing on pupils' personal strengths and weaknesses.

2. How can a teacher ensure that self-generated and peer feedback is effective?

- a.) Ensure it offers specific guidance.
- b.) Ensure it encourages further effort.
- c.) Make it fun to complete.
- d.) Focus on pupils' perceptions of each other.

3. How can feedback support with pupils' self-regulation?

- a.) By increasing their self-confidence.
- b.) By helping them to judge how well they are doing.
- c.) By encouraging them to trust the teacher.

FURTHER READING

Department for Education. (2016). Eliminating unnecessary workload around marking. bit.ly/ecf-dfe2.

REFLECT

A REMINDER OF THE KEY TAKEAWAYS:

Mr Jones can help pupils to improve their work and deepen their understanding by:

- > Offering feedback which guides pupils on how to improve and gives them the opportunity to apply it.
- > Making his approach to feedback efficient and sustainable for him.
- > Encouraging pupils to monitor and regulate their own learning.

1. What did you see in this module that you already do or have seen in other classrooms?

2. What do you feel is the gap between your current practice and what you have seen in this module?

3. Which of the 'key takeaways' do you need to focus on? Where and when might you try to apply them to your teaching?

REFERENCES

- Department for Education. (2016). Eliminating unnecessary workload around marking. bit.ly/ecf-dfe2.
- Education Endowment Foundation (2017). Metacognition and Self-regulated learning Guidance Report. bit.ly/ecf-eef
- Gibson, S., Oliver, L. & Dennison, M. (2015). Workload Challenge: Analysis of teacher consultation responses. Department for Education.
- Kluger, A. N., & DeNisi, A. (1996) The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. *Psychological Bulletin*, 119(2), 254–284.
- Hattie, J. & Timperley, H. (2007). The Power of Feedback. *Review of Educational Research*, 77(1), 81-112.
- Wiliam, D. (2011). *Embedded formative assessment*. Bloomington, Solution Tree Press.

QUIZ ANSWERS

1. a, c, d
2. a, b
3. b

APPENDICES

The following materials are guides for participants of Ambition Institute's full induction programme, Early Career Teachers. For more information visit ambition.org.uk/ecf.



GUIDE TO OUR PROGRAMME

For more information visit ambition.org.uk/ecf

“Every teacher needs to improve, not because they are not good enough, but because they can be even better.”

– Dylan Wiliam

Welcome to the Early Career Teachers programme. This programme harnesses the Early Career Framework (ECF) to help NQTs develop their teaching during the first few years of their career.

We have drawn on the best available evidence around how professionals learn to create a programme that will not only have a lasting impact on NQT knowledge and practice, but will do so whilst respecting the busy and demanding working lives of teachers.

We believe that effective teaching is one of the biggest levers we have for improving the experiences, outcomes and life chances of the pupils in our care. It is a privilege to support you on your journey to keep getting better.

This document provides an introduction to the programme. It may be worth keeping a copy to hand to refer to, especially during the first few weeks, while you get things set up.

PROGRAMME GOALS AND FEATURES	2
KEY PEOPLE, RESPONSIBILITIES AND INTERACTIONS	3
CORE INPUTS AND TIMINGS	4
THE SEQUENCE	5

PROGRAMME

GOALS AND FEATURES

Teaching is important. The quality of the teaching that our pupils receive is probably the biggest lever we have for improving their outcomes and future life chances (Slater et al., 2012). However, teaching is a complex job. There is lots to know and to be able to do well. Getting better at teaching is not straightforward.

