UCET
Universities' Council for the Education of Teachers

Initial Teacher Training and Early Career Framework

The purpose of this document is to demonstrate how teacher educators can deliver the statutory ITTECF while emphasising competences, such as empathy, criticality and systemic thinking that are the hallmark of good practice in teaching for a sustainable future.

All additional or modified text is shown in this red typeface so it is distinct from the original text that remains in black.

Track changes version
October 2026

The Original Acknowledgements

The Initial Teacher Training and Early Career Framework (ITTECF) was developed in consultation with the following members of an External Steering Group and in collaboration with a wide range of teachers, school leaders, academics and experts:

Sir Ian Bauckham	Tenax Schools Trust, Ofqual
Richard Gill	Teaching School Hubs Council, Arthur Terry Learning Partnership
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Matt Hood	Oak National Academy
Reuben Moore	National Institute of Teaching
Chris Paterson	Education Endowment Foundation
Professor Sam Twiselton	Sheffield Hallam University

The content of the framework and its underpinning evidence has been independently assessed and endorsed by the Education Endowment Foundation (EEF).



Track Changes Acknowledgements

This version of the ITTECF is the result of months of voluntary effort by some very committed people, mostly members of the UCET (Universities' Council for the Education of Teachers) Working Group on Sustainability and Climate Change Education.

This includes inputs from, among others, Tremaine Baker, Phil Bamber, Beth Christie, Lynda Dunlop, Michelle Graffagnino, Judith Holby, Lee Jowett, Alison Kitson, Elena Lengthorn, Una Meehan, Kit Marie Rackley, Jo Anna Reed Johnson, Elizabeth Rushton, Adam Simcock, Paul Vare, Nicola Walshe, Sophie Wilson and Jenny Wynne.

We also wish to acknowledge the role of Teach the Future/SOS-UK who provided the inspiration for this work with their original track changes version of the national curriculum: https://www.teachthefuture.uk/tracked-changes-project

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Guidance for providers delivering the 'Initial Teacher Training and Early Career Framework'

The Initial Teacher Training and Early Career Framework (ITTECF) covers the training and induction periods at the start of a teacher's career.[1] It combines and replaces the previously separate Initial Teacher Training (ITT) Core Content Framework (CCF) and Early Career Framework (ECF) following a review. (Further detail on the review, and the important changes to the design and content of the frameworks and to delivery, has been published alongside the framework.)

The ITTECF sets out the entitlement of every trainee and early career teacher (ECT) to the core body of knowledge, skills and behaviours that define great teaching, and to the mentoring and support from expert colleagues they should receive throughout the three or more years at the start of their career. ECTs will purposefully revisit the elements of teaching introduced in ITT to deepen their knowledge and understanding. The ITTECF remains designed to equip all trainees and ECTs with a shared body of knowledge and skills, irrespective of subject or phase.

The ITTECF, as with its predecessors, is based on the best available evidence from this country and around the world, assured by the Education Endowment Foundation (EEF). The content of the framework has been updated based on a Call for Evidence in spring 2023, feedback from a broad range of experts across the education sector, and on what the department has learned from the first few years of CCF implementation and delivery of ECF-based induction. The changes include updates and enhancements regarding supporting pupils with special educational needs and disabilities (SEND), high quality oral language (sometimes known as oracy), early cognitive development, and social and emotional learning. The EEF have appraised all changes to ensure they reflect the evidence base.

The design of the framework

Providers of ITT and ECT training are expected to translate the framework into a carefully sequenced curriculum of training and professional development to support trainees and ECTs to build their expertise across all aspects of the framework.[2] To support providers to

[1] The Initial Teacher Training and Early Career induction period for most teachers is the first three or more years at the start of their career, dependent on their ITT route.

[2] For the purpose of this document, 'providers' refers to: those accredited to deliver ITT that leads to Qualified Teacher Status (QTS) from 2024, lead providers of training for early career teachers (ECTs) based on the ITTECF alongside their induction, and schools following school-led routes for delivering ITTECF-based training for ECTs.

do this, the section below on 'expertise development and progression' provides an illustrative model on how progression can work across the three or more years of ITT and ECT training.

The ITTECF sets out two types of content: '*Learn that…*' and '*Learn how to…*' statements. '*Learn that…*' statements are informed by the best available educational research. This evidence includes practice guides, rigorous individual studies, high quality reviews and syntheses, including meta-analyses. '*Learn how to…*' statements are drawn from the wider evidence base, including both academic research and guidance from expert practitioners. A full reference list is included at the end of this document. The framework statements should be read in the context of this preamble section, which explains how the statements were devised and how they should be incorporated in the design of curricula.

When designing their training programmes, ITT and ECT training providers must carefully consider how they will cover both the *'Learn that…'* and the *'Learn how to…'* statements fully and specifically. Providers need to be attentive to the nuance of each statement to ensure their training captures the framework in its entirety. Providers must have a fully developed, evidence-informed curriculum. It must encompass all aspects of the framework as appropriate to the stage of a trainee or ECT's development as a minimum entitlement, ensuring that they are prepared for the next stage in their professional development.

The ITTECF is a minimum entitlement to training and not a full curriculum. It remains for accredited ITT providers and ECT training lead providers to integrate additional analysis and critique of theory, research, and expert practice as they deem appropriate for their curriculum. The framework is designed to cover the content required by trainee teachers and ECTs irrespective of subject and phase. Therefore, it is for providers to ensure that they carefully craft coherently sequenced curricula that enable trainees and ECTs to apply evidence effectively in their phase, setting, and subject.

The ITTECF vision of great teaching embraces a professional commitment to learning for a sustainable and equitable world. While the climate and nature crises bring wide-ranging, urgent challenges to address, they also present opportunities to seize, as we seek to restore our environment[1]. Regardless of subject or phase taught, learning for sustainability requires trainees and ECTs to apply four core principles:

- **Recognise the interconnected and complex nature of the world including the connections across the disciplines that we teach**
- **Engender a sense of hope built on shared values**
- **Encourage connection *with* and care *for* the wider environment and nature in**

[1] See Curriculum and Assessment Review, p.34 'Preparing learners for a changing world'

particular

- **Support learners' ability to take action, independently and with others, to help shape their world.**

The technology available for facilitating great teaching and supporting pupils to succeed is constantly evolving, so the framework does not refer to specific technological innovations. Teachers, however, need to be conversant throughout their careers with technological developments that evidence suggests can improve pupil outcomes. **Similarly, teachers need to be aware of their potential role in providing emergency responses to extreme weather events as well as the effects these may have on pupils' safety, wellbeing and access to learning, alongside teachers' roles within safeguarding, adaptation and emergency-response arrangements.**

Providers of ITT and ECT training are encouraged to consider how their training materials can support trainees and ECTs in the judicious use of technology, informed by evidence, both in helping pupils to progress and in enabling and enhancing their own working practices.

Supporting pupils with Special Educational Needs and Disabilities (SEND)

The ITTECF has been designed in the knowledge that high quality teaching is the most important way to improve outcomes for pupils – particularly those with SEND. The framework is designed to enable trainees and ECTs to take their first steps towards becoming expert teachers who can transform the lives all pupils.

Our review of content for the ITTECF paid particular attention to the needs of trainees and ECTs when supporting pupils with SEND. There is now significantly more content related to adaptive teaching and supporting pupils with SEND, some of which has been adapted from the new NPQ for SENCOs to be relevant for trainees and ECTs. We have also made some edits to existing statements to improve inclusivity for SEND throughout the framework.

In special schools or where children with particularly complex needs are educated in mainstream settings, trainees and ECTs should be supported by their mentor and other expert colleagues to apply the statements within this framework in the most appropriate way. For example, the '*Learn how to*…' statement 'requiring high quality oral language' within section 3 may not have the same relevance to pupils with complex disabilities, including those who are non-verbal. In this instance, the mentor or other expert colleague should use their judgement to provide appropriate support for the trainee or ECT.

Recognising the importance of ensuring trainees and ECTs are confident in supporting pupils with SEND to succeed, we will be enhancing the requirements on ECT training lead

providers in creating SEND exemplification materials. **A particularly valuable resource for pupils with SEND is outdoor learning, as highlighted on the Government's support for sustainability website**[2].

Climate change, nature and sustainability education

ITT and ECT training providers should ensure that their training programmes prepare their trainees and ECTs to contribute to the DfE's *Sustainability and Climate Change Strategy*. Providers, their trainees and ECTs need to be mindful that this reflects the context in which all education is taking place.

Expertise development and progression across the ITT and early career induction period

Integrating the CCF and ECF into a single framework recognises that there is a core set of pedagogical knowledge and skills that is relevant for teachers throughout their careers. ITT and ECT training providers should be empowered to develop ambitious and flexible curricula based on the framework. To support providers to create programmes that deliberately revisit and build on knowledge as teachers progress through the early stages of their career, this section provides an illustrative model and guidance on how progression can work across the 3 or more years of ITT and ECT training.

During ITT and ECT training, trainees and ECTs should revisit *'Learn that…'* and *'Learn how to…'* statements across the framework in order to deepen their understanding of the evidence base and make links between theory and practice (for example, the link between the limited nature of working memory and the practice of breaking down material into smaller steps). ECTs should revisit approaches introduced in their ITT to develop greater fluency and confidence, and to develop their decision making in order to solve more complex challenges.

By the time a teacher has reached the end of their training and induction period they will possess strong mental models of great teaching informed by the content of the framework. They will have fluency in core practices and an ability to make good decisions to respond to the complexities of the classroom, adapting practice appropriately to meet pupils' needs across a range of contexts.

The ITTECF informs curriculum design and is not an assessment framework. End-point assessment of performance remains against the Teachers' Standards.

Guidance for ITT providers

ITT providers will ensure that all trainees are taught an ambitious curriculum that allows

[2] https://www.sustainabilitysupportforeducation.org.uk/indicator/outdoor-learning-special-educational-needs

them to develop expertise in all areas of the ITTECF, to enable them to gain qualified teacher status (QTS) and meet the Teachers' Standards. In combining the frameworks, ITT providers remain responsible for ensuring that trainees receive their minimum entitlement to training, including both '*Learn that…'* and '*Learn how to…'* columns, and are able to flexibly determine how best to deliver this.

In the earlier stages of teacher development, greater support and direction is required to help teachers develop their expertise. During ITT it is not always appropriate or possible to build in practice opportunities in relation to every '*Learn how to…'* statement. In the previous iteration of the CCF (2019) this was captured through defining an expectation of support from expert colleagues in the '*Learn how to…'* column in each section.

In using the ITTECF to develop their curricula, ITT providers should determine the appropriate level of support required in the application of '*Learn how to*' statements. As a minimum, it is expected that all trainees will be supported to develop their knowledge and practice through an appropriate selection of approaches as detailed in the previous CCF that must include:

- Observation of practice, discussing and analysing with expert colleagues[3], to deconstruct what makes a particular approach successful or unsuccessful.
- Receiving clear, consistent and effective mentoring, through structured feedback from expert colleagues on a particular approach – using the best available evidence – to provide a structured process for improving practice.
- Opportunities to practise using approaches defined in the '*Learn how to*…' column of the framework. Providers should ensure that trainees have multiple opportunities to rehearse and refine particular approaches throughout their training. This could include beginning outside the classroom before using approaches in classrooms.
- Receiving feedback on applying a particular approach or approaches. Working with expert colleagues to identify areas for and ways of improving practice, seeking challenge and critique from expert colleagues with trainees taking the lead in their own development.

Guidance for ECT training lead providers

At the start of induction, most ECTs will be beginning to both habituate frequently used approaches and successfully adapt to meet pupils' needs in relation to the majority of *'Learn how to…'* statements. However, trainees and ECTs may be at different stages of expertise development in relation to each area of the framework.

ECT training lead providers will need to consider the progress of trainees starting induction, where possible drawing on information relating to the trainee's ITT course and placement experiences. ECT training providers will use their own assessment of ECTs' development following ITT and throughout the induction period to deliver a responsive curriculum that supports ECTs to develop expertise in all areas of the ITTECF. ECTs will need to revisit approaches introduced in their training to develop greater fluency and

confidence, and to develop their decision making in order to solve more complex challenges.

