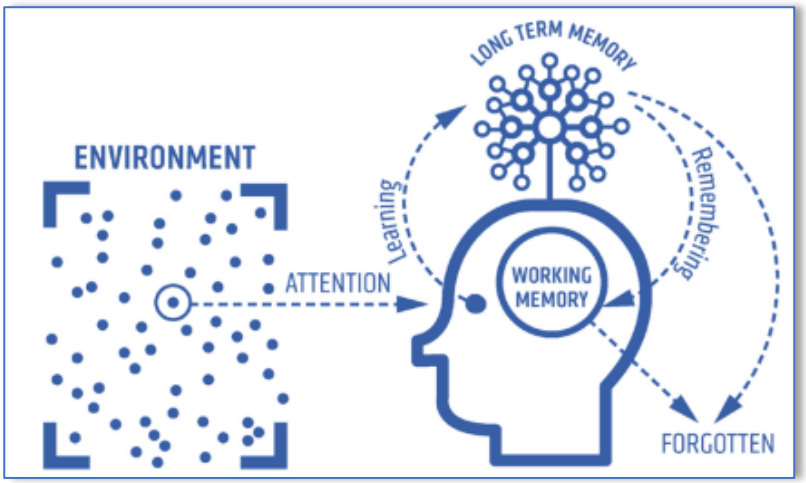
East Midlands Academy Trust

Teaching and Learning Framework

Conceptual framework for the curriculum and effective teaching and learning



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This framework sets out the key principles and theoretical perspectives that inform curricular thinking at EMAT across all our academies and settings and give us a shared language. It describes what we believe are important features of the most effective teaching, learning and assessment practices. This framework is informed by reliable research. The principles we have chosen are not a 'checklist', but a framework that underpins our work to enable our pupils' successful learning.

Every child deserves to be the best they can be

Contents

1. EMAT's curriculum vision

Every EMAT academy and setting is committed to providing the highest standard of education so that **all** children are supported to be the **best that they can be**. The curriculum is the totality of our pupils' experiences of education from the Early Years to Post 18 and includes the teaching of metacognitive skills and techniques to aid pupils' independent learning, extra-curricular opportunities, and the development of 'cultural capital' and broader employability skills and personal qualities. We provide pupils with high-quality education and experiences to ensure they are ready for the next stage in their education and their lives in modern Britain. We are committed to making every day count for our pupils.

The curriculum in all our schools in underpinned by our values:

Inclusion

We ensure all pupils can access our ambitious curriculum by adapting teachign, learning, assessment and feedback to meet the needs of all learners including those who are disadvantaged, have special educational needs and/or disabilities and those who speak English as an Additional Language.

Innovation

We use up-to-date research to inform our educational strategy and continually improve and refine our curriculum. We ensure our curriculum is coherently planned and sequenced to enable pupils to build on their prior learning, deepen and connect their understanding and retain knowledge in their long-term memory. We ensure our staff use the most effective teaching strategies to promote pupils' learning. Pupils acquire an increasing array of broader skills such as critical thinking, resilience, working effectively with others, problem solving and leadership.

Impact

Our central aim is that all our pupils achieve all they are capable of, make good progress, both academically and in their personal development and achieve the best possible outcomes. We use assessment to check our pupils know and remember more and target support when this is needed. `We give our pupils feedback on their learning to help them improve. The impact of our curriculum is also reflected in our pupils' outcomes of summative assessments including statutory assessments and examination results, employability.

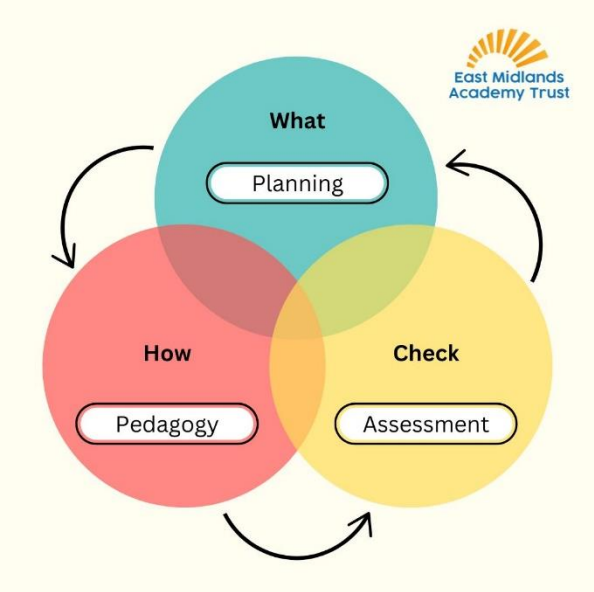
Our curriculum also of course includes the knowledge pupil gain in different subjects because of high-quality teaching, assessment and feedback. Our curriculum is underpinned by the National Curriculum aims and programmes of study. It is broad, balanced, rich and varied. Teachers make hundreds of decisions every day when planning, teaching and assessing lessons. They use their professional judgement and knowledge to decide how best to do these things to help pupils learn and remember what is taught.