This programme draws on the best available evidence, alongside the ECF, to help craft a set of experiences that will help NQTs keep getting better during this critical period in their career. Key features of the programme include:

- > **Regular, bite-sized learning:** Evidence from the science of learning suggests that we can only focus on a few things at once and that we tend to forget a lot of what we learn, especially when it is organised into one big block (Sweller, 2016). There is more chance of making progress when our learning is spread out and part of a regular, frequent routine.
- > **Examples of classroom practice:** Understanding the theory is important but it's also critical that teachers and mentors get to see what this looks like in practice (Rosenshine, 2012; Sweller, van Merriënboer & Paas, 1998). As part of our materials we include videos of what the ECF looks like in a variety of classroom settings.
- > **Practice makes permanent:** If we are to change the outcomes and life chances of our pupils, we must change how teachers teach. Sustained changes in teaching generally occur only if we keep practising those changes (Deans for Impact, 2016). This programme puts practice at the heart of teacher learning.
- > **Familiar routines:** The life of a newly qualified teacher is full on. To ensure this programme doesn't add unnecessary complexity, we have designed it around a set of simple, repeating professional development patterns. This means everyone can spend less time thinking about the process and more time thinking about great teaching.

TO MAKE THE MOST OF THIS PROGRAMME WE RECOMMEND YOU:

- 1. Tailor it to your needs:** We have designed a comprehensive programme but also one that should be able to flex quite a lot and still deliver (Cordingley et al., 2015). If you consistently study and get coached on powerful ideas, improvement will follow. When and how you apply your knowledge matters much less.
- 2. Go with it:** It may not always be clear why a certain topic is in a certain place on the programme. However, we have thought carefully about the sequencing to ensure you come across the right ideas at the best times and revisit them lots to ensure they take hold (Dunlosky et al., 2013).

KEY PEOPLE, RESPONSIBILITIES AND INTERACTIONS

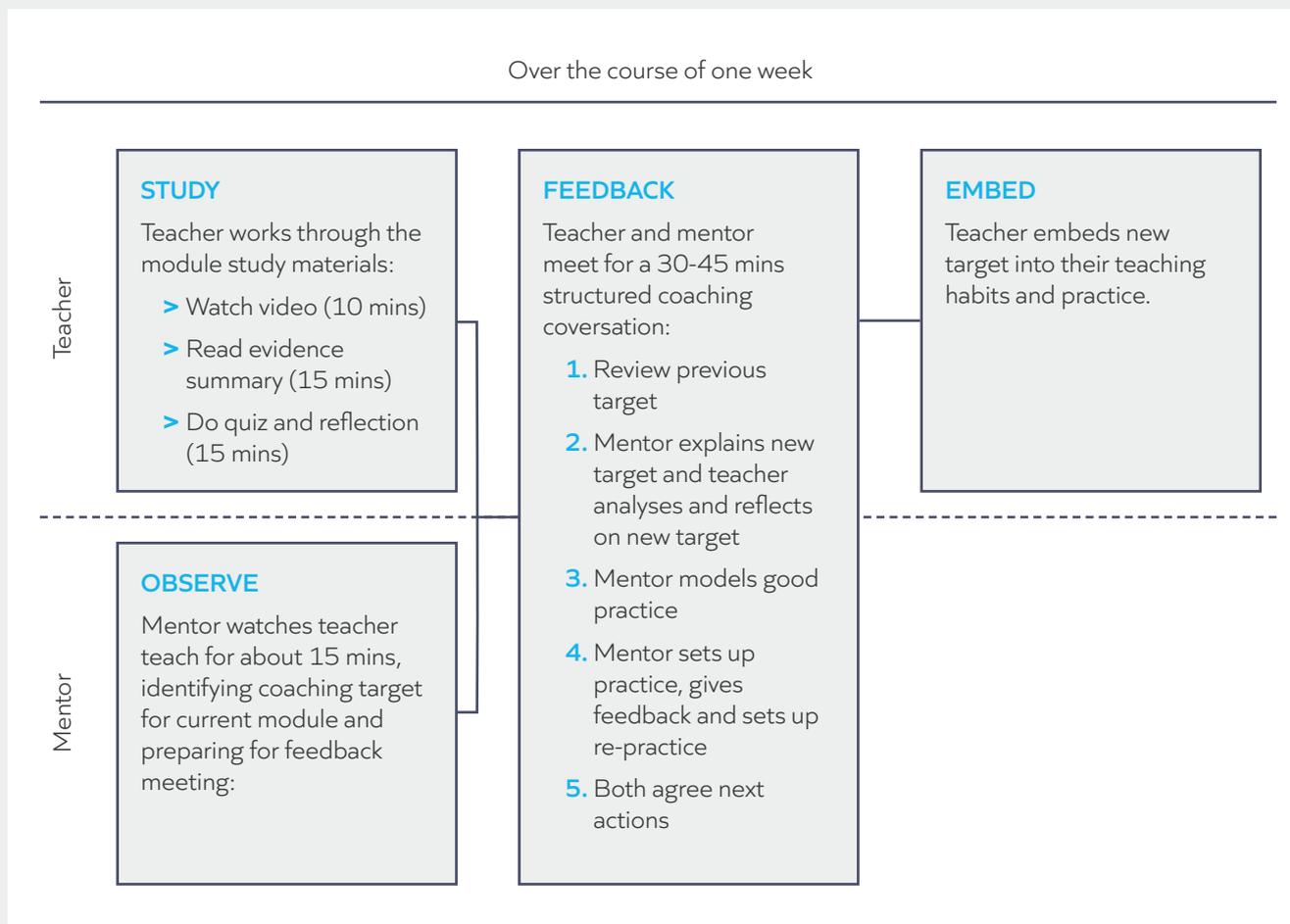
	The teacher	The mentor	The lead
Role	The main audience for the Early Career Framework. A practising, newly qualified teacher .	Each teacher has a mentor to support their development. An experienced, practising classroom teacher keen and able to support the teacher to develop.	Responsible for ensuring that the programme is implemented effectively across the school. Is the main point of contact for the programme. A member of the school's senior leadership team.
Responsibilities on the programme	Learning and practising aspects of the framework throughout the programme.	Ensuring that the teacher understands and successfully embeds their learning into their classroom practice through effective coaching.	Ensuring that teachers and mentors are supported and held to account for their responsibilities, as well as taking action to continually track and improve the programme over time in their school.