Statutory Duties and assessment against the Teachers' Standards

The ITTECF is not – and must not be used as – a means of assessing trainees and ECTs. Instead, it is an entitlement to training and professional development. Trainees and ECTs will continue to be assessed against the Teachers' Standards at the end of ITT and induction respectively. Relating to Part Two of the Standards, providers should continue to ensure that trainees and ECTs have a clear understanding of the expectations regarding personal and professional conduct of a teacher and the ethics of the teaching profession. Ofsted and Appropriate Bodies will continue to ensure all trainees and ECTs receive their entitlement to training and professional development.

In addition to incorporating the content detailed in the ITTECF for ITT courses that lead to QTS, it remains a mandatory requirement for ITT providers to ensure that their curricula fulfil statutory duties as set out in the ITT Criteria, including ensuring that trainees are fully aware of their responsibilities in respect of safeguarding and equalities legislation. For more information please see the ITT Criteria: https://www.gov.uk/government/publications/initial-teacher-training-criteria/initial-teacher-training-itt-criteria-and-supporting-advice

Similarly, it remains a statutory requirement that qualified teachers who are employed in a relevant school in England must complete an induction period satisfactorily, subject to specific exemptions, and it is expected that ITTECF-based training for ECTs is embedded as a central aspect of this induction from 2025. Please see the statutory guidance on induction for early career teachers for more information: Induction for early career teachers (England) - GOV.UK (www.gov.uk)

[3] Expert colleagues are defined as: professional colleagues, including experienced and effective teachers, subject specialists, mentors, lecturers, and tutors.

Department for Education

Education Endowment Foundation

Initial Teacher Training and Early Career Framework

High Expectations (Standard 1 – Set high expectations)

Learn that…	Learn how to…
1. Teachers have the ability to affect and improve the wellbeing, motivation and behaviour of their pupils and can **actively engage pupils in developing their self-regulation.** 2. Teachers are key role models, who can influence the attitudes, values and behaviours of their pupils **by modelling ethical and sustainable behaviors, including respect for themselves, others and the natural world.** 3. Teacher expectations can affect pupil outcomes; setting goals that challenge and stretch pupils from their starting points **and enabling them to develop critical thinking and problem solving** is essential. 4. Setting clear expectations can help communicate shared values that improve classroom and school culture, **reflecting the rights of pupils to be involved in decisions regarding their learning experiences.** 5. A **collaborative** culture of mutual trust and respect supports effective relationships **and interconnectedness.** 6. High quality, **transformative** teaching that **builds pupils' resilience, ability to deal with and manage**	**Communicate a belief in the academic potential of all pupils, by:** a) Using intentional and consistent language that promotes **critical, systems and futures thinking,** challenge**,** and aspiration. b) Setting tasks that stretch pupils, but which are achievable, within a challenging **and meaningful** curriculum**, for example through engagement with real-world issues**. c) Creating **a safe,** positive environment where making mistakes, learning from them, **sharing feelings and ideas and engaging in reflective, self-aware learning** and **recognising** the need for effort and perseverance are part of the daily routine. d) Seeking opportunities to engage parents and carers in the education of their children (e.g. proactively highlighting successes) and consider**ing** how this engagement changes depending on the age and development stage of the pupil. **Demonstrate consistently high behavioural expectations, by:** e) Creating a culture of inclusion, respect and trust in the classroom that supports all pupils to **flourish,**

uncertainty, and navigate complexity has a long-term positive effect on pupils' life chances, particularly for pupils from disadvantaged backgrounds. 7. High quality teaching is underpinned by positive interactions **that support constructive and respectful relationships** between pupils, their teachers and their peers. 8. Pupils' experiences of school and their readiness to learn can be impacted by their home life and circumstances, particularly for EAL pupils, young carers, and those living in poverty.	**collaborate and care by modelling a consistently high level of respect for self, others and the natural world**. f) Teaching and rigorously maintaining clear**, ethical** behavioural expectations (e.g. for contributions, volume level and concentration). g) Applying rules, sanctions and rewards consistently, **and sensitively**, in line with school policy, including where individual pupils have an agreed tailored approach, escalating behaviour incidents as appropriate. h) Acknowledging and praising pupil**s' individual and collaborative** effort**,** emphasising progress being made.

How Pupils Learn (Standard 2 – Promote good progress)

Learn that…	Learn how to…
1. Learning involves a lasting change in pupils' capabilities, **attitudes, values and** understanding, **including an ability to think critically and solve problems.** 2. Prior knowledge **and experience** play an important role in how pupils learn**; relating learning to pupils' own lives and experiences can help pupils learn more complex ideas and apply their understanding to the world around them in ways that build pupil agency and promote effective learning as well as** committing key facts to their long-term memory. 3. **Learning is affected by learners' emotional responses, including the extent to which they are motivated to learn and can see the relevance of learning to their own lives.** 4. An important factor in learning is memory, which can be thought of as comprising two elements: working memory and long-term memory. 5. Working memory is where information that	**Avoid overloading working memory, by:** a) Taking into account pupils' prior knowledge **and experiences** when planning how much new information to introduce **and relating it as much as possible to pupils' own lives.** b) Breaking complex material into smaller steps (e.g. using partially completed examples to focus pupils on the specific steps). c) Reducing distractions that take attention away from what is being taught (e.g. keeping the complexity of a task to a minimum, so that attention is focused on the content). **Build on pupils' prior knowledge and experiences, by:** d) Identifying possible misconceptions and planning how to prevent these forming. e) Linking what pupils already know to what is being taught (e.g. explaining how new content builds on what is already known). f) Sequencing lessons so that pupils secure foundational knowledge before encountering more complex content. g) Encouraging pupils to share emerging understanding and points of confusion so that misconceptions can be addressed. h) **Connecting learning to the wider world, including pupils' lives and futures.** **Increase likelihood of material being understood, retained and applied, by:** i) Balancing exposition, repetition, practice and retrieval of critical

is being actively processed is held, but its capacity is limited and can be overloaded. 6. Long-term memory can be considered as a store of knowledge that changes as pupils learn by integrating new ideas with existing knowledge. 7. Pupils have different working memory capacities; some pupils with SEND may have more limited working memory capacity than their peers without SEND. 8. Where prior knowledge is weak, pupils are more likely to develop misconceptions, particularly if new ideas are introduced too quickly. 9. Regular purposeful practice and **application** of what has previously been taught can help consolidate material, help pupils remember what they have learned **and increase the perceived value of the learning, thereby increasing engagement and motivation.**	knowledge and skills. j) Planning regular review and practice of key ideas and concepts over time (e.g. through carefully planned use of structured talk activities). k) Designing practice, generation and retrieval tasks that provide just enough support so that pupils experience a high success rate when attempting challenging work. l) Increasing challenge with practice and retrieval as knowledge becomes more secure (e.g. by removing scaffolding, lengthening spacing or introducing interacting elements). m) **Incorporating real world examples in lessons, including those that connect directly with the lives of pupils.** n) **Ensuring that lessons are engaging and motivating.** o) **Providing opportunities for pupils to apply knowledge independently and critically**. p) **Creating learning environments, including outdoors, that are supportive and attend to the affective dimensions of learning**.

10. Requiring pupils to retrieve information from memory, **connecting this information to students' lives** and spacing practice so that pupils revisit ideas after a gap are also likely to strengthen recall. 11. Worked examples that take pupils through each step of a new process are also likely to support pupils to learn. 12. **Learning is a profoundly social activity which is enriched through dialogue and collaboration with others**.	

Subject and Curriculum (Standard 3 – Demonstrate good subject and curriculum knowledge)

Learn that…	Learn how to…
1. A school's curriculum enables it to set out its vision for the knowledge, skills and values that its pupils will learn, encompassing the national curriculum within a coherent wider vision for successful learning. 2. Secure subject knowledge helps teachers to motivate pupils and teach effectively. 3. Ensuring pupils master foundational concepts and knowledge before moving on is likely to build pupils' confidence and help them succeed. 4. Anticipating common misconceptions within particular subjects is also an important aspect of curricular knowledge; working closely with colleagues to develop an understanding of likely misconceptions is valuable. 5. Explicitly teaching pupils the knowledge and skills they need to succeed within particular subject areas is beneficial. 6. In order for pupils to think critically, they must have a secure understanding of knowledge within the subject area they	**Deliver a carefully sequenced and coherent curriculum, by:** a) **Using curriculum mapping to identify the** essential concepts, knowledge, skills and principles **within and across subjects, providing** opportunity for all pupils to learn, master **and apply** these critical components **in real-world contexts**. b) Ensuring pupils' thinking is focused on key ideas within the subject **and the major present and future challenges that learners must understand**. c) Working with experienced colleagues **in partnership and through collaboration** to accumulate and refine a collection of powerful analogies, illustrations, examples, explanations and demonstrations. d) Using resources**,** materials **and expert reports to strengthen the curriculum content** (e.g. textbooks or shared resources designed by experienced colleagues that carefully sequence content). e) Being aware of common misconceptions**, reviewing outdated concepts and weak wording to avoid such misconceptions** and discussing with experienced colleagues how to help pupils master important concepts. **Support pupils to build increasingly complex mental models, by:** f) Discussing and analysing with expert colleagues the rationale for curriculum choices, the process for arriving at current curriculum choices**,** how the school's curriculum materials inform lesson preparation **and reviewing where links to the crucial dimensions of nature, climate change and sustainability should be included.**

are being asked to think critically about. 7. In all subject areas, pupils learn new ideas by linking those ideas to existing knowledge **and experiences**, organising this knowledge into increasingly complex mental models (or "schemata"); carefully sequencing teaching to facilitate this process is important. 8. Pupils are likely to struggle to transfer what has been learnt in one discipline to a new or unfamiliar context. 9. To access the curriculum, early literacy provides fundamental knowledge; reading comprises two elements: word reading and language comprehension; systematic synthetic phonics is the most effective approach for teaching pupils to decode. 10. Every teacher can improve pupils' communication and literacy, including by explicitly teaching reading, writing and oral language skills specific to individual disciplines. 11. Pupils' positive dispositions and attitudes towards mathematics are associated with positive outcomes on learning. 12. Pupils' oral language skills can be supported by teaching new words and how to use and understand words within	g) Balancing exposition, repetition, practice of critical skills and knowledge. h) Revisiting the big ideas of the subject over time and teaching key concepts through a range of examples. i) Drawing explicit links between new content and the core concepts and principles in the subject as well **making connections across subjects and linking to real world contexts.** **Develop fluency, by:** j) Providing tasks that support pupils to learn key ideas securely **and making links to the real-world contexts** (e.g. quizzing pupils so they develop fluency with times tables). k) Using retrieval and spaced practice to build automatic recall and application of key knowledge. **Help pupils apply knowledge and skills to other contexts, by:** l) Ensuring pupils have relevant domain-specific knowledge, especially when being asked to think critically within a subject **and when asked to make links to cross-disciplinary dimensions such as sustainability and climate change.** m) Interleaving concrete and abstract examples, slowly withdrawing concrete examples and drawing attention to the underlying structure of problems. **Develop pupils' literacy, by:** n) Demonstrating a clear understanding of systematic synthetic phonics, and the necessary prerequisite knowledge, particularly if teaching early reading and spelling. o) Supporting younger pupils, especially those with reading difficulties, to become fluent readers by building automatic and accurate

sentences or longer texts. This can help to address speech and language difficulties, especially for children in their early school years.	decoding with various texts and repeated reading of texts with modelling and feedback.Teaching unfamiliar vocabulary explicitly and planning for pupils to be repeatedly exposed to high-utility and high-frequency vocabulary in what is taught. p) Modelling strategies that encourage active comprehension by asking questions, making predictions, and summarising when reading. q) Promoting reading for pleasure (e.g. by using a range of whole class reading approaches and regularly reading high quality texts to pupils). r) Teaching, modelling, and requiring high quality oral language, sometimes known as oracy, recognising that spoken language underpins the development of reading and writing (e.g. where appropriate, develop pupils' responses to questions into full sentences). s) Teaching different forms of writing by modelling planning, drafting and editing. t) Supporting younger pupils to become fluent writers through explicit teaching and practice of spelling and handwriting, with modelling and feedback, such as addressing both the process and product of letter formation when developing pupils' handwriting.