EMAT's *Teaching and Learning Framework* (TLF) summarises evidence-based features of effective practice which provides a sound foundation on which to base such decisions and informs our educational thinking.

The TLF informs day to day-to-day teaching, curriculum design, staff support, training and development, and our wider curriculum strategy.

2 EMAT's three theoretical perspectives that underpin effective teaching and learning

At EMAT, we have though carefully about the what these decisions might be based on - the principles and factors that if applied well contribute to **high-quality practice**. Our TLF sets out these key principles that inform our educational thinking and practice. Fundamentally, the curriculum is made up of three main elements:



Our curriculum identifies clearly *what* will be taught – the important knowledge we want pupils to learn and remember - and *how* this will be taught – the most appropriate and effective pedagogical approaches. We also assess to check that we 'got there'. We ensure our curriculum has impact and this means that pupils get better at subjects and achieve well. To 'get better' at maths or history means that pupils know and remember more. The test of the effectiveness of our curriculum is how well pupils remember what they have learned.

Put simply, **our teachers plan what they are teaching, how they will best teach it, and how they will check that pupils have learned it**.

Planning	Pedagogy	Assessment
WHAT is taught	**HOW** the curriculum content is taught	**CHECK** and ensure desired outcomes and measures of those outcomes

Underpinning these things, we've
chosen **three main theoretical perspectives** to inform the curriculum in our academies and settings:

(i) ***Cognitive load theory***, as described by John Sweller

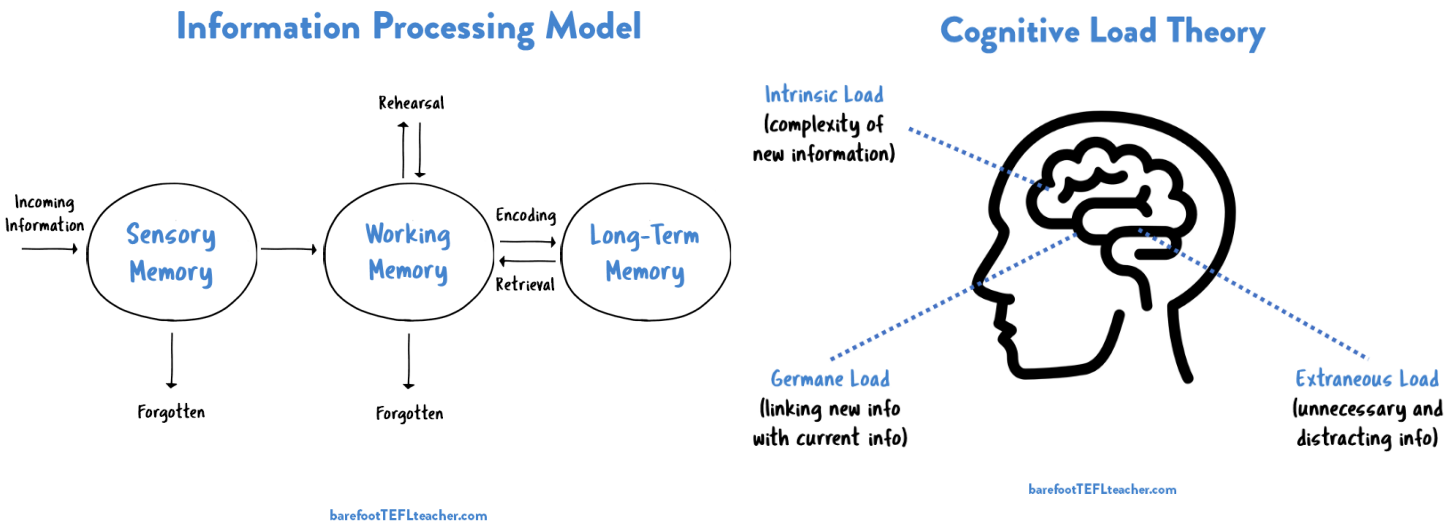
(ii) ***Schema theory*** of Jean Piaget

(iii) ***Principles of effective pedagogy*** (teaching) as described by Barak Rosenshine

We combine these three perspectives to provide a solid foundation for teaching and learning.

(i) Sweller's cognitive load theory: moving knowledge into pupils' long-term memory

John Sweller's cognitive load theory describes how we learn using our 'cognitive architecture'. In a classroom, when a teacher teaches something, pupils take information in through their senses – mostly through sight and sound. Sweller states that we take in information through our visual and auditory 'channels'. Information, from hearing the teacher talking or showing or demonstrating something using pictures, images, or text enters through these channels into our working or short-term memory (STM). This is where we take in and make sense of (process) information from the 'outside world'.