CORE INPUTS AND TIMINGS

Here is an overview of the NQT's different inputs on the programme and how long they are intended to take:

Component		Description	Year 1	Year 2
Modules	Study	The self-directed study materials are designed to help NQTs understand the ECF in depth. Materials are designed to be worked through on a weekly basis. They are comprised of: <ul style="list-style-type: none"> > Watch: 10-minute videos. > Read: 15-minute evidence summaries. > Reflect: 15-minute quiz/reflections. 	40 minutes, weekly	15 minutes, fortnightly
	Coaching	Coaching with the mentor also happens on a weekly basis and is designed to help NQTs apply insights from the study materials to their practice. It includes: <ul style="list-style-type: none"> > Observation: Mentor watching part of NQT's lesson (15 minutes). > Feedback: A coaching meeting between NQT and mentor (30-45 minutes). 	60 minutes, weekly 120 minutes for B1, I1, S1	60 minutes, fortnightly
Conferences		Conferences are designed to give NQTs a deep insight into key aspects of the ECF and implications for their classroom. They happen once at the start of each year.	One day at start of year 1	One day at start of year 2
Clinics		Clinics are designed to help NQTs make sense of study materials and address common misconceptions.	90 minutes, once per half-term	90 minutes, once per half-term
Progress reviews		Run by the school, using the Teachers' Standards.	30 minutes, once per half-term	30 minutes, once per half-term
Formal assessments		Responsibility of the school, with assessment against the Teachers' Standards not the ECF.	60 minutes, twice in year 1	60 minutes, once in year 2

Here is an example of how the study and coaching work together during a typical week on the programme:



THE SEQUENCE

INTRODUCTION TO THE SEQUENCE

The programme is composed of three **strands**. A strand is the sequenced content that a newly qualified teacher will work through over the period of roughly a term. Each strand has a core focus: mainly **Behaviour, Instruction, or Subject**. Each strand includes relevant aspects of other strands as well as important ideas and practice about teacher self-regulation.

Each strand is composed of 12 **modules**: one overview module and eleven core modules. These are designed to be worked through on a weekly rhythm. Each module has

three associated **development areas**. Teacher improvement works best when it is focused on changing one aspect of practice at a time -- participants work on a maximum of one development area per week as part of the coaching process. To ensure lasting changes in practice, teachers remain on a strand for the duration of the term. This ensures that teachers have the necessary time to practice and habitualise changes to their classroom practice.