Classroom Practice (Standard 4 – Plan and teach well structured lessons)

Learn that…	Learn how to…
1. Effective teaching can transform pupils' knowledge, capabilities, **values** and beliefs about learning. 2. Effective teachers introduce new material in steps, explicitly linking new ideas to what has been previously studied and learned **while repairing past injustices and transforming the future.** 3. Modelling helps pupils understand new processes and ideas; good models **help pupils to connect to the world around them. Making** abstract ideas concrete and accessible **allows pupils to relate this to their own lived experiences.** 4. Guides, scaffolds and worked examples can help pupils apply new ideas, but should be gradually removed as pupil expertise increases. 5. Explicitly teaching pupils metacognitive strategies, **such as design thinking, problem solving and systems thinking that is** linked to subject knowledge, including how to plan, monitor and **critically**	**Plan effective lessons, by:** a) **Using a variety of approaches and methods which stimulate learning in a collaborative and collegiate way, recognising the values and beliefs behind the actions and behaviours of others.** b) Using modelling, explanations and scaffolds, acknowledging that novices need more structure early in a domain. c) Enabling critical thinking and problem solving by first teaching the necessary foundational content knowledge and **recognising and embracing difference, treating all equally and with respect.** d) Removing scaffolding only when pupils are achieving a high degree of success in applying previously taught material, **operating in an open way that engenders trust and empowers others.** e) Using evidence of prior learning to provide sufficient opportunity for pupils to consolidate and practise applying new knowledge and skills. f) Breaking tasks down into constituent components when first setting up independent practice (e.g. using tasks that scaffold pupils through meta-cognitive and procedural processes). **Make good use of expositions, by:** g) Starting expositions at the point of current pupil understanding **and connecting it to their lived experience and local contexts**. h) Combining a verbal explanation with a relevant graphical

evaluate, supports independence and academic success. 6. Questioning is an essential tool for teachers; questions can be used for many purposes, including to check pupils' prior knowledge, assess understanding and break down problems. 7. **Reflecting on one's own positionality and experiences when planning and sequencing lessons can help to engender empathy and agency in others as well as demonstrating how learning can be critical in a democratic society.** 8. High quality classroom talk (sometimes referred to as oracy), can support pupils to articulate key ideas, consolidate understanding and extend their vocabulary. 9. Practice is an integral part of effective teaching; ensuring pupils have repeated opportunities to practise, with appropriate guidance and support, increases success. 10. Paired and group activities can increase pupil success, but to work together effectively pupils need guidance, support and practice. 11. How pupils are grouped is also important; care should be taken to monitor the impact of groupings on pupil attainment, behaviour	representation of the same concept or process, where appropriate. i) Using concrete representation of abstract ideas (e.g. making use of analogies, metaphors, manipulatives for counting, examples and non-examples). j) **Using questioning strategies that acknowledge there are multiple answers and ways of thinking (e.g. Socratic questioning and philosophy for children (P4C) approaches).** **Model effectively, by:** k) Narrating thought processes when modelling to make explicit how experts think (e.g. asking questions aloud that pupils should consider when working independently and drawing pupils' attention to links with prior knowledge). l) Making the steps in a process memorable and ensuring pupils can recall them (e.g. naming them, developing mnemonics, or linking to memorable stories). m) Exposing potential pitfalls and explaining how to avoid them. **Stimulate pupil thinking and check for understanding, by:** n) Planning activities around what you want pupils to think hard about. o) Including a range of types of questions in class discussions to extend and challenge pupils (e.g. by modelling new vocabulary or asking pupils to justify answers). Elaborate on and query pupil contributions to support pupils' oral language skills, and knowledge development. p) Providing appropriate wait time between question and response where more developed responses are required. q) Considering the factors that will support effective collaborative or paired work (e.g. familiarity with routines, whether pupils have the necessary prior knowledge and how pupils are grouped).

and motivation. 12. Homework can improve pupil outcomes, particularly for older pupils, but it is likely that the quality of homework and its relevance to main class teaching is more important than the amount set.	r) Providing scaffolds for pupil talk to increase the focus and rigour of dialogue.

Adaptive Teaching (Standard 5 - Adapt teaching)

Learn that…	Learn how to…
1. Adapting teaching in a responsive way, including by providing targeted support to pupils who are struggling, is likely to increase pupil success. 2. Pupils are likely to learn at different rates and to require different levels and types of support from teachers to succeed. 3. Seeking to understand pupils' differences, including their different levels of prior knowledge and potential barriers to learning, is an essential part of teaching. 4. Adaptive teaching is less likely to be valuable if it causes the teacher to artificially create distinct tasks for different groups of pupils or to set lower expectations for particular pupils. 5. Flexibly grouping pupils within a class to provide more tailored support can support learning, but care should be taken to monitor its impact on attainment, behaviour, engagement and motivation, particularly for low attaining pupils. 6. There is a common misconception that pupils have distinct and identifiable learning	**Develop an understanding of different pupil needs, by:** a) Identifying pupils who need new content further broken down. b) Making use of formative assessment. c) Working closely with the Special Educational Needs Co-ordinator (SENCO) and other SEND specialists or expert colleagues. d) Working closely with the Designated Safeguarding Lead. e) Supporting pupils with a range of additional needs and using the SEND Code of Practice: 0 to 25 years, which provides guidance on effective school systems and approaches for identifying and supporting the special educational needs of pupils with SEND. f) Utilising existing opportunities to engage with parents and carers to better understand pupils' individual needs (e.g. meetings with parents). **Provide opportunity for all pupils to experience success, by:** g) Adapting lessons, whilst maintaining high expectations for all, so that all pupils have the opportunity to meet expectations. h) Balancing input of new content with the revisiting of prior learning so that pupils master important concepts. i) Making effective use of teaching assistants and other adults in the classroom. j) Making effective and judicious use of specialist technology to support pupils with SEND. k) **Use nature as the location, resource and context for developing wellbeing and learning to foster respect for all living things.**

styles. This is not supported by evidence and attempting to tailor lessons to learning styles is unlikely to be beneficial.

7. Pupils with SEND are likely to require additional or adapted support; working closely with colleagues, parents/carers, and pupils to understand barriers to learning and identify effective strategies is essential.
8. High quality teaching for all pupils, including those with SEND, is based on strategies which are often already practised by teachers, and which can be developed through training and support.
9. Technology, including educational software and assistive technology, can support teaching and learning for pupils with SEND.
10. **Outdoor learning, including direct experience of nature (and other learning within and beyond the school boundaries) supports all pupils' wellbeing and fosters nature connectedness especially for pupils with SEND.**
11. **Teaching also needs to adapt to the natural environment, including extreme weather, e.g. changing location of lessons as necessary, not using ovens on hot days, adapting expectations of**

Meet individual needs without creating unnecessary workload, by:

l) Making use of well-designed resources (e.g. textbooks, manipulatives).
m) Planning to connect new content with pupils' existing knowledge or providing additional pre-teaching if pupils lack critical knowledge.
n) Building in additional practice or removing unnecessary expositions.
o) Reframing questions to provide greater scaffolding or greater stretch.
p) Considering carefully whether intervening within lessons with individuals and small groups would be more efficient and effective than planning different lessons for different groups of pupils.

Group pupils effectively, by:

q) Applying high expectations to all groups, and ensuring all pupils have access to a rich curriculum.
r) Intentionally grouping in relation to a specific learning outcome, regularly reviewing those groupings, taking care to monitor their impact and avoiding the perception that groups are fixed.

uniform and taking rest during extreme heat. Such adaptations should be connected to a setting's established safeguarding, health and safety and business continuity arrangements so they do not rely on individual teacher improvisation.	

Assessment (Standard 6 – Make accurate and productive use of assessment)

Learn that…	Learn how to…
1. Effective assessment is critical to teaching because it provides teachers with information about pupils' understanding and needs. 2. **Using a** good **range of** assessment**s** helps teachers avoid being over-influenced by potentially misleading factors, such as how busy pupils appear. 3. Before using any assessment, teachers should be clear about the decision it will be used to support and be able to justify its use. 4. **Assessments include skills and the application of knowledge.** 5. To be of value, teachers use information from assessments to inform the decisions they make; in turn, pupils must be able to act on feedback for it to have an effect. 6. High quality feedback can be written or verbal; it is likely to be accurate and clear, encourage further effort, and provide specific guidance on how to improve. 7. Over time, feedback should support pupils to monitor and regulate their own learning,	**Avoid common assessment pitfalls, by:** a) Planning formative assessment tasks linked to lesson objectives and thinking ahead about what would indicate understanding (e.g. by using hinge questions to pinpoint knowledge gaps). b) Drawing conclusions about what pupils have learned, **and their ability to apply this learning,** by looking at patterns of performance over a number of assessments (e.g. appreciating that assessments draw inferences about learning **and attitudinal or skill development** from performance). c) Choosing, where possible, externally validated materials, used in controlled conditions when required to make summative assessments. d) Using available evidence to accurately identify what is required for individuals to meet their next steps and use this understanding to guide teaching adjustments for sub-group and individual pupils. **Check prior knowledge and understanding during lessons, by:** e) Using assessments to check for prior knowledge and pre-existing misconceptions. f) Structuring tasks and questions to enable the identification of knowledge gaps and misconceptions (e.g. by using common misconceptions within multiple-choice questions). g) Prompting pupils to elaborate when responding to questioning to check that a correct answer stems from secure understanding. h) Monitoring pupil work during lessons, including checking

empowering them to develop and exercise greater agency. 8. Working with colleagues to identify efficient approaches to assessment is important; assessment can become onerous and have a disproportionate impact on workload.	for misconceptions. **Provide high quality feedback, by:** i) Focusing on specific actions for pupils and providing time for pupils to respond to feedback. j) Appreciating that pupils' responses to feedback can vary depending on a range of social factors (e.g. the message the feedback contains or the age of the child). k) Scaffolding self-assessment by sharing model work with pupils, highlighting key details. l) Thinking carefully about how to ensure feedback is specific and helpful when using peer- or self-assessment. **Make feedback manageable and effective, by:** m) Recording data only when it is useful for improving pupil outcomes. n) Working with colleagues to identify efficient approaches to marking and alternative approaches to providing feedback (e.g. using whole class feedback or well supported peer- and self-assessment). o) Using verbal feedback during lessons in place of written feedback after lessons where possible. p) Understanding that written marking is only one form of feedback. q) Reducing the opportunity cost of marking (e.g. by using abbreviations and codes in written feedback). r) Prioritising the highlighting of errors related to misunderstandings, rather than careless mistakes when marking. s) **Highlighting opportunities for pupils to exercise agency and take action in their everyday lives.**

Managing Behaviour (Standard 7 – Manage behaviour effectively)

Learn that…	Learn how to…
1. Establishing and reinforcing routines, including through positive reinforcement, can help create an effective learning environment. 2. A predictable and secure environment benefits all pupils, including younger pupils, but is particularly valuable for pupils with special educational needs. 3. The ability to self-regulate one's emotions affects pupils' ability to learn, success in school and future lives. 4. Teachers can influence pupils' resilience and beliefs about their ability to succeed, by ensuring all pupils have the opportunity to experience meaningful success. 5. Building effective relationships is easier when pupils believe that their feelings will be considered and understood. 6. Pupils are motivated by intrinsic factors (related to their identity and values) and extrinsic factors (related to reward). 7. Pupils' investment in learning is also driven by their prior experiences and perceptions of success and failure.	**Develop a positive, predictable and safe environment for pupils, by:** a) Establishing a supportive and inclusive environment with a predictable system of reward and sanction in the classroom. b) Working alongside colleagues as part of a wider system of behaviour management (e.g. recognising responsibilities and understanding the right to assistance and training from senior colleagues particularly where pupils exhibit unacceptable behaviours). c) Giving manageable, specific and sequential instructions. d) Checking pupils' understanding of instructions before a task begins. e) Using consistent language and non-verbal signals for common classroom directions. f) Using early and least-intrusive interventions as an initial response to low level disruption. g) Responding quickly to any behaviour or bullying that threatens physical or emotional safety. **Establish effective routines and expectations, by:** h) Creating and explicitly teaching routines in line with the school ethos that maximise time for learning **and connect to societal needs across the curriculum** (e.g. setting and reinforcing expectations about key transition points). i) Practising school and classroom routines at the beginning of the school year. j) Reinforcing established school and classroom routines (e.g.