The STM acts as a filter for all the information and knowledge we receive. We cannot keep everything - we have to prioritise and decide what to keep. But if information just stays in the working memory it will probably be forgotten. However, in the right conditions knowledge moves from our STM into our long-term memory (LTM). When this happens, we can remember it after a period of time. Knowledge from the LTM can be *retrieved* back into the STM: in the classroom, pupils can remember and use it. In fact, every time it is retrieved, knowledge gets stronger in our LTM.

Moving knowledge into the long-term memory

New learning is a *change* in **long-term memory**:

> *Learning is defined as an alteration in long-term memory. If nothing has altered in long-term memory nothing has been learned. (Sweller, J., Ayres, P., & Kalyuga, S. (2011). Cognitive load theory (Vol. 1). Springer Science & Business Media.*

The process of moving knowledge from the STM to the LTM is not straightforward because pupils' STM can only deal with (process) a limited amount of new information before it becomes 'overloaded'. There is a limit to how much information can be processed. If pupils' working memory is overloaded, then the content being taught will not be understood and pupils will likely just be confused. Sweller says, 'Our working memory is a high maintenance mechanism…(if we) …'Give it *too little* to play with it begins to look for more interesting fodder. Give it too much to juggle and it will drop all the balls'. When there is too much information at once, pupils experience what Sweller calls 'cognitive overload'. When this happens, it is unlikely the new knowledge will be stored in pupils' long-term memory.

There are three important elements from Sweller's cognitive load theory that we think about to help our pupils better remember what they are taught:

1. We aim to *minimise cognitive overload.*
2. We create the right conditions for knowledge to be *transferred into long term memory.*
3. We ensure our pupils are given opportunities to *recall* **and use** knowledge , reinforcing their memory.

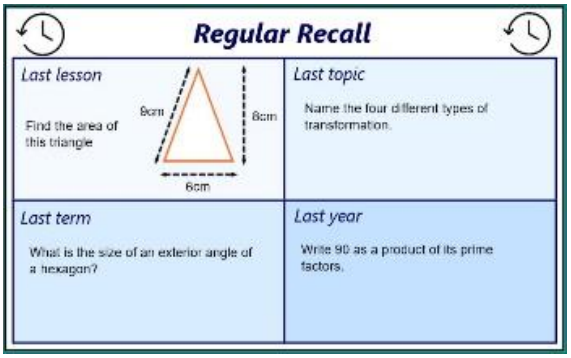
In our curriculum planning, we plan how pupils revisit important knowledge. We use assessment to check and build pupils' memory. We use different teaching strategies that build memory. In our classrooms, to minimise cognitive overload and ensure knowledge is transferred into long term memory we:

- **focus on one task at a time**; we break learning down ('chunk') into parts; we **sequence learning carefully.**
- make sure **tasks, information and instructions are clear and unambiguous**. Teachers **reduce the number of simultaneous elements that pupils have to think about**. If there are multiple sources of information, this will split pupils' attention and add to the cognitive load.
- provide **worked examples and scaffolding** to help pupils understand how to complete tasks.
- take advantage of the **auditory and visual channels** of pupils' short-term working memory.
- **build effectively on pupils' prior knowledge** to help pupils construct and remember ever more complex schema. (see ii on page 7)
- always **review knowledge** in lessons to help pupils transfer knowledge into their long-term memory.
- **rehearse the 'components' of complex 'composite tasks'** (see below) so that pupils' recall becomes automatic. This frees up the capacity of pupils' short-term working memory.
- **revisit previous content** to embed what pupils know. We build practise and repetition of the most important things. Some things are 'overlearned'. Sweller says the more you search for a memory, the easier it becomes to find it and memory gets stronger.
- **remove unnecessary distractions** and **signal the important information**. Staff draw pupils' attention to it, whether spoken, visual or written.
- plan to **help pupils to *connect* new knowledge** with what they already know (building schema).
- **promote metacognition** by encouraging pupils to think about how they best learn and remember knowledge.