YEAR 1, STRAND 1 (AUTUMN) | BEHAVIOUR

Week	Study and coaching	Training	Reviews and assessments
1	<p>B1 Strand fundamentals and contracting</p> <p>Introduces foundational elements of behaviour and supports teachers and mentors to set up effective ways of working</p>	<p>Kick-off conference</p> <p>Provides teachers with an overview of the science of learning and habits of planning.</p> <p>Programme induction</p> <p>Explains the programme and the ECF, and introduces teachers to aspects of self-regulation.</p>	
2	<p>B2 Routines</p> <p>Explores effective routines, the role of classroom environment and its connection learning.</p>	<p>Clinic 1: Supporting all pupils</p> <p>Provides overview of SEND code of practice, and working with SENCO/Safeguarding Lead and TAs.</p>	
3	<p>B3 Instructions</p> <p>Shares role of high-quality instructions and how to plan and reinforce them.</p>		
4	<p>B4 Directing attention</p> <p>Examines monitoring and reinforcing expectations with praise, voice and movement(s).</p>		
5	<p>B5 Low-level disruption</p> <p>Focuses on managing low-level disruption to learning and how to maintain a positive environment.</p>		
6	<p>B6 Consistency</p> <p>Explores how teacher consistency builds a positive learning environment.</p>		Timing flexible.
7	<p>B7 Positive learning environment</p> <p>Focuses on the classroom culture required for pupils to learn effectively.</p>		
8	<p>B8 Structured support of learning</p> <p>Shares the link between success, behaviour and grain size.</p>	<p>Clinic 2: Responding to challenging behaviour</p> <p>Explores challenging behaviour, bullying and the impact on emotional safety.</p>	
9	<p>B9 Challenge</p> <p>Explores the role challenge plays in pupil behaviour.</p>		
10	<p>B10 Independent practice</p> <p>Considers the link between successful independent practice and expectations, routines and feedback.</p>		
11	<p>B11 Pairs and groups</p> <p>Focuses on how to make paired and group work successful through expectations, routines and culture.</p>		
12	<p>B12 Upholding high expectations</p> <p>Focuses on how to make paired and group work successful through expectations, routines and culture.</p>		Timing flexible.

YEAR 1, STRAND 2 (SPRING) | INSTRUCTION

Week	Study and coaching	Training	Reviews and assessments
1	<p>I1 Strand fundamentals and re-contracting</p> <p>Introduces foundational elements of instruction and supports teachers and mentors to set up effective ways of working.</p>		<p>Progress review 3</p> <p>Timing flexible.</p>
2	<p>I2 Identifying learning content</p> <p>Focuses on identifying essential concepts and considering their role in planning and assessment.</p>	<p>Clinic 3: Building effective relationships with parents and carers</p> <p>Examines what effective relationships might look like and how they can impact pupil motivation, behaviour and academic success.</p>	
3	<p>I3 Instruction for memory</p> <p>Considers how teaching can support lasting change in pupils.</p>		
4	<p>I4 Prior knowledge</p> <p>Examines the implications prior knowledge and misconceptions have on instruction.</p>		
5	<p>I5 Teacher exposition</p> <p>Explores the challenge(s) when introducing new information and how modelling, explanations and scaffolds can help.</p>		<p>Formal assessment 1</p> <p>Timing flexible.</p>
6	<p>I6 Adapting teaching</p> <p>Focuses on how effective instruction requires adapting teaching to support and challenge all pupils.</p>		
7	<p>I7 Practice, challenge and success</p> <p>Examines what constitutes purposeful practice and how practice is an integral part of effective teaching.</p>		
8	<p>I8 Explicit teaching</p> <p>Explores explicit teaching across a lesson/unit of learning.</p>	<p>Clinic 4: Adapting teaching for pupils</p> <p>Focuses on resources, grouping and working with other adults.</p>	
9	<p>I9 Scaffolding</p> <p>Focuses on how scaffolds and worked examples can help pupils and how to gradually remove them.</p>		
10	<p>I10 Questioning</p> <p>Looks at how effective questions can deepen and extend pupil thinking.</p>		
11	<p>I11 Classroom talk</p> <p>Explores how classroom talk can help to develop pupils' mental models.</p>		<p>Progress review 4</p> <p>Timing flexible.</p>
12	<p>I12 Feedback</p> <p>Examines the link between teacher questions, feedback for pupils and responsive instruction.</p>		