8. Teaching and modelling a range of social and emotional skills (e.g. how to recognise and understand feelings, manage emotions, and sustain positive relationships) can support pupils' social and emotional development. 9. Teaching typically expected behaviours will reduce the need to manage misbehaviour. 10. Pupils who need a tailored approach to support their behaviour do not necessarily have SEND and pupils with SEND will not necessarily need additional support with their behaviour. 11. A key influence on a pupil's behaviour in school is being the victim of bullying.	by articulating the link between time on task and success). k) Working with the SENCO, other SEND specialists or expert colleagues if a pupil needs more intensive support with their behaviour to understand how the approach may need to be adapted to their individual needs. **Build trusting relationships, by:** l) Liaising with parents, carers and colleagues to better understand pupils' individual circumstances and how they can be supported to meet high academic and behavioural expectations. m) Consistently applying the school's behaviour policy, including where individual pupils have an agreed tailored approach. **Motivate pupils, by:** n) Supporting pupils to master challenging content, which builds towards long-term goals, including **future roles and green careers**. o) Providing opportunities for pupils to articulate their long-term goals and helping them to see how these are related to their success in school **and their potential contribution to a better society e.g. through green careers.** p) Helping pupils to journey from needing extrinsic motivation to being motivated to work intrinsically**, by connecting their learning to meaningful real-world and societal needs.** **Develop pupils' self regulation by:** q) Helping pupils to think through scenarios before they occur and using cues to help them recall agreed upon behaviours. r) Providing new opportunities**, including making use of outdoor spaces,** to exercise self-regulation **through metacognitive approaches that build self-awareness** and**, particularly** for the

	youngest pupils, to practice impulse control.

Professional Behaviours (Standard 8 – Fulfil wider professional responsibilities)

Learn that…	Learn how to…

1. Effective professional development is likely to be sustained over time, building knowledge, **skills and values**, motivating staff, developing teaching techniques, and embedding practice. 2. Reflective practice, supported by feedback from and observation of experienced colleagues, professional debate and learning from educational research, is also likely to support improvement. 3. Teachers can make valuable contributions to the wider life of the school **and wider community** in a broad range of ways, including by supporting and developing effective professional relationships **and engaging with individuals and organisations locally to enhance learning and cooperation in the construction of new knowledge and ideas.** 4. Building effective relationships with parents, carers and families can improve pupils' motivation, behaviour and academic success **as can the construction of new knowledge and ideas in intercultural and intergenerational contexts**.	**Develop as a professional, by:** a) Engaging in professional development focused on developing an area of practice with clear intentions for impact on pupil outcomes, sustained over time with built-in opportunities for practice. b) Strengthening pedagogical and subject knowledge by participating in wider **multi-, inter- and trans-disciplinary** networks and as part of the lesson preparation process. c) Seeking challenge, feedback and critique from mentors and other colleagues in an open and trusting working environment. d) **Involving people from different disciplines and stakeholders from the wider community e.g. in tackling local sustainability-related issues.** e) Engaging with research evidence by accessing reliable sources, seeking support for how findings can inform practice, and monitoring the impact of applications. f) Reflecting on progress made, recognising strengths and weaknesses and identifying next steps for further improvement. **Build effective working relationships, by:** g) Contributing positively to the wider school culture and developing a feeling of shared responsibility for improving the lives of all pupils within **and beyond** the school. h) Seeking ways to support individual colleagues and working as part of a team. i) Communicating with parents, carers and working **intergenerationally in proactive ways,** making effective use of parents' evenings **and community events** to engage parents and carers in their children's schooling. j) Working closely with the SENCO and other professionals

5. Teaching assistants (TAs) can support pupils more effectively when they are prepared for lessons by teachers, and when TAs supplement rather than replace support from teachers. 6. SENCOs, pastoral leaders, careers advisors and leaders and other specialist colleagues also have valuable expertise and can ensure that appropriate support is in place for pupils. 7. Engaging in high quality professional development can help teachers improve. 8. Teacher attitudes towards inclusion and SEND are a key determinant in the school experience of pupils with SEND. 9. Research evidence can vary in its level of reliability, which is determined by how the research was conducted and other factors that might introduce bias, such as the level of independence. High quality research communicates methods and limitations transparently.	supporting pupils with additional needs, making explicit links between interventions delivered outside of lessons with classroom teaching. k) Drawing on guidance from expert colleagues, sharing the intended lesson outcomes with teaching assistants ahead of lessons. l) Ensuring that support provided by teaching assistants in lessons is additional to, rather than a replacement for, support from the teacher. m) Knowing who to contact with any safeguarding, or any pupil mental health concerns. n) **Contributing, where appropriate to their role, to whole-setting climate action planning and associated activity, working with sustainability leadership and other relevant colleagues.** **Manage workload and wellbeing, by:** o) Using and personalising systems and routines to support efficient time and task management. p) Understanding the right to support (e.g. to deal with misbehaviour, or support pupils with SEND). q) Collaborating with colleagues to share the load of planning and preparation and making use of shared resources (e.g. textbooks). r) Protecting time for rest and recovery and being aware of support available to support good mental wellbeing **including opportunities to spend time outdoors and in green spaces**.

References

The following reference lists are made up of the evidence related to the '*Learn that*…' statements in each section; it does not constitute a list of expected reading for trainee and early career teachers. Following sector feedback in the implementation of the earlier versions of the frameworks, certain references are marked with an asterisk to indicate that these are recommendations for further reading.

High Expectations (Standard 1– Set high expectations)

[Key reading recommendations are indicated with an asterisk.]

Aronson, J. (Ed.) (2002) Improving academic achievement: Impact of psychological factors on education. New York: Academic Press.

Bandura, A. (1986) Social foundations of thought and action: a social cognitive theory. Englewood Cliffs, NJ: Prentice-Hall.

Boyd, D., Lankford, H., Loeb, S., Rockoff, J., & Wyckoff, J. (2008). The narrowing gap in New York City teacher qualifications and its implications for student achievement in high-poverty schools (No. w14021). National Bureau of Economic Research. Available at: https://www.nber.org/papers/w14021.

Clay, D., Connors, C., Day, N., Gkiza, M., and Aldridge, J. (2016) The Lives of young carers in England: Qualitative report to DfE. Available at: Clay_TheLivesOfYoungCarersInEngland.pdf.

Campbell Collaboration (2018) School-based interventions for reducing disciplinary school exclusion: A Systematic Review. Available at: https://campbellcollaboration.org/library/reducing-school-exclusion-school-based-interventions.html.

Chapman, R. L., Buckley, L., & Sheehan, M. (2013) School-Based Programs for Increasing Connectedness and Reducing Risk Behavior: A Systematic Review, 25(1), 95–114. https://doi.org/10.1007/s10648-013-9216-4.

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. Available at: https://doi.org/10.1257/aer.104.9.2633.

Cullen, M. A., Lindsay, G., Hastings, R., Denne, L., & Stanford, C. (2020) Special Educational Needs in Mainstream Schools: Evidence Review. Available at: EEF_SEND_Evidence_Review.pdf (d2tic4wvo1iusb.cloudfront.net).

Dobbie, W., & Fryer Jr, R. G. (2011). Are high-quality schools enough to increase achievement among the poor? Evidence from the Harlem Children's Zone. American Economic Journal: Applied Economics, 3(3), 158-187. Available at: https://www.aeaweb.org/articles?id=10.1257/app.3.3.158.

*Education Endowment Foundation (2021) Education Endowment Foundation Teaching and Learning Toolkit: Available at: https://educationendowmentfoundation.org.uk/education-evidence/teaching-learning-toolkit.

Hall, G. (2019). The experiences of secondary school students with English as an additional language: Perceptions, priorities and pedagogy. Available at:

Hall_TheExperiencesofsecondaryschoolstudentswithEnglishasanadditionallanguage.pdf

Hanushek, E. (1992) The Trade-off between Child Quantity and Quality. Journal of Political Economy, 100(4), 859–887. Available at: https://doi.org/10.1086/261808.

*Institute of Education Sciences (2008) Reducing Behavior Problems in the Elementary School Classroom. Available at: https://ies.ed.gov/ncee/wwc/PracticeGuide/4.

Johnson, S., Buckingham, M., Morris, S., Suzuki, S., Weiner, M., Hershberg, R., B. Weiner, Hershberg, R., Fremont, E., Batanova, M., Aymong, C., Hunter, C., Bowers, E., Lerner, J., & 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. Available at: https://doi.org/10.1080/15427609.2016.1164552.

Jussim, L. & Harber, K., (2005) Teacher Expectations and Self-Fulfilling Prophecies: Knowns and Unknowns, Resolved and Unresolved Controversies, Personality and Social Psychology Review 2005, Vol. 9, No. 2, 131–1557. Available at: https://doi.org/10.1207/s15327957pspr0902_3.

Lazowski, R. A., & Hulleman, C. S. (2016) Motivation Interventions in Education: A Meta-Analytic Review. Review of Educational Research, 86(2), 602–640. Available at: https://doi.org/10.3102/0034654315617832.

Muijs, D., Harris, A., Chapman, C., Stoll, L., & Russ, J. (2004). Improving schools in socioeconomically disadvantaged areas–A review of research evidence. School effectiveness and school improvement, 15(2), 149-175. Available at: https://doi.org/10.1076/sesi.15.2.149.30433.

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. Available at: https://doi.org/10.1007/s11218-018-9439-9.

Okonofua, J. A., Parker Goyer, J., Lindsay, C. A., Haugabrook, J., & Walton, G. M. (2022) A scalable empathic-mindset intervention reduces group disparities in school suspensions, Science Advances, 8(12), 1–11. Available at: https://doi.org/10.1126/sciadv.abj0691.

*PISA. (2015) PISA in Focus: Do teacher-student relations affect students' well-being at school? Available at: PISA_DoTeacher-StudentRelationsAffectStudents'Wellbeing.pdf.

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. Available at: Rathmann_PerceivedClassClimateAndSchool-agedChildren'sLifeSatisfaction.pdf.

Roorda, D. L., Jak, S., Zee, M., Oort, F. J., & Koomen., H. M. Y. (2017) Affective Teacher–Student Relationships and Students' Engagement and Achievement: A Meta Analytic Update and Test of the Mediating Role of Engagement. https://doi.org/10.3102/0034654311421793.

Rubie-Davies, C. M., Weinstein, R. S., Huang, F. L., Gregory, A., Cowan, P. A., & Cowan, C. P. (2014) Successive teacher expectation effects across the early school years. Journal of Applied Developmental Psychology, 35(3), 181–191. Available at: https://doi.org/10.1016/j.appdev.2014.03.006.

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. Available at: Slater_DoTeachersMatter?.pdf.

Zins, J. E., Bloodworth, M.R., Weissberg, R.P., & Walberg, H.J. (2007) The Scientific Base Linking Social and Emotional Learning to School Success. Journal of Educational and Psychological Consultation, 17(2–3), 191–210. Available at: https://doi.org/10.1080/10474410701413145.

How Pupils Learn (Standard 2 – Promote good progress)

[Key reading recommendations are indicated with an asterisk.]

Adesope, O. O., Trevisan, D. A., & Sundararajan, N. (2017) Rethinking the Use of Tests: A Meta-Analysis of Practice Testing. Review of Educational Research, 87(3), 659–701. Available at: https://doi.org/10.3102/0034654316689306.

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. https://doi.org/10.1080/09658211.2016.1220579.

Agarwal, P. K., Nunes, L. D., & Blunt, J. R. (2021) Retrieval practice consistently benefits student learning: A systematic review of applied research in schools and classrooms. Educational Psychology Review, 33(4), 1409-1453. Available at: https://doi.org/10.1007/s10648-021-09595-9.

Baddeley, A. (2003) Working memory: looking back and looking forward. Nature reviews neuroscience, 4(10), 829-839. Available at: https://doi.org/10.1038/nrn1201.