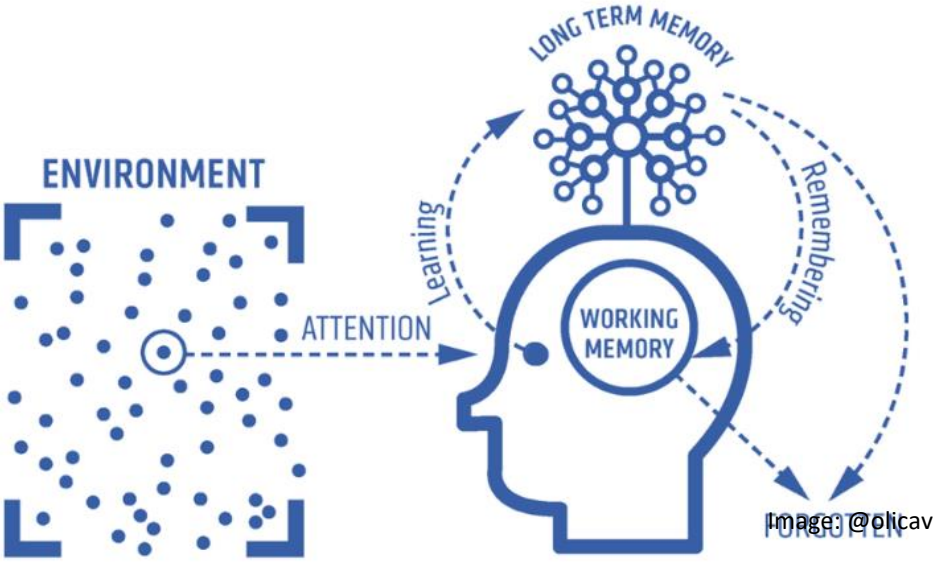
Retrieval practice: regular recall

Retrieval practice is the act of recalling previously learned knowledge from our memory. Every time knowledge is retrieved it changes the original memory and makes it stronger. At EMAT, we use retrieval practice to help pupils remember the most important knowledge. Fluency (ready recall or 'automaticity') requires 'overlearning' through repeated recall. We say that pupils move well beyond the point of accuracy to *automaticity*: they can recall knowledge without cognitive effort. This means they are in a strong position to learn and connect new knowledge.

Image: KATE JONES (TES)



Our teachers make sure they revisit crucial knowledge taught previously. We help pupils remember the right things because we know they cannot remember everything. Our teachers focus is on the most important knowledge pupils need, the core knowledge and skills that will be used again and again. To support this, our academies and settings sometimes use *knowledge organisers* for different subjects and topics. These identify the most important knowledge and vocabulary we want our pupils to learn, revisit and remember.



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Knowing about cognitive load affects the way we think about teaching and learning. It affects how we plan and teach lessons, present information to pupils, design resources and organise our classroom environments. We use assessment to identify any gaps in pupils' prior knowledge and check for automaticity. By not cognitively overloading pupils and avoiding unnecessary distractions we better enable our pupils to transfer knowledge into their long-term memories.

(ii) Piaget's schema theory: building and connecting knowledge

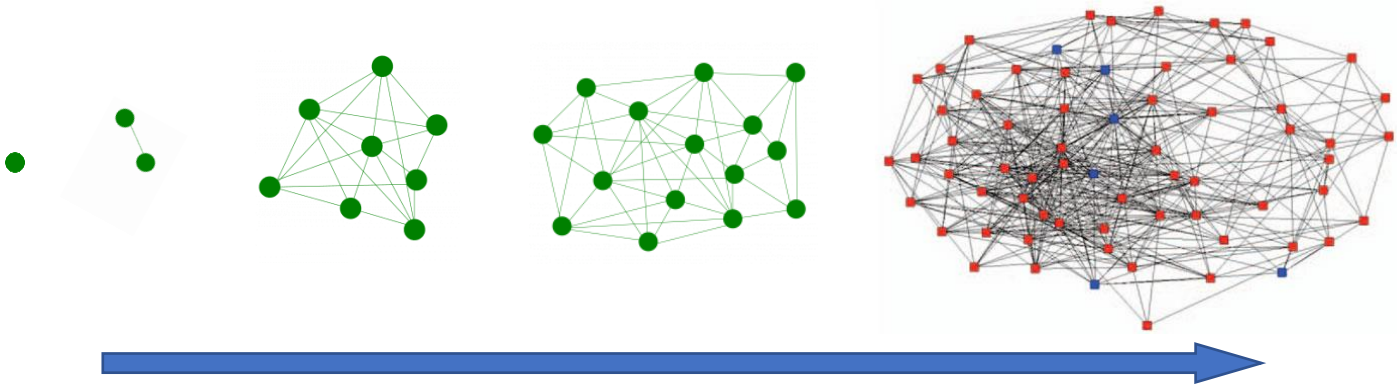
For pupils to be successful, they must be taught a foundation of factual knowledge and taught to understand that knowledge in the context of a conceptual framework. They need to organise knowledge in order to facilitate retrieval and application (Bransford et al., 2000).

Jean Piaget's schema theory builds on the importance of long-term memory. Piaget identified in his theory of cognitive development that children cannot undertake certain tasks until they are psychologically mature enough to do so. He identified four stages of development:

1. Sensorimotor stage: thought, memory, and imitation begin to be used
2. Preoperational stage: recognising the symbolic form and language development
3. Concrete operational stage: ability to solve hands-on problems using logic
4. Formal operational stage: ability to solve abstract problems using logic.