YEAR 1, STRAND 3 (SUMMER) | SUBJECT

Week	Study and coaching	Training	Reviews and assessments
1	<p>S1 Strand fundamentals and re-contracting</p> <p>Introduces foundational elements of subject and supports teachers and mentors to set up effective ways of working.</p>		<p>Progress review 5</p> <p>Timing flexible.</p>
2	<p>S2 Planning backwards from learning goals</p> <p>Focuses on the importance of subject excellence and starting with what teachers want pupils to learn.</p>		
3	<p>S3 Types of knowledge</p> <p>Looks at the differing nature of subjects, the importance of mental models, knowledge and identifying core knowledge within subjects.</p>	<p>Clinic 5: Teacher wellbeing and workload</p> <p>Looks at teacher wellbeing, support available and ways to manage and reduce workload.</p>	
4	<p>S4 Gaps and misconceptions</p> <p>Explores the need to identify and respond to gaps in pupil knowledge and pupil misconceptions.</p>		
5	<p>S5 Acquisition before application</p> <p>Explores the role secure relevant knowledge can play prior to application and how to build and check for high success rates.</p>		
6	<p>S6 Promoting deep thinking</p> <p>Focuses on ensuring deep, hard thinking about key ideas that develops pupil mental models and flexible knowledge.</p>		<p>Progress review 6</p> <p>Timing flexible.</p>
7	<p>S7 Developing pupils' literacy</p> <p>Explores the varying nature of literacy across and within subjects/phases and the important role of vocabulary, comprehension and oral literacy.</p>		
8	<p>S8 Sharing academic expectations</p> <p>Examines the links between challenging academic expectations, purposeful planning and breaking down and modelling content.</p>	<p>Clinic 6: Early Literacy 1 - Reading and phonics</p> <p>Focuses on systematic synthetic phonics, high-quality texts and early reading.</p>	
9	<p>S9 Assessing for formative purposes</p> <p>Examines the link between learning goals, formative and summative assessments.</p>		
10	<p>S10 Examining pupils' responses</p> <p>Looks at drawing inferences, identifying misconceptions and getting pupils to elaborate as part of formative assessments.</p>		
11	<p>S11 Adapting lessons to meet pupil needs</p> <p>Explores the ways formative assessments can provide inferences to adapt teaching to meet the needs of their pupils.</p>		<p>Formal assessment 2</p> <p>Timing flexible.</p>
12	<p>S12 Feedback</p> <p>Focuses on aspects of effective feedback so that pupils can put it into action to improve their understanding.</p>		

YEAR 2 | HOW IT IS DIFFERENT?

Year 2 has been designed to enable teachers to take increasingly responsibility for their professional development and so provides a less frequent and more flexible curriculum. A few things to note:

- > It is suggested that total teacher study time during the year takes approximately five hours. This can be distributed according to teacher need and should be negotiated and agreed with mentors.
- > Coaching should follow a fortnightly rhythm.

- > It is recommended that both study and coaching follow the strand pattern of year 1: Behaviour in the Autumn term, Instruction in the Spring term, and Subject in the Summer term. This will enable teachers to make the most of clinics as part of programme training.
- > Study for each strand entails either (A) picking up unfinished modules from the strand from year 1, and/or (B) revisiting specific modules from year 1 based on teacher need. Further reading that was not explored during year 1 can also be an effective learning experience and will enable teachers to take greater responsibility for their own professional learning.