*Black, P., & Wiliam, D. (2009) Developing the theory of formative assessment. Educational Assessment, Evaluation and Accountability, 21(1), 5-31. Available at: https://doi.org/10.1007/s11092-008-9068-5.

Chen, O., Paas, F., & Sweller, J. (2021) Spacing and interleaving effects require distinct theoretical bases: A systematic review testing the cognitive load and discriminative-contrast hypotheses. Educational Psychology Review, 33, 1499-1522. Available at: https://doi.org/10.1007/s10648-021-09613-w.

Chi, M. T. (2009). Three types of conceptual change: Belief revision, mental model transformation, and categorical shift. In the International handbook of research on conceptual change (pp. 89-110). Routledge. Available at: Chi_ThreeTypesOfConceptualChange.pdf .

Churches, R., Dommett, E. J., Devonshire, I. M., Hall, R., Higgins, S., & Korin, A. (2020) Translating laboratory evidence into classroom practice with teacher-led randomized controlled trials—A perspective and meta-analysis. Mind, Brain, and Education, 14(3), 292-302. Available at: https://doi.org/10.1111/mbe.12243.

Cowan, N. (2008) What are the differences between long-term, short-term, and working memory? Progress in brain research, 169, 323-338. Available at: https://doi.org/10.1016/S0079-6123(07)00020-9.

*Deans for Impact (2015) The Science of Learning. Available at: https://deansforimpact.org/resources/the-science-of-learning/.

Donoghue, G. M., & Hattie, J. A. (2021) A meta-analysis of ten learning techniques. Frontiers in Education, 6, 1-9. Available at: https://doi.org/10.3389/feduc.2021.581216.

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. Available at: https://doi.org/10.1177/1529100612453266.

*Education Endowment Foundation (2021) Cognitive science approaches in the classroom: A Review of the evidence (summary). Available at: EEF_CognitiveScienceApproachesInTheClassroomSummary.pdf.

*Education Endowment Foundation (2018) Improving Secondary Science Guidance Report. Available at: EEF_ImprovingSecondaryScienceGuidanceReport.pdf.

Gathercole, S., Lamont, E., & Alloway, T. (2006) Working memory in the classroom. Working memory and education, 219-240. Available at: https://doi.org/10.1016/B978-012554465-8/50010-7.

Hattie, J. (2012) Visible Learning for Teachers. Oxford: Routledge.

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. Available at: https://doi.org/10.1007/s11412-018-9277-y.

Latimier, A., Peyre, H., & Ramus, F. (2021) A meta-analytic review of the benefit of spacing out retrieval practice episodes on retention. Educational Psychology Review, 33, 959-987. Available at: https://doi.org/10.1007/s10648-020-09572-8.

Pachler, 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. Available at: Pachler_OrganisingInstructionAndStudyToImproveStudentLearning.pdf.

Pan, S. C., & Rickard, T. C. (2018) Transfer of test-enhanced learning: Meta-analytic review and synthesis. Psychological Bulletin, 144(7), 710–756. Available at: https://doi.org/10.1037/bul0000151.

Perry, T., Lea, R., Jørgensen, C. R., Cordingley, P., Shapiro, K., Youdell, D., ... & Pomareda, C. (2021) Cognitive science in the classroom: evidence and practice review. London: Education Endowment Foundation (EEF). Available at: Perry_CognitvieScienceInTheClassroomEvidenceAndPracticeReview.pdf.

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. https://doi.org/10.1016/j.tics.2010.09.003.

*Rosenshine, B. (2012) Principles of Instruction: Research-based strategies that all teachers should know. American Educator, 12–20. Available at: Rosenshine_PrinciplesOfInstruction.pdf.

Simonsmeier, B. A., Flaig, M., Deiglmayr, A., Schalk, L., & Schneider, M. (2022) Domain-specific prior knowledge and learning: A meta-analysis. Educational Psychologist, 57(1), 31-54. Available at: https://doi.org/10.1080/00461520.2021.1939700.

Sweller, J. (2016) Working Memory, Long-term Memory, and Instructional Design. Journal of Applied Research in Memory and Cognition, 5(4), 360–367. Available at: http://doi.org/10.1016/j.jarmac.2015.12.002.

Von Bastian, C. C., and Oberauer, K. (2014) Effects and Mechanisms of Working Memory Training: A Review, Psychological Research, 78 (6), pp. 803–820. Available at: https://doi.org/10.1007/s00426-013-0524-6.

*Willingham, D. T. (2009) Why don't students like school? San Francisco, CA: JosseyBass. Available at: Willingham_WhyDontStudentsLikeSchool.pdf.

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. Available at: Wittwer_HowEffectiveAreInstructionalExplanationsInExample-BasedLearning.pdf.

Yang, C., Luo, L., Vadillo, M. A., Yu, R., & Shanks, D. R. (2021). Testing (quizzing) boosts classroom learning: A systematic and meta-analytic review. Psychological Bulletin, 147(4), 399-435. Available at: https://doi.org/10.1037/bul0000309.

Subject and Curriculum (Standard 3 – Demonstrate good subject and curriculum knowledge)

[Key reading recommendations are indicated with an asterisk.]

Abrami, P. C., Bernard, R. M., Borokhovski, E., Wade, A., Surkes, M. A., Tamim, R., & Zhang, D. (2008) Instructional interventions affecting critical thinking skills and dispositions: A stage 1 meta-analysis. Review of educational research, 78(4), 1102-1134. Available at: https://doi.org/10.3102/0034654308326084.

Abrami, P. C., Bernard, R. M., Borokhovski, E., Waddington, D. I., Wade, C. A., & Persson, T. (2015) Strategies for teaching students to think critically: A meta-analysis. Review of educational research, 85(2), 275-314. Available at: https://doi.org/10.3102/0034654314551063.

Alfieri, L., Nokes-Malach, T. J., & Schunn, C. D. (2013) Learning through case comparisons: A meta-analytic review. Educational Psychologist, 48(2), 87-113. Available at: https://doi.org/10.1080/00461520.2013.775712.

Ball, D. L., Thames, M. H., & Phelps, G. (2008) Content knowledge for teachers: What makes it special? Journal of Teacher Education, 2008 59: 389 Available at: https://doi.org/10.1177/0022487108324554.

Barroso, C., Ganley, C. M., McGraw, A. L., Geer, E. A., Hart, S. A., & Daucourt, M. C. (2021) A meta-analysis of the relation between math anxiety and math achievement. Psychological Bulletin, 147(2), 134–168. Available at: https://doi.org/10.1037/bul0000307.

Biesta, G. (2009) Good education in an age of measurement: on the need to reconnect with the question of purpose in education. Educational Assessment, Evaluation and Accountability, 21(1), 33-46. Available at: https://doi.org/10.1007/s11092-008-9064-9.

Carney, M., & Indrisano, R. (2013) Disciplinary literacy and pedagogical content knowledge. Journal of Education, 193(3), 39-49. Available at: https://doi.org/10.1177/002205741319300306.

Chen, O., Paas, F., & Sweller, J. (2021) Spacing and interleaving effects require distinct theoretical bases: A systematic review testing the cognitive load and discriminative-contrast hypotheses. Educational Psychology Review, 33, 1499-1522. Available at: https://doi.org/10.1007/s10648-021-09613-w.

*Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014) What makes great teaching. Review of the underpinning research. Durham University: UK. Available at: Coe_WhatMakesGreatTeaching.pdf.

Corrin, W., Lindsay, J. J., Somers, M-A., Myers, N. E., Myers, C. V., Condon, C. A., & Smith, J. K. (2012) Evaluation of the Content Literacy Continuum: Report on Program Impacts, Program Fidelity, and Contrast. (NCEE2013-4001). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Available at: http://dx.doi.org/10.2139/ssrn.2198586.

Cowan, N. (2008) What are the differences between long-term, short-term, and working memory? Progress in brain research, 169, 323-338. Available at: https://doi.org/10.1016/S0079-6123(07)00020-9.

Deans for Impact (2015) The Science of Learning [Online], Available at: https://deansforimpact.org/resources/the-science-of-learning/.

Dobinson, K. & Dockrell, J. (2021) Universal strategies for the improvement of expressive language skills in the primary classroom: A systematic review. First Language, 41(5), 527-554. Available at: https://doi.org/10.1177/0142723721989471.

Education Endowment Foundation (2018) Improving Literacy in Secondary Schools Guidance Report.. Available at: EEF_ImprovingLiteracyInSecondarySchools.pdf.

Education Endowment Foundation (2018) Improving Secondary Science Guidance Report. Available at: EEF_ImprovingSecondaryScienceGuidanceReport.pdf.

Education Endowment Foundation (2018) Preparing for Literacy Guidance Report. Available at: EEF_PreparingForLiteracy.pdf.

*Education Endowment Foundation (2021) Education Endowment Foundation Teaching and Learning Toolkit. Available at: https://educationendowmentfoundation.org.uk/education-evidence/teaching-learning-toolkit.

Education Endowment Foundation (2021) Improving Literacy in Key Stage 2 Guidance Report. Available at: EEF_ImprovingLiteracyInKeyStage2.pdf.

Education Endowment Foundation (2021) Improving Mathematics in Key Stages 2 and 3 Guidance Report. Available at: EEF_ImprovingMathematicsInKeyStages3And4.pdf.

Education Endowment Foundation (2022) Early Years Toolkit. Available at: https://educationendowmentfoundation.org.uk/education-evidence/early-years-toolkit.

Education Endowment Foundation (2023) Early Years Evidence Store. Available at: https://educationendowmentfoundation.org.uk/support-for-schools/evidence-for-the-early-years/early-years-evidence-store.

Guzzetti, B. J. (2000) Learning counter-intuitive science concepts: What have we learned from over a decade of research? Reading & Writing Quarterly: Overcoming Learning Difficulties, 16, 89 –98. Available at: http://dx.doi.org/10.1080/105735600277971.

Heard, J., Scoular, C., Duckworth, D., Ramalingam, D., & Teo, I. (2020) Critical thinking: Skill development framework. Available at: https://research.acer.edu.au/ar_misc/41/.

Hill, H. C., & Chin, M. (2018) Connections between teachers' knowledge of students, instruction, and achievement outcomes. American Educational Research Journal, 55(5), 1076-1112. Available at: Hill_ConnectionsBetwenTeachers'KnowledgeOfStudentsInstructionAndAchievementOutcomes.pdf.

Hulme, C., Snowling, M. J., West, G., Lervag, A., & Melby-Lervag, M. (2020) Children's Language Skills Can Be Improved: Lessons From Psychological Science for

Educational Policy. Current Directions in Psychological Science, 29(4), 372-377. Available at: https://doi.org/10.1177/0963721420923684.

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. Available at: https://doi.org/10.1016/j.econedurev.2015.11.003.

Jitendra, A. K., Dupuis, D. N., Rodriguez, M. C., Zaslofsky, A. F., Slater, S., Cozine-Corroy, K., & Church, C. (2013) A randomized controlled trial of the impact of schema-based instruction on mathematical outcomes for third-grade students with mathematics difficulties. The Elementary School Journal, 114(2), 252-276. Available at: https://doi.org/10.1086/673199.

Kalyuga, S. (2010) Schema acquisition and sources of cognitive load. In J. L. Plass, R. Moreno, & R. Brünken (Eds.), Cognitive Load Theory (pp. 48–64). Cambridge University Press. Available at: https://doi.org/10.1017/CBO9780511844744.005.

Lai, E. R. (2011) Critical thinking: A literature review. Pearson's Research Reports, 6(1), 40-41. Available at: Lai_CriticalThinkingALiteratureReview.pdf.

Ma, X., & Kishor, N. (1997) Assessing the Relationship between Attitude toward Mathematics and Achievement in Mathematics: A Meta-Analysis. Journal for Research in Mathematics Education, 28(1), 26–47. Available at: https://doi.org/10.2307/749662.

Machin, S., McNally, S., & Viarengo, M. (2018) Changing how literacy is taught: Evidence on synthetic phonics. American Economic Journal: Economic Policy, 10(2), 217–241. Available at: https://doi.org/10.1257/pol.20160514.