Understanding these stages of development affects how we teach pupils in the classroom. For Piaget, cognitive development is a progressive re-organisation of mental processes. Schemas or schemata are 'cognitive structures' or *webs of knowledge* that are the building blocks of cognitive development and learning. Our long-term memory consists of lots of schemata built up over time that link knowledge and create meaning. Teaching

enables pupils to change those schemata by enabling acquiring and connecting new knowledge and different schemas.



Schema are increasingly complex, interconnected webs of knowledge that build up over time.

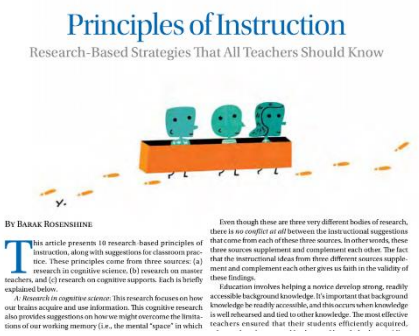
We enable our pupils to create schemas by building new knowledge on pupils' prior learning. We know that discrete and disconnected 'bits' of knowledge (left in the diagram above) are much harder for pupils to retrieve than when they are connected. When pupils are taught to connect new pieces of knowledge to what they have learned previously it becomes *easier* for them to remember. Pupils store the new connected pieces of knowledge as 'one piece' and this reduces the cognitive load. As stated above, when pupils can automatically and effortlessly recall most of the items within a schema, we regard them as 'fluent'.

The more pupils learn, the more they can remember because it becomes easier to draw a schema into working memory rather than lots of separate bits of information. Pupils' understanding deepens as these structures of knowledge stored in long-term memory become increasingly complex. New knowledge, ideas and concepts become 'sticky' when we help our pupils relate them to ones they already know. When this happens, we say that pupils have a 'deep understanding'.

At EMAT, we identify the most important knowledge our pupils need to learn and remember and help them acquire and remember it through our well-planned and carefully sequenced curriculum. This is deigned to, for example, revisit things and deepen their understanding over time, helping our pupils to build interconnecting schema. Our teachers anticipate how new knowledge fits into the bigger picture. In lessons, they encourage and teach pupils to link new learning to previous learning.

(iii) Rosenshine: principles of effective teaching

In 2012, Professor Barak Rosenshine wrote *Principles of Instruction: Research-based Strategies that Teachers Should Know*. Rosenshine's work emerged from research in cognitive science on how the brain acquires new information and research into effective classroom practice. Rosenshine summarised his findings in ten key principles which link to both Sweller's cognitive load theory and Piaget's schema theory.



Principles of Instruction

Research-Based Strategies That All Teachers Should Know

By Barak Rosenshine

This article presents 10 research-based principles of instruction, along with suggestions for classroom practice. These principles come from three sources: (a) research in cognitive science, (b) research on master teachers, and (c) research on cognitive supports. Each is briefly explained below.

A: Research in cognitive science. This research focuses on how our brains acquire and use information. This cognitive research also provides suggestions on how we might overcome the limitations of our working memory (i.e., the mental "space" in which

Even though these are three very different bodies of research, there is *no conflict at all* between the instructional suggestions that come from each of these three sources. In other words, these three sources supplement and complement each other. The fact that the instructional ideas from three different sources supplement and complement each other gives us faith in the validity of these findings.

Education involves helping a novice develop strong, readily accessible background knowledge. It's important that background knowledge be readily accessible, and this occurs when knowledge is well rehearsed and tied to other knowledge. The most effective teachers ensured that their students efficiently acquired,

Rosenshine's principles apply for teaching and learning in all subjects and educational phases:

1) *Begin a lesson with a short review of previous learning.* ***Daily review*** *strengthens previous learning and enables fluent recall.*

Reviewing previously learned material strengthens connections between pieces of knowledge. It enhances understanding. Automatic recall frees working memory. Rosenshine suggests a five to eight-minute review of the previously covered material, including peer marking, asking questions, checking for misconceptions, correcting homework, and others.

2) ***Present new material in small steps*** *with pupil practise after each step. Only present small amounts of new material at any time and then support pupils as they practise this material.*

There is only so much information pupils can process at one time. If we ask pupils to do too much at the same time, they will have cognitive overload and likely become confused. Present new information in small, bite-sized chunks to reduce cognitive load. Proceed only when the first steps are mastered.

3) *Ask a large number of* ***questions*** *and check of the responses of all pupils. Questions help pupils practise new information and connect new material with their prior learning.*

Questioning is a teacher's most powerful tool. Questions can highlight misconceptions, keep learning flowing and challenge pupils to think more deeply about a subject. They enable pupils to practise retrieval, strengthen memory and help build schema. Every time a pupil answers a question they retrieve that knowledge and this enables knowledge to be transferred to the long-term memory.

4) ***Provide models.*** *Providing pupils with models and worked examples helps pupils learn to solve problems faster.*

Provide concrete examples and models when introducing a new concept. This provides cognitive support. Give worked out examples, use 'thinking out loud', provide explicit demonstrations, explanations and instructions.