YEAR 2 | SEQUENCE FOR THE WHOLE YEAR

Half term	Study and coaching	Training	Reviews and assessments
HT1	Behaviour Continue strand or revisit priority modules, conducting 'further reading' where possible.	Conference 2: Wellbeing and Implementing change Provides an opportunity to reflect on year 1, their development and wellbeing and consider the year head. Clinic 7: Pupil wellbeing Explores a wide range of issues relating to pupil wellbeing: pupil safety, child protection, safety online and more.	Progress review 7 Timing flexible.
HT2		Clinic 8: Implementing change: Prepare Focuses on professional development and the ability for it to be sustained over time.	Progress review 8 Timing flexible
HT3	Instruction Continue strand or revisit priority modules, conducting 'further reading' where possible.	Clinic 9: Support and interventions Looks at specific learning needs, interventions and support available within and beyond school.	Progress review 9 Timing flexible.
HT4		Clinic 10: Implementing change: Deliver Examines criticality in research and implementing classroom changes with fidelity.	Progress review 10 Timing flexible.
HT5	Subject Continue strand or revisit priority modules, conducting 'further reading' where possible.	Clinic 11: Early literacy 2 Focuses on speaking and listening, writing and the role they play for all learners.	Progress review 11 Timing flexible.
HT6		Clinic 12: Implementing change: Sustain Reflection on development across ECF, a review of good professional development and consideration of professional development going forward.	Progress Review 12 Timing flexible. Formal assessment 3 Timing flexible.

REFERENCES

Cordingley, P., Higgins, S., Greany, T., Buckler, N., Coles-Jordan, D., Crisp, B., Saunders, L. & Coe, R. (2015.) *Developing Great Teaching*. bit.ly/ecf-cor

Deans for Impact (2016). *Practice with purpose*. Bit.ly/ecf-dea2

Dunlosky, J., Rawson, K. A., Marsh, E. J., Nathan, M. J., & Willingham, D. T. (2013). Improving students' learning with effective learning techniques: Promising directions from cognitive and educational psychology. *Psychological Science in the Public Interest, Supplement*, 14(1), 4–58.

Rosenshine, B. (2012). Principles of Instruction: Research-based strategies that all teachers should know. *American Educator*, 36(1), 12–20. bit.ly/ecf-ros

Slater, H., Davies, N. M., & Burgess, S. (2012). Do teachers matter? Measuring the variation in teacher effectiveness in England. *Oxford Bulletin of Economics and Statistics*, 74(5), 629–645.

Sweller, J., van Merriënboer, J. J. G., & Paas, F. G. W. C. (1998). Cognitive Architecture and Instructional Design. *Educational Psychology Review*, 10(3), 251–296.

Sweller, J. (2016). Working Memory, Long-term Memory, and Instructional Design. *Journal of Applied Research in Memory and Cognition*, 5(4), 360–367.

TEACHER HANDBOOK

MAKING THE MOST OF THE PROGRAMME

For more information visit ambition.org.uk/ecf

This document outlines the different programme components in detail, explains how they will help you to keep getting better, and offers advice for how to make the most of the experience.

Where you have further questions, talk to your Mentor or ECF Lead.

MAKING THE MOST OF YOUR STUDY	2
<hr/>	
MAKING THE MOST OF YOUR MENTORING AND OTHER TRAINING	3
> Mentoring	3
> Other training	3
<hr/>	
MANAGING YOUR OWN PROFESSIONAL DEVELOPMENT	4
> Be brave, be kind, be present	4
<hr/>	
COMMON CHALLENGES AND SOLUTIONS	5
> Time	5
> Context	5
> Disruption to study	5

MAKING THE MOST OF YOUR STUDY

This programme provides resources to help you work through Early Career Framework (ECF) content independently. This aspect of the programme is called 'study'. This includes:

- > 10 minutes to watch a video that zooms into an aspect of the ECF, unpacks some of the key ideas around it, and shows you what it looks like in practice.
- > 15 minutes to read and think about a summary of the evidence around the same area of the ECF.
- > 15 minutes to check your understanding using a quiz and reflect on your current practice.

Watching videos are a great way to see what good looks like in practice and consider how you might apply the ideas from the module to your own teaching. To have the best chance of impacting your teaching, when watching the videos, it is useful to have a clear focus in mind and watch them when you can concentrate fully. This might entail you finding a quiet space for productive study so you can watch and think carefully about what you are seeing and hearing.