Merchie, E., & Van Keer, H. (2016) Mind mapping as a meta-learning strategy: Stimulating pre-adolescents’ text-learning strategies and performance?. Contemporary Educational Psychology, 46, 128-147. Available at: https://doi.org/10.1016/j.cedpsych.2016.05.005.

Perry, T., Lea, R., Jørgensen, C. R., Cordingley, P., Shapiro, K., Youdell, D., … & Pomareda, C. (2021) Cognitive science in the classroom: evidence and practice review. London: Education Endowment Foundation (EEF). Available at: Perry_CognitiveScienceInTheClassroomEvidenceAndPracticeReview.pdf.

Rasinski, T. V. (2004). Assessing reading fluency. Pacific Resources for Education and Learning (PREL). Available at: Rasinski_AssessingReadingFluency.pdf.

*Rosenshine, B. (2012) Principles of Instruction: Research-based strategies that all teachers should know. American Educator, 12–20. Available at: Rosenshine_PrinciplesOfInstruction.pdf.

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. Available at: https://doi.org/10.1016/j.tate.2018.03.010.

Shanahan, T. (2005) The National Reading Panel Report: Practical Advice for Teachers. Available at: Shanahan_TheNationalReadingPanelReport.pdf.

Simonsmeier, B. A., Flaig, M., Deiglmayr, A., Schalk, L., & Schneider, M. (2022). Domain-specific prior knowledge and learning: A meta-analysis. Educational Psychologist, 57(1), 31-54. Available at: https://doi.org/10.1080/00461520.2021.1939700.

Sweller, J., van Merrienboer, J. J. G., & Paas, F. G. W. C. (1998) Cognitive Architecture and Instructional Design. Educational Psychology Review, 10(3), 251–296. Available at: http://dx.doi.org/10.1023/a:1022193728205.

West, G., Lervag, A., Snowling, M. J., Buchanan-Worster, E., Duta, M., & Hulme, C. (2022) Early language intervention improves behavioral adjustment in school: Evidence from a cluster randomized trial. Journal of School Psychology, 92, 334-345. Available at: https://doi.org/10.1016/j.jsp.2022.04.006.

What Works Clearinghouse, Institute of Education Sciences, U.S. Department of Education. (2021). Literacy Design Collaborative. Available at: https://ies.ed.gov/ncee/WWC/Docs/InterventionReports/wwc_EESL_ldc_IR_mar2021.pd f.

Willingham, D. T. (2002) Ask the Cognitive Scientist. Inflexible Knowledge: The First Step to Expertise. American Educator, 26(4), 31-33. Available at: https://www.aft.org/periodical/american-educator/winter-2002/ask-cognitive-scientist.

Wright, T. S., & Gotwals, A. W. (2017). Supporting kindergartners' science talk in the context of an integrated science and disciplinary literacy curriculum. The Elementary School Journal, 117(3), 513-537. Available at: https://doi.org/10.1086/690273.

Classroom Practice (Standard 4 – Plan and teach well structured lessons)

[Key reading recommendations are indicated with an asterisk.]

Alexander, R. (2017) Towards Dialogic Teaching: rethinking classroom talk. York: Dialogos.

* Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014) What makes great teaching. Review of the underpinning research. Durham University: UK. Available at: Coe_WhatMakesGreatTeaching.pdf.

Donker, A. S., de Boer, H., Kostons, D., Dignath van Ewijk, C. C., & Van der Werf, M. P. C. (2014) Effectiveness of learning strategy instruction on academic performance: A meta-analysis. Educational Research Review, 11, 1–26. Available at: https://doi.org/10.1016/j.edurev.2013.11.002.

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. Available at: https://doi.org/10.1177/1529100612453266.

Education Endowment Foundation (2016) Improving Literacy in Key Stage One Guidance Report. Available at: EEF_ImprovingLiteracyInKeyStage1.pdf.

Education Endowment Foundation (2021) Improving Mathematics in Key Stages 2 and 3 Guidance Report. Available at: EEF_ImprovingMathematicsInKeyStages3And4.pdf.

Education Endowment Foundation (2017) Metacognition and Self-regulated Learning Guidance Report. Available at: EEF_MetacognitionAndSelf-RegulatedLearning.pdf.

Education Endowment Foundation (2018) Improving Secondary Science Guidance Report. Available at: EEF_ImprovingSecondaryScienceGuidanceReport.pdf.

Education Endowment Foundation (2021) Education Endowment Foundation Teaching and Learning Toolkit: Available at: https://educationendowmentfoundation.org.uk/education-evidence/teaching-learning-toolkit.

Elleman, A. M., Lindo, E. J., Morphy, P., & Compton, D. L. (2009) The Impact of Vocabulary Instruction on Passage-Level Comprehension of School-Age Children:

Meta-Analysis. Journal of Research on Educational Effectiveness, 2(1), 1–44. Available at: https://doi.org/10.1080/19345740802539200.

Hodgen, J., Foster, C., Marks, R. & Brown, M. (2018) Improving Mathematics in Key Stages Two and Three: Evidence Review, 149-157. Available at: Hodgen_ImprovingMathematicsInKeyStages3And4EvidenceReview.pdf,

Institute of Education Sciences. (2009) Assisting Students Struggling with Mathematics: Response to Intervention for Elementary and Middle Schools. Available at: IES_AssistingStudentsStrugglingWithMathematics.pdf.

Jay, T., Willis, B., Thomas, P., Taylor, R., Moore, N., Burnett, C., Merchant, G., Stevens, A. (2017) Dialogic Teaching: Evaluation Report. Available at: https://educationendowmentfoundation.org.uk/projects-and-evaluation/projects/dialogic-teaching.

Kalyuga, S. (2007) Expertise reversal effect and its implications for learner-tailored instruction. Educational Psychology Review, 19(4), 509-539. Available at: https://doi.org/10.1007/s10648-007-9054-3.

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. Available at: https://doi.org/10.1007/s11412-018-9277-y.

Leung, K. C. (2015) Preliminary Empirical Model of Crucial Determinants of Best Practice for Peer Tutoring on Academic Achievement Preliminary Empirical Model of Crucial Determinants of Best Practice for Peer Tutoring on Academic Achievement. Journal of Educational Psychology, 107(2), 558–579. Available at: https://doi.org/10.1037/a0037698.

*Rosenshine, B. (2012) Principles of Instruction: Research-based strategies that all teachers should know. American Educator, 12–20. Available at: Rosenshine_PrinciplesOfInstruction.pdf.

Sweller, J. (2016) Working Memory, Long-term Memory, and Instructional Design. Journal of Applied Research in Memory and Cognition, 5(4), 360–367. Available at: http://doi.org/10.1016/j.jarmac.2015.12.002.

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, 34(4), 425-444. Available at: https://doi.org/10.1080/02671522.2018.1452962.

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. Available at: https://doi.org/10.1007/s11251-015-9351-z.

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. Available at: https://doi.org/10.1007/s10648-010-9136-5.

Zimmerman, B. J. (2002) Becoming a Self-Regulated Learner: An Overview, Theory Into Practice. Theory Into Practice, 41(2), 64–70. https://doi.org/10.1207/s15430421tip4102_2.

Adaptive Teaching (Standard 5 – Adapt teaching)

[Key reading recommendations are indicated with an asterisk.]

Belland, B. R., Walker, A. E., & Kim, N. J. (2017) A Bayesian Network Meta-Analysis to Synthesize the Influence of Contexts of Scaffolding Use on Cognitive Outcomes in STEM Education. Review of Educational Research, 87(6), 1042- 1081. Available at: https://doi.org/10.3102/0034654317723009.

Cullen, M. A., Lindsay, G., Hastings, R., Denne, L., & Stanford, C. (2020) Special Educational Needs in Mainstream Schools: Evidence Review. Available at: Cullen_SENDEvidenceReview.pdf.

Davis, P., Florian, L., Ainscow, M., Dyson, A., Farrell, P., Hick, P., Rouse, M. (2004) Teaching Strategies and Approaches for Pupils with Special Educational Needs: A Scoping Study. Available at: Davis_TeachingStrategiesAndApproachesForPupilsWithSEND.pdf.

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(February), 31–54. Available at: https://doi.org/10.1016/j.edurev.2018.02.002.

Education Endowment Foundation (2020) Special Educational Needs in Mainstream School Guidance Report. Available at: EEF_SENDInMainstreamSchool.pdf.

*Education Endowment Foundation (2021) Education Endowment Foundation Teaching and Learning Toolkit: Available at: https://educationendowmentfoundation.org.uk/education-evidence/teaching-learning-toolkit.

Gallagher, M. A., Parsons, S. A., & Vaughn, M. (2022). Adaptive teaching in mathematics: A review of the literature. Educational Review, 74(2), 298-320. Available at: https://doi.org/10.1080/00131911.2020.1722065.

Hattie, J. (2009) Visible learning: a synthesis of over 800 meta-analyses relating to achievement. London: Routledge.

Kriegbaum, K., Becker, N., & Spinath, B. (2018) The Relative Importance of Intelligence and Motivation as Predictors of School Achievement: A meta-analysis. Educational Research Review. Available at: https://doi.org/10.1016/j.edurev.2018.10.001.

McLeskey et al. (2017) High-leverage practices in special education. Arlington, VA: Council for Exceptional Children and CEEDAR Center. Available at: McLeskey_High-LeveragePracticesInSpecialEducation.pdf.

OECD (2015) Pisa 2015 Result: Policies and Practices for Successful Schools. Available at: https://doi.org/10.1787/9789264267510-en.

Pashler, H., McDaniel, M., Rohrer, D., & Bjork, R. (2008) Learning Styles: Concepts and Evidence. Psychological Science in the Public Interest, 9 (3). Available at: https://doi.org/10.1111/j.1539-6053.2009.01038.x.

Sisk, V. F., Burgoyne, A. P., Sun, J., Butler, J. L., & Macnamara, B. N. (2018) To What Extent and Under Which Circumstances Are Growth Mind-Sets Important to Academic Achievement? Two Meta-Analyses. Psychological Science, 29(4), 549–571. Available at: https://doi.org/10.1177/0956797617739704.

Speckesser, S., Runge, J., Foliano, F., Bursnall, M., Hudson-Sharp, N., Rolfe, H. & Anders, J. (2018) Embedding Formative Assessment: Evaluation Report. Available at: https://educationendowmentfoundation.org.uk/projects-and-evaluation/projects/embedding-formative-assessment.

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. Available at: https://doi.org/10.3102/0034654316675417.

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, 34(4), 425-444. Available at: https://doi.org/10.1080/02671522.2018.1452962.

Assessment (Standard 6 – Make accurate and productive use of assessment)

[Key reading recommendations are indicated with an asterisk.]

*Black, P., & Wiliam, D. (2009) Developing the theory of formative assessment. Educational Assessment, Evaluation and Accountability, 21(1), 5-31. https://doi.org/10.1007/s11092-008-9068-5.

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. https://doi.org/10.1177/003172170408600105.

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.

*Education Endowment Foundation (2021) Teacher Feedback to Improve Pupil Learning Guidance Report. Available at: EEF_TeacherFeedbackToImproveLearning.pdf.

Education Endowment Foundation (2021) Education Endowment Foundation Teaching and Learning Toolkit: Available at: https://educationendowmentfoundation.org.uk/education-evidence/teaching-learning-toolkit.

Gibson, S., Oliver, L. and Dennison, M. (2015) Workload Challenge: Analysis of teacher consultation responses. Department for Education. Available at: Gibson_WorkloadChallengeAnalysisOfTeacherConsultationResponses.pdf.

Hattie, J., & Timperley, H. (2007) The Power of Feedback. Review of Educational Research, 77(1), 81–112. Available at: https://doi.org/10.3102/003465430298487.

Harlen, W. & James, M. (1997) Assessment and Learning: differences and relationships between formative and summative assessment, Assessment in Education: Principles, Policy & Practice 4:3, 365-379. Available at: https://doi.org/10.1080/0969594970040304.

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. Available at: https://doi.org/10.1037/0033-2909.119.2.254.