5) ***Guide pupil practice****.*

Pupils need additional time to rephrase, elaborate and summarise new material to store it in their long-term memory. Spend time building pupils' confidence check for errors or misconceptions.

6) ***Check pupils' understanding****. Checking pupils' understanding at each point helps pupils learn material with fewer errors.*

Constant checking of pupils' understanding means the teacher knows that pupils are ready to move on to the next step and prevents pupils from making errors, misunderstanding or carrying misconceptions into their future learning. It helps teachers know if key knowledge needs reteaching. Rosenshine suggests that teachers ask direct questions, instead of asking pupils if they have questions or assuming that silence means a full understanding of the topic.

7) ***Obtain a high success rate****. It is important for pupils to achieve and be successful in the classroom.*

Rosenshine suggests a success rate of 80% is optimal, showing pupils are learning and being challenged. It suggests teaching and learning is ambitious. For Rosenshine, 70% is too low, 95-100% is too easy. Small steps followed by practice means that pupils master the current important knowledge and concepts before moving on.

8) *Provide **scaffolds for difficult tasks**. Provide pupils with temporary supports and scaffolds to help them when they learn difficult tasks.*

Provide pupils with a framework to support their understanding. Sequencing is key. Scaffolds can then be gradually removed as pupils' understanding and fluency grows. Teachers can model, 'think aloud', use e.g. cue cards, checklists, worked examples and models. Teachers can also anticipate and reduce pupils' commonly made errors or misconceptions in the scaffolded tasks.

9) *Require and check pupils' **independent practice**. Pupils need extensive, successful independent practice for knowledge and skills to become automatic.*

*Independent practice means providing opportunities for pupils to work with little or no assistance. Independent practice should be used after scaffolded, guided practice. When pupils are already competent in a task, they should be expected to practise the task independently to become fluent and retrieve knowledge automatically. Rosenshine calls this repetition of a task to promote fluency 'overlearning'. Independent practice should cover the same topic covered in **guided practice** as pupils need to be fully prepared for it.*

10) *Engage pupils in **weekly and monthly reviews**. Students need to be involved in extensive practise to develop well-connected and automatic knowledge.*

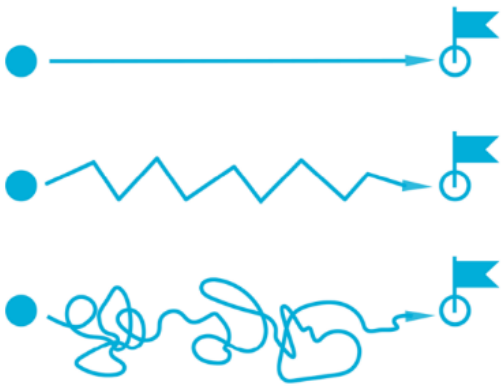
The effort involved in recalling recently learned material embeds it in long-term memory. The more this happens, the easier it is for pupils to connect new material to prior knowledge. Rosenshine advocates monthly and weekly reviews of previous learning to aid recall of the most important knowledge and skills and build stronger schema.

Appendix 1 is a poster of these ten principles of effective teaching. We do not see these principles as 'checklist' of what should be included in every lesson, but as a framework or 'toolkit' to support the effective implementation of our curriculum as well as our teachers' professional development. Appendix 2 is a pupils' version of the principles which might be displayed in the classroom and referred to by the teacher to help pupils understand how they learn and why their teacher is doing some of these things! We help pupils gain an understanding of how they learn and remember. We believe an age-appropriate understanding of metacognition is a crucial to being and effective and lifelong learner.

*At EMAT, we use Sweller's **cognitive load theory**, Piaget's **schema theory** and **Rosenshine's principles** to inform teaching and learning in our academies and setting and inform our thinking in many areas.*

3 Planning the curriculum: a knowledge-rich curriculum

Pupils need to gain a rich body of knowledge so that they are equipped for each stage of their education and for their future lives. At EMAT, we believe that knowledge comes first because pupils cannot acquire higher-level 'skills' without first learning the content of our curriculum. We design a well-sequenced curriculum which identifies the most important knowledge and concepts that are revisited time and time again so that pupils remember what they have learned in their long-term memories.



We plan and sequence our curriculums carefully so that new knowledge builds upon pupils' prior learning in a logical way. We make sure pupils learn (remember) the knowledge they need.