Reading is an effective way to dig deeper into the evidence and think about what this might mean for your practice. We have attempted to pull together all the most relevant evidence into a concise 'evidence summary'. Again, finding a weekly slot to read and think where you'll be free from interruptions and distractions will be key to your success on the programme.

After reading, it is important to check your understanding and reflect on your learning. The quizzes provided are 'low stakes' - your performance on them won't impact you in any way (other than consolidating your learning). They are intended to help you check if you've understood key ideas from the reading and should help to clarify misconceptions that you might have. You can use them to strategically re-read, to reflect, or simply to consider questions you might want to pick up with your mentor.

In year 2, there is much more flexibility around when and what you should use your study time for. It is unlikely that you will have covered all the content from the modules in year 1, and even if you have, there will likely be areas that you need to revisit. As you move into year 2, you should be taking much greater responsibility for your professional development. You should construct a study plan with your mentor for each term that outlines what you are going to focus on and when, dipping back into the modules from year 1, and in particular the 'further reading' suggestions.

MAKING THE MOST OF YOUR MENTORING AND OTHER TRAINING

MENTORING

The ECF entitlement includes funded time for teachers to have regular mentoring. This should occur weekly in year 1 and fortnightly in year 2. Mentors play an important role in helping you get better. They have the knowledge, skills and time to support you personally and professionally to help develop your teaching practice. To make the most out of your mentoring, let's zoom into several important aspects:

- > Time.
- > Relationships.
- > Subject and pedagogical knowledge.
- > Instructional coaching and practice.

Teaching is a busy job and it is always a challenge to prioritise your training and development. However, prioritising time for your professional development is one of the most important things you can do to improve your wellbeing and effectiveness as a teacher. This includes both time for your mentor to observe your teaching and time for you and your mentor to meet regularly.

The teacher-mentor relationship needs to be one where support is offered with integrity, honesty and respect. You should expect your mentor to provide a mixture of challenge, support and the opportunity to reflect. To help establish an effective working relationship, this programme provides support for conducting 'contracting'. Contracting is a way of getting clarity on what both parties need to be successful and what you will do if things get difficult.

Your mentor is partly there to help you gain access to expert subject and pedagogical knowledge. In many instances, this can be done by the mentor themselves, when they explain or demonstrate these ideas in practice. However, there are also likely to be times that the mentor draws on other colleagues to support you with this.

As above, time needs to be set aside for instructional coaching. Instructional coaching is the evidence-based process that your mentor will use to help you develop. It includes:

- > Your mentor conducting a brief 15-minute observation of you teaching.
- > A 30-45-minute coaching feedback meeting. This includes agreeing a precise target for you to work on, getting a chance to practise as well as feedback to help refine that practice.

OTHER TRAINING COMPONENTS

The training aspects of the programme are intended to ensure that you have an opportunity to learn, reflect and practise important aspects of the ECF with teacher educators. Your training in your school might differ. On this programme's you will receive the following training:

- > A one-day conference at the beginning of each year.
- > A programme induction to set you up for the programme.
- > 90-minute clinics roughly every half-term.

Training will cover content that is fundamental to your success on the programme. It also covers content that doesn't lend itself well to weekly coaching (like working with parents and carers or managing your wellbeing). Training is a great time to:

- > Learn new content.
- > Work with experts to clarify questions and check your understanding.
- > Collaborate with other NQTs.

MANAGING YOUR OWN PROFESSIONAL DEVELOPMENT

SELF-REGULATION

In addition to improving your teaching, this programme aims to help you become better at self-regulating your learning. This means that you'll consider how you might monitor your own strengths and weaknesses and consider what you can do to keep getting better.

Throughout this programme (and indeed your career as a teacher), you will encounter various learning opportunities. To make the most of them you can:

- > Plan how to undertake the task and pre-empt any barriers you might face.
- > Monitor the strategy you've chosen to check progress.
- > Evaluate your overall success and reflect on what you would do differently next time.