Sadler, D. (1989) Formative assessment and the design of instructional systems. Instructional Science, 18(2), 119-144. Available at: Sadler_FormativeAssessmentAndTheDesignOfInstructionalSystems.pdf.

Speckesser, S., Runge, J., Foliano, F., Bursnall, M., Hudson-Sharp, N., Rolfe, H. & Anders, J. (2018) Embedding Formative Assessment: Evaluation Report. Available at: https://educationendowmentfoundation.org.uk/projects-and-evaluation/projects/embedding-formative-assessment.

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. Available at: https://doi.org/10.3102/0091732X09351544.

Managing Behaviour (Standard 7 – Manage behaviour effectively)

[Key reading recommendations are indicated with an asterisk.]

*Carroll, J., Bradley, L., Crawford, H., Hannant, P., Johnson, H., & Thompson, A. (2017). SEN support: A rapid evidence assessment. Available at: Carroll_SENSupportARapidEvidenceAssessment.pdf.

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. Available at: https://doi.org/10.1007/s10648-013-9216-4.

Chatzitheochari, S., Parsons, S., & Platt, L. (2016). Doubly Disadvantaged? Bullying Experiences among Disabled Children and Young People in England. Sociology, 50(4), 695–713. Available at: https://doi.org/10.1177/0038038515574813.

*Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014) What makes great teaching. Review of the underpinning research. Durham University: UK. Available at: Coe_WhatMakesGreatTeaching.pdf.

Department for Education (2019) Omnibus survey of pupils and their parents or carers: wave 6 research report. Available at: DFE_OmnibusSurveyOfPupilsAndTheirParentsOrCarers.pdf.

*Education Endowment Foundation (2018) Improving Secondary Science Guidance Report. Available at: EEF_ImprovingSecondaryScienceGuidanceReport.pdf.

*Education Endowment Foundation (2021) Education Endowment Foundation Teaching and Learning Toolkit: Available at: https://educationendowmentfoundation.org.uk/education-evidence/teaching-learning-toolkit.

Education Endowment foundation (2019) Improving Social and Emotional Learning in Primary Schools Guidance Report. Available at: EEF_ImprovingSocialAndEmotionalLearningInPrimarySchools.pdf.

Education Endowment Foundation (2021) Improving Behaviour in Schools Guidance Report. Available at: EEF_ImprovingBehaviourInSchools.pdf.

Education Endowment Foundation (2023) Early Years Evidence Store. Available at: https://educationendowmentfoundation.org.uk/support-for-schools/evidence-for-the-early-years/early-years-evidence-store.

Education Endowment Foundation (2022) Early Years Toolkit. Available at: https://educationendowmentfoundation.org.uk/education-evidence/early-years-toolkit.

Gutman, L. & Schoon, L. (2013) The impact of non-cognitive skills on the outcomes of young people. Available at: Gutman_TheImpactOfNon-CognitiveSkills.pdf.

*Institute of Education Sciences (2008) Reducing Behavior Problems in the Elementary School Classroom. Available at: IES_ReducingBehaviourProblems.pdf.

Kern, L., & Clemens, N. H. (2007) Antecedent strategies to promote appropriate classroom behavior. Psychology in the Schools, 44(1), 65–75. Available at: https://doi.org/10.1002/pits.20206.

Lazowski, R. A., & Hulleman, C. S. (2016) Motivation Interventions in Education: A Meta-Analytic Review. Review of Educational Research, 86(2), 602–640. Available at: https://doi.org/10.3102/0034654315617832.

Sibieta, L., Greaves, E. & Sianesi, B. (2014) Increasing Pupil Motivation: Evaluation Report. Available at: https://educationendowmentfoundation.org.uk/projects-and-evaluation/projects/increasing-pupil-motivation/.

Ursache, A., Blair, C., & Raver, C. C. (2012) The promotion of self-regulation as a means of enhancing school readiness and early achievement in children at risk for school failure. Child Development Perspectives, 6(2), 122-128. Available at: https://doi.org/10.1111/j.1750-8606.2011.00209.x.

*Willingham, D. T. (2009) Why don't students like school? San Francisco, CA: JosseyBass. Available at: Willingham_WhyDontStudentsLikeSchool.pdf.

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.

Yeager, D. S., & Walton, G. M. (2011) Social-Psychological Interventions in Education: They're Not Magic. Review of Educational Research, 81(2), 267–301. https://doi.org/10.3102/0034654311405999.

Professional Behaviours (Standard 8 – Fulfil wider professional responsibilities)

[Key reading recommendations are indicated with an asterisk.]

Allen JP, Pianta RC, Gregory A, Mikami AY, Lun J (2011) An interaction-based approach to enhancing secondary school instruction and student achievement. Science 333(6045):1034-1037. Available at: https://doi.org/10.1126/science.1207998.

Basma, B. & Savage, R. (2018) Teacher Professional Development and Student Literacy Growth: a Systematic Review and Meta-analysis. Education Psychology Review. 30: 457-481. Available at: https://doi.org/10.1007/s10648-017-9416-4.

Blatchford, P., Bassett, P., Brown, P., Martin, C., Russell, A., & Webster, R. (2009) Deployment and impact of support staff in schools: Characteristics, Working Conditions

and Job Satisfaction of Support Staff in Schools. Available at: Blatchford_DeploymentAndImpactOfSupportStaffInSchools.pdf.

*Carroll, J., Bradley, L., Crawford, H., Hannant, P., Johnson, H., & Thompson, A. (2017). SEN support: A rapid evidence assessment. Available at: Carroll_SENSupportARapidEvidenceAssessment.pdf.

*Cordingley, P., Higgins, S., Greany, T., Buckler, N., Coles-Jordan, D., Crisp, B., Saunders, L. & Coe, R. (2015) Developing Great Teaching. Available at: https://tdtrust.org/about/dgt.

Darling-Hammond, L. (2009) Professional Learning in the Learning Profession. Available at: Darling-Hammond_ProfessionalLearningintheLearningProfession.pdf.

Department for Education (2018) Schools: guide to the 0 to 25 SEND code of practice. Available at: DFE_SchoolsGuideToThe0to25SENDCodeOfPractice.pdf.

*Education Endowment Foundation (2015) Making Best Use of Teaching Assistants Guidance Report. Available at: EEF_MakingBestUseOfTeachingAssistants.pdf.

Education Endowment Foundation (2021) Education Endowment Foundation Teaching and Learning Toolkit: Available at: https://educationendowmentfoundation.org.uk/education-evidence/teaching-learning-toolkit.

Education Endowment Foundation. (2021). Effective Professional Development Guidance Report Available at: EEF_EffectiveProfessionalDevelopment.pdf.

Education Endowment Foundation (2024) Using Research Evidence: A Concise Guide. Available at: https://educationendowmentfoundation.org.uk/support-for-schools/using-research-evidence.

Heyder, A., Südkamp, A., Steinmayr, R. (2020). How are teachers' attitudes toward inclusion related to the social-emotional school experiences of students with and without special educational needs? Learning and Individual Differences, 77. Available at: https://doi.org/10.1016/j.lindif.2019.101776.

Hughes, D., Mann, A., Barnes, S., Baladuf, B. and McKeown, R. (2016). Careers education: International literature review. Available at: Hughes_CareersEducationInternationalLiteratureReview.pdf.

Kraft, M., Blazar, D., & Hogan, D. (2018) The Effect of Teacher Coaching on Instruction and Achievement: A Meta-Analysis of the Causal Evidence. Review of Educational Research, 88(4), 547-588. Available at: https://doi.org/10.3102/0034654318759268.

Sims, S., Fletcher-Wood, H., O'Mara-Eves, A., Cottingham, S., Stansfield, C., Van Herwegen, J., & Anders, J. (2021). What are the characteristics of teacher professional development that increase pupil achievement? A systematic review and meta-analysis. Available at: Sims_WhatAreTheCharacteristicsOfTeacherProfessionalDevelopment.pdf.

Skaalvik, E. M., & Skaalvik, S. (2017) Still motivated to teach? A study of school context variables, stress and job satisfaction among teachers in senior high school. Social Psychology of Education, 20(1), 15–37. Available at: https://doi.org/10.1007/s11218-016-9363-9.

Further evidence relating to sustainability and climate change education

Section	Annotated references to empirical research or key policy documents and frameworks related to climate change, nature and sustainability education
Preamble	**Curriculum and Assessment Review:** DfE (2025) *Curriculum and Assessment Review Final Report: Building a world-class curriculum for all*. Department for Education: London https://assets.publishing.service.gov.uk/media/690b96bbc22e4ed8b051854d/Curriculum_and_Assessment_Review_final_report_-_Building_a_world-class_curriculum_for_all.pdf **Nature connections:** Dillon, J. & Dickie, I. (2012) *Learning in the Natural Environment: Review of social and economic benefits and barriers.* Report Number 092. London: Natural England Social Value Business (2022) *Social & economic benefits of learning in natural environments: A study of learning outside the classroom in natural environments (LINE) in primary school settings to provide a forecast of social value.* NECR442. London: Natural England Waite, S., Passy, R., Gilchrist, M., Hunt, A. & Blackwell, I. (2016) *Natural Connections Demonstration Project, 2012-2016: Final Report*. NECR 215. London: Natural England Monroe, M. C., Plate, R. R., Oxarart, A., Bowers, A., & Chaves, W. A. (2019). *Identifying effective climate change education strategies: a systematic review of the research*. Taylor & Francis. https://doi.org/10.1080/13504622.2017.1360842 *(ALSO ADDED TO TS2)* **Connections with ITE:** Fischer, D., King, J., Rieckmann, M., Barth, M., Büssing, A., Hemmer, I., & Lindau-Bank, D. (2022). *Teacher Education for Sustainable Development: A Review of an Emerging Research Field*. Sage Publications. https://doi.org/10.1177/00224871221105784 **Hope over climate anxiety:** Hickman, C., E. Marks, P. Pihkala, S. Clayton, R. E. Lewandowski, E. E. Mayall, B. Wray, C. Mellor, and L. van Susteren. (2021) "Climate Anxiety in Children and Young People and Their Beliefs about Government Responses to Climate Change: A Global Survey." *The Lancet. Planetary Health* 5 (12): E 863–e873. https://doi.org/10.1016/S2542-5196(21)00278-3 **Benefits of taking action:** Bogner, F. X., & Sotiriou, S. (2023) Open schooling matters: Student effects in science motivation, intrinsic motivation and state emotions. *Journal of Higher Education Theory and Practice*, 23(2), 137-153. https://articlegateway.com/index.php/JHETP/article/view/5813/5511 Vare, P. (2021) Exploring the Impacts of Student-Led Sustainability Projects with Secondary School Students and Teachers. *Sustainability*, *13*(5), 2790. https://doi.org/10.3390/su13052790 Brandt, J.-O. et al. (2021) "A matter of connection: The 4 Cs of learning in

	pre-service teacher education for sustainability," Journal of cleaner production, 279. Available at: https://doi.org/10.1016/j.jclepro.2020.123749. : Provides robust, mixed-methods empirical evidence that action-oriented, praxis-based CCSE improves sustainability content knowledge (CK), pedagogical content knowledge (PCK), and increases motivation and willingness to act. **Teacher Agency** Rushton, E. A. C., Dunlop, L., & Atkinson, L. (2024). Fostering teacher agency in school-based climate change education in England, UK. Curriculum Journal (London, England). https://doi.org/10.1002/curj.253: : *Importance of structures e.g. school culture and values (e.g. culture and support) to teacher agency in CCSE, also need for transformative professional learning to support CCSE* **Educator Competences for teaching sustainability** Rieckmann, M., (2017) *Education for sustainable development goals: Learning objectives*. UNESCO publishing. UNECE: United Nations Economic Commission for Europe (2012) Learning for the Future: Competences in Education for Sustainable Development, ECE/CEP/ AC.13/2011/6. Available at: www.unece.org/fileadmin/DAM/env/esd/ESD_Publications/Competences_Publication.pdf Vare P, Arro G, deHamer A, Del Gobbo G, deVries G, Farioli F, Kadji-Beltran C, Kangur M, Mayer M, Millican R, Nijdam C, Reti M & Zachariou A (2019) Devising a Competence-Based Training Program for Educators of Sustainable Development: Lessons Learned. Sustainability, 11(7), 1890; doi:10.3390/su11071890
Standard 1	**Conceptual Foundations of ESD and Global Citizenship** Bourn, D., Sharma, N. and Vilela, M. (eds.) (2025) *Education for sustainable futures: global citizenship and the Earth Charter*. Bingley: Emerald Publishing Limited, United Nations Educational, Scientific and Cultural Organization (UNESCO) (n.d.) *Education for sustainable development*. Paris: UNESCO. Available at: https://www.unesco.org/en/sustainable-development/education (Accessed: 22 April 2026). United Nations Educational, Scientific and Cultural Organization (UNESCO) (n.d.) *Education for sustainable development: what you need to know*. Paris: UNESCO. Available at: https://www.unesco.org/en/sustainable-development/education/need-know (Accessed: 22 April 2026) United Nations Economic Commission for Europe (UNECE) (2012) *Learning for the future: competences in education for sustainable development*. Geneva: UNECE. Available at: https://unece.org/environment-

policy/publications/competences-esd (Accessed: 22 April 2026),

Policy Frameworks and Institutional Strategies for Sustainability and Children's Rights

Department for Education (2022) *How we are working with the United Nations to protect children's rights*. London: Department for Education. Available at: https://educationhub.blog.gov.uk/2022/06/how-we-are-working-with-the-united-nations-to-protect-childrens-rights/ (Accessed: 22 April 2026),

Department for Education (2022) *Sustainability and climate change: a strategy for the education and children's services systems*. London: Department for Education. Available at: https://www.gov.uk/government/publications/sustainability-and-climate-change-strategy (Accessed: 22 April 2026).