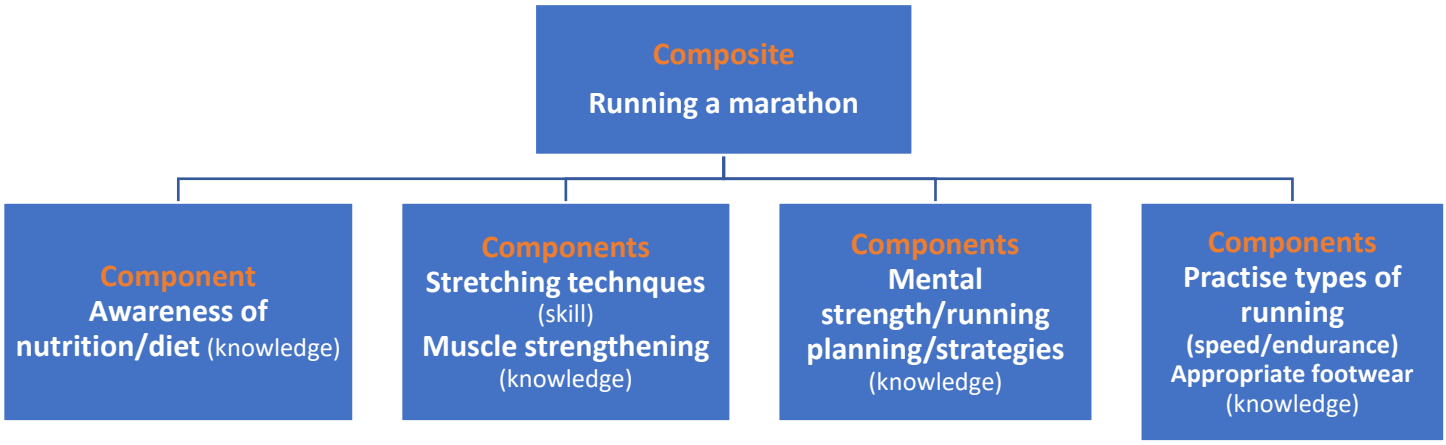
We know that if lessons are not planned in a logical way, pupils will not remember and make the progress of which they are capable.

We give pupils secure foundations at each stage of their education so that are ready for the next.

We know that if pupils have gaps in their knowledge, like in the Jenga tower here, over time this will slow their learning. Their learning will not be built on secure foundations. We constantly check that pupils understand what they are learning and if pupils have any gaps.

Components and composite tasks

To understand complex concepts or perform complex tasks or skills requires a secure foundation of knowledge. Each complex, 'composite' task has its own set of 'components' that pupils need to learn and remember fluently. For example, to be able to be successful in a complex task such as running a marathon requires knowledge and expertise in a range of components. Runners don't get better at running marathons by just running more and more marathons - they to learn and practise a range of different components:



***Components*:** the building blocks that together, when known allow successful performance of a complex task.

Composites: tasks that require several building blocks or components.

This applies to pupils' learning in lessons, for example, whether solving problems in mathematics, writing a non-chronological report or performing a dance routine. Pupils' success in the composite activity depends upon the learnt components. We plan carefully WHAT pupils need to know, building on past learning. We plan the order in which they will learn these things. We plan and check that pupils have the necessary and most important components embedded in their long-term memory that they need to be successful in the more complex tasks. We check pupils have gained automaticity or fluency in their memory of prior components so that their working memory is less likely to be overloaded when faced with a new complex task.

The difference between knowledge and skills

The Oxford English Dictionary (OED) defines a 'skill' as 'expertness, practised ability, facility in an action'. **A skill is a capacity to perform drawing on what is known.** It is knowing how to do something. How to write a set of instructions, for example. We do not regard knowledge and skills as two things that are learned separately. Skills are dependent on relevant 'component' knowledge. 'Analysis', 'evaluation' and 'problem solving', for example, are often referred to as 'skills'. However, for pupils to be able to able to evaluate, for example, the quality of a piece of creative writing, they must first know the components. Pupils need to draw upon and apply a range of relevant **knowledge stored in the long-term memory**. It is for this reason in EMAT we say our curriculum is knowledge based: we focus on the deep body of knowledge we want our pupils to acquire.

Knowledge ⇨ skill = progress

Substantive and disciplinary knowledge

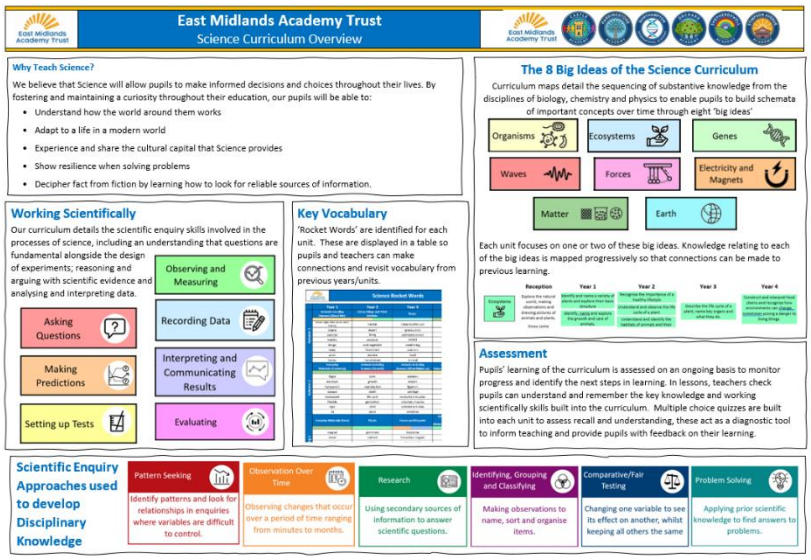
All subjects have *substantive* and *disciplinary* knowledge. At EMAT, we carefully sequence the curriculum for all subjects and educational phases. When planning the curriculums and sequences of lessons, our staff identify both the substantive and disciplinary knowledge we want our pupils to learn:

Substantive knowledge:
the subject content. In science, for example, this would include Newton's three laws of motion and or how osmosis works.

***Disciplinary knowledge**:*
knowing **how** knowledge works and is used in the subject. In history, for example, pupils do not just learn facts about the past, they also learn how sources of evidence are used to interpret the past and how such interpretations can be challenged.

Sequencing and clear end points

Our subject, department and other leaders in different educational phases decide, with our teachers, what subject content will be taught and how it should be sequenced in agreed detailed schemes of work. **Our curriculums for each subject identify the clear end points: what we want pupils to know and be able to do by the end of each unit of work, term and year.**



Teachers then make further detailed content and sequencing choices as they implement the curriculum in the classroom, lesson by lesson. Teachers use their subject expertise to provide effective learning opportunities in accordance with our TLF principles. They ensure the content of lessons is appropriate for the age group and needs of the pupils. They make sure it is suitably ambitious for all pupils. They ensure there is logic to the sequence of lessons. In accordance with Rosenshine's ten principles, they provide opportunities for pupils recall and practise previously learned skills and knowledge. They carefully choose the most important content they want the pupils to remember, sequence learning carefully to build more complex schema, and constantly review and revisit knowledge so that knowledge 'sticks' in pupils' long-term memories.

4 The five key elements of effective lesson planning

Applying the principles of the TLF, teachers plan logical, cohesive teaching sequences that are pathways towards ambitious learning goals and end points – over the course of an academic year, term, unit of work or an individual lesson. Teachers plan how they will ensure pupils securely learn the components that, over time, build towards more complex composite tasks.

Well-planned and sequenced lessons are crucial for effective learning. Everything we do in a lesson is designed to help pupils learn and remember what the teacher intends them to. Each lesson should map out a series of steps building towards a clearly understood end point. Teachers select and use the most appropriate pedagogical approaches (e.g. modelling, demonstrating, explaining, scaffolding) and choose tasks that match the intended learning of the lesson to achieve this. There is no fixed structure; it depends on the nature of what is being taught and the needs of the pupils. Lessons should be responsive to pupils' learning. Teachers use their pedagogical knowledge to plan the teaching strategies, assess learning to judge when to move on or make adjustments if needed.

Our TLF principles tell us that for most learning sequences, five key elements are needed to ensure the most effective learning:

all elements may be included, some may not, some may be used more than once.

The teacher typically starts by **activating pupils' prior knowledge** and then provides **explicit instruction**: 'I do', direct teaching. The teacher and pupils then explore knowledge/concepts together through **guided practice** ('we do') and after that the teacher ensures pupils have opportunity for **independent practice** ('you do') where pupils work on their own or with others. The teacher then **reviews and assesses what has been learned** to check that pupils are ready to move or identifies any misconceptions that need to be picked up.

Sequences of learning are not 'fixed' and rigid. In the structure above for example, teachers will still formatively assess throughout a lesson and adjust as required. The teacher may work with a group of pupils while others are engaged with independent practice. However, the structure above shows *the elements* that should be planned for and included in the majority of lessons. If one of these is missing, the lesson will likely be less effective. It's very unlikely these elements will be of equal lengths of time as presented in the diagram above. Teachers will make judgments about how long is needed for each element when planning lessons. They will decide, for example, just how much explicit instruction they think will be needed before moving on to guided practice:

There is no fixed structure that will work in all circumstances. Teachers decide the best 'balance' that will enable the pupils to learn and remember the intended learning. The lesson structure below, for example, features much explicit instruction, no guided practice, limited independent practice and brief review of learning. The teacher has also not activated prior knowledge. This lesson *could* be planned in this way for a specific purpose, but over a series of lessons, this approach would not enable effective learning.

Once understood and applied, teachers will decide how plan and sequence lessons effectively in different ways. For example, teachers may wish to sequence learning in shorter steps:

This lesson structure, for example, might be suitable for a mathematics problem solving lesson or suit some secondary 100-minute lessons. The teacher has activated prior knowledge, provided direct instruction and guided practice, and pupils 'have a go' during independent practice. The teacher may then draw the class together to review learning, before further guided practice opportunity for