Planning can help you clarify the problem. It can also help you to identify the relevant prior knowledge and strategies to use. Additionally, by taking the time to plan, you can also ensure you allocate the resources and effort you might need to be successful with the task.

Once you've got a plan and begin to do the task, you can gather information to help you both immediately and in the future. Monitoring your performance can help you be more successful right away. Considering "how am I getting on?" might help you to make the adjustments needed to be more effective immediately.

Once you've completed the task, it is important to evaluate how it has gone. This means considering both "how did it go?" and "how did I do?" There's a slight difference in these questions. With "how did it go?" you might reflect on the particular strategy you used or the approach to solving the problem. With "how did I do?" you might consider the lessons you might want to take forward to different tasks in the future.

BE BRAVE, BE KIND, BE PRESENT

Successful professional learning requires you to think hard. To help create the conditions for hard thinking, it is important to be brave, be kind and be present.

- > Being brave is about pushing beyond your comfort zone. Being brave means asking questions. Being brave isn't about knowing everything or sharing all the knowledge you'll have acquired from past experiences or your time in Initial Teacher Training. Not knowing or not being completely sure is why there's training offered in the first place! It might also mean saying 'I don't know' or seeking support from more knowledgeable colleagues.
- > Being kind means being kind to yourself and others. As mentioned, it isn't expected that you begin the programme being an expert on all the topics we will cover. You will have also been exposed to much of the content covered in school and on your Initial Teacher Training. Where you can't recall things, being kind to yourself is important. Errors are an important part of learning, as long as you learn from them. It is also important to be kind to other teachers. You'll work closely with them during training. Providing them a helping hand where they need one will help everyone in the long run.
- > Being present means ensuring you are paying attention to your development. Being an NQT is hard. There are many demands on your time and on your attention. That said, when attending training, it is important to try to focus on the content in the session. Professional development is the most important investment you can make to get better and therefore fulfil your other roles more effectively. Give yourself permission to be present -- it will save time later and make your teaching better.

COMMON CHALLENGES AND SOLUTIONS

Over the two years, you might face numerous challenges. From working with NQTs and mentors, here are the ones we have found to be most prevalent, along with solutions recommended by teachers like you.

TIME

Schools can be busy places. However, the ECF entitles you to development and the time it requires. Where you're finding scheduling difficult – whether it's finding study time, attending clinics, or meeting with your mentor – there are a variety of things you can do:

- > First, speak with your mentor and/or lead. They might be able to share some advice or ensure you're getting the time that you're entitled to.
- > Likewise, it might be worth checking back with this guidance. You might want to double check the recommended amount of time you should be spending on each component.
- > Lastly, use each other! You'll have colleagues, friends from ITT or fellow NQTs that are in a similar situation. Asking them about the strategies they use is always helpful.

CONTEXT

Many of the problems teachers face are similar. However, your particular context will be different to that of teachers in other schools, other phases and/or other departments, so the ideas you encounter will need to be adapted to fit your context. The materials on this programme are suitable for any teacher in any context; we have tested them with teachers, mentors and schools just like you.

Where you're finding it difficult to contextualise, we'd recommend using your mentor in the first instance. They should be an expert in your context, whether it be framing your learning in relation to your school's policy, the needs of your pupils or the distinct nature of your subject or phase.

DISRUPTION TO STUDY

Where possible, you should aim to keep your study and coaching on track. But we know disruptions happen. You might find yourself in a situation where you have missed a week here or there. This is not a problem. The programme is designed to flex to your needs. This includes taking into account things like school trips, exams, illness, progress reviews or any of the other multitude of instances that you'll face over the school year.

Where you're able to resume study and coaching, simply pick up where you left off. If you cannot be coached one week, you always have access to the self-study materials, so you can ensure you're continuing to improve.

This handbook was compiled for teachers on Ambition Institute's programme, **Early Career Teachers**.

Mentors and in-school leads have separate handbooks which should be used in conjunction with this one to make the most of the programme.

KEEP UP TO DATE

🌐 ambition.org.uk

🐦 @Ambition_Inst



Department
for Education

**KEEP
GETTING
BETTER**