Organisation for Economic Co-operation and Development (OECD) (2019) *Student agency for 2030: OECD future of education and skills 2030 – conceptual learning framework*. Paris: OECD Publishing. Available at: https://www.creatingrounds.com/uploads/9/6/2/4/96240662/student_agency_for_2030_concept_note.pdf (Accessed: 22 April 2026),

Global Competence, Climate Literacy, and System-Level Assessment Frameworks

Organisation for Economic Co-operation and Development (OECD) (2018) *PISA 2018 global competence*. Paris: OECD. Available at: https://www.oecd.org/en/topics/sub-issues/global-competence/pisa-2018-global-competence.html (Accessed: 22 April 2026),

Organisation for Economic Co-operation and Development (OECD) (2025) *PISA 2029 climate literacy framework*. Paris: OECD. Available at: https://www.oecd.org/content/dam/oecd/en/about/projects/edu/pisa-rdi-programme/PISA%202029%20Climate%20Literacy%20Framework%20Digital%20version.pdf (Accessed: 22 April 2026).

Values-Based and Ethical Pedagogies for Sustainability

Bourn, D., Sharma, N. and Vilela, M. (eds.) (2025) *Education for sustainable futures: global citizenship and the Earth Charter*. Bingley: Emerald Publishing Limited,

Huang, R.X., Pagano, A. and Marengo, A. (2024) Values-based education for

	sustainable development (VbESD): introducing a pedagogical framework for education for sustainable development (ESD) using a values-based education (VbE) approach. *Sustainability*, 16(9), 3562. Basel: MDPI. Available at: https://www.mdpi.com/2071-1050/16/9/3562 (Accessed: 22 April 2026). **Teacher Agency and Professional Practice in Sustainability Education** Emans, A., Oolbekkink-Marchand, H., Bakker, C. and De Bruijn, E. (2025) Teacher agency in the dynamics of educational practices: a theory synthesis. *Frontiers in Education*, 9, Article 1515123. Lausanne: Frontiers Media SA. Walshe, N. and Rushton, E.A.C. (2026) Understanding teacher agency in the context of school-based climate change and sustainability education: a case study of the experiences of teachers and school students in England. *British Educational Research Journal*, 52(3), 886–910. https://doi.org/10.1002/berj.70036. **Emotions, Affective Dimensions, and Learner Experience in Sustainability Education** Dunlop, L. and Rushton, E.A.C. (2022) Education for environmental sustainability and the emotions: implications for educational practice. *Sustainability*, 14(8), 4441. https://doi.org/10.3390/su14084441,
Standard 2	**Effective pedagogy** James, M., & Pollard, A. (2011). TLRP's ten principles for effective pedagogy: rationale, development, evidence, argument and impact. *Research Papers in Education*, *26*(3), 275–328. https://doi.org/10.1080/02671522.2011.590007. *UK's largest coordinated educational empirical research initiative. Involved 700 researchers in 70 project teams and almost 20 initiatives of crossprogramme thematic analysis. The first projects began empirical work in 2000 and the last project ended in 2011. The research generated ten principles for effective pedagogy, two of which are especially relevant to this Standard:* ● *Principle 6: effective pedagogy promotes the active engagement of the learner. A chief goal of teaching and learning should be the promotion of learners' independence and autonomy. This involves acquiring a repertoire of learning strategies and practices, developing positive learning dispositions, and having the will and confidence to become agents in their own learning. P298.* ● *Principle 7: effective pedagogy fosters both individual and social processes and outcomes. Learners should be encouraged and helped to build relationships and communication with others for learning purposes, in order to assist the mutual construction of knowledge and enhance the achievements of individuals and groups. Consulting*

learners about their learning and giving them a voice is both an expectation and a right. P298-9.

Muccione V, Ewen T, Vaghefi SA (2025) A scoping review on climate change education. PLOS Clim 4(1): e0000356. https://doi.org/10.1371/journal.pclm.0000356

This study provides a comprehensive mapping of the literature on climate change education with a particular focus on the time period 2008-2023. It examines over 6'000 publications from the peer reviewed literature.

'Based on our results, we call for a key role for climate education as a crucial lever for climate action through its potential to enhancing knowledge, fostering engagement and promoting resilience…..innovative educational practices across various levels of society should be made essential for cultivating a proactive and informed society capable of addressing the pressing challenges posed by climate change.' P21.

Critical thinking and problem solving

OECD: PISA 2029 Climate Literacy Framework (Preliminary Draft) *https://www.oecd.org/content/dam/oecd/en/about/projects/edu/pisa-rdi-programme/PISA%202029%20Climate%20Literacy%20Framework%20Digital%20version.pdf*

Climate literacy will be a strand of PISA international benchmark testing from 2029 and critical thinking will be part of this.

Real world / relevant learning for improving student understanding

Monroe, M. C., Plate, R. R., Oxarart, A., Bowers, A., & Chaves, W. A. (2019). Identifying effective climate change education strategies: a systematic review of the research. Environmental Education Research, 25(6), 791–812 https://doi-org.ezproxy.mdx.ac.uk/10.1080/13504622.2017.1360842): *Systematic review identifying that personal relevance and real-world framing are key predictors of CCSE understanding.*

The role of motivation in learning

Gabriel, F., Fowler, S., & Brinkman, S. (2025). Motivation for Learning Review. *University of South Australia.* https://digital.library.adelaide.edu.au/server/api/core/bitstreams/75833eb7-574a-4b17-bbe8-f85893f91e02/content.

A review of longitudinal an international studies learning commissioned by the South Australian Department for Education (DfE) to examine how motivation shapes student learning, engagement and well-being.

'In terms of school-level practices, the review identifies three areas where change is most likely to support sustained motivation. First, curriculum design can promote student agency by building in meaningful choices and connections to students' lives. Second, assessment approaches that include formative elements and invite student reflection on learning processes tend to reinforce motivation more effectively than those focused solely on performance comparisons. Third, professional learning opportunities that equip teachers with knowledge of motivational processes and practical

	strategies are important for building school-wide capacity.' P4. **The importance of affective and emotional learning in CCSE and its positive impact** Trott, C.D. (2021) Climate change education for transformation: exploring the affective and attitudinal dimensions of children's learning and action. Environmental Education Research. https://doi.org/10.1080/13504622.2021.2007223 *Mixed-methods study of 10–12-year-olds shows that action-oriented CCE strengthens children's pro-environmental attitudes & mitigates climate-related anxiety.* Pihkala, P. (2020). Eco-Anxiety and Environmental Education. Sustainability, 12(23), 10149. https://doi.org/10.3390/su122310149 *Synthesises interdisciplinary research showing that emotional engagement (including anxiety, hope, care) is unavoidable in CCSE and can enhance learning when addressed pedagogically. Provides a strong theoretical and empirical basis for affective pedagogy.*
Standard 3	(UNESCO/OECD; Walshe & Rushton, 2025). https://unece.org/environment-policy/publications/competences-esd https://bera-journals.onlinelibrary.wiley.com/doi/epdf/10.1002/berj.70036 https://www.creatingrounds.com/uploads/9/6/2/4/96240662/student_agency_for_2030_concept_note.pdf
Standard 4	Curriculum design/Pedagogies for stronger PEB: Klement, S., Greatorex, J., and Albayrak Sari, A. (2025). Climate Change Education and the Knowledge/Action Gap. Cambridge University Press & Assessment. Available at: https://www.cambridgeassessment.org.uk/Images/745148-climate-change-education-and-the-knowledge-action-gap.pdf Accessed on 30th April 2026
Standard 5	**Place-based pedagogy, nature connection, and practitioner-led wellbeing practices** Finding Nature (2025) *Nature connection in schools*. Kendal: Finding Nature. Available at: https://findingnature.org.uk/wp-content/uploads/2025/09/nature_connection_for_schools.pdf (Accessed: 22 April 2026).
Standard 6	**Assessment beyond 'knowledge recall' (e.g. action, attitudes, skill development, capabilities)** Rousell, D., & Cutter-Mackenzie-Knowles, A. (2020). A systematic review of climate change education: Giving children and young people a 'voice' and a 'hand' in redressing climate change. Children's Geographies, 18(2), 191–208**:** *Systematic review demonstrating that knowledge-only approaches rarely shift understanding or action and that the strongest learning gains occur through creative, participatory, affective approaches.*

	OECD (2023) PISA 2022 assessment and analytical framework. Paris: OECD Publishing. https://doi.org/10.1787/dfe0bf9c-en :*Emphasises assessing creative thinking- students' competencies through authentic tasks that require applying knowledge, creativity, reasoning and judgement in unfamiliar contexts, moving beyond recall towards transferable problem-solving and real-world decision-making skills.* OECD (2026) PISA 2029 Media and Artificial Intelligence Literacy (MAIL) Assessment Framework: First draft. Paris: OECD Publishing. *PISA plans to assess students through authentic, scenario-based tasks (including climate literacy) that measure how learners analyse, evaluate, create, and act ethically, focusing on real-world application rather than technical recall.*
Standard 7	Impacts on behaviour: Proulx K, Daelmans B, Baltag V, Banati P. Climate change impacts on child and adolescent health and well-being: A narrative review. J Glob Health. 2024 May 24;14:04061. doi: 10.7189/jogh.14.04061. PMID: 38781568; PMCID: PMC11115477. Accessed at https://pmc.ncbi.nlm.nih.gov/articles/PMC11115477/#:~:text=Results,change%20and%20children's%20learning%20outcomes. (30th April 2026) Impacts on safe learning environment: Jie Dong, Yair Schwartz, Ivan Korolija, Dejan Mumovic (2023). The impact of climate change on cognitive performance of children in English school stock: A simulation study Available at: https://www.sciencedirect.com/science/article/pii/S0360132323006340 Accessed on 30th April 2026
Standard 8	Wider life of the school rationale and Whole School Approach: Mobilising Climate Majorities (2026). Available at: https://assets.climatemajorityproject.com/Mobilising%20Silent%20Majorities%20March%202026%20(2).pdf (30th April 2026) Verhelst, D., Mogren, A., Boeve-de Pauw, J., Van Petegem, P. (2024). Getting to a Whole School Approach: Lessons From School Effectiveness and School Improvement in ESD Research. In: Wals, A.E., Bjønness, B., Sinnes, A., Eikeland, I. (eds) Whole School Approaches to Sustainability. Sustainable Development Goals Series. Springer, Cham. https://doi.org/10.1007/978-3-031-56172-6_5 Available at: https://link.springer.com/chapter/10.1007/978-3-031-56172-6_5 (30th April 2026)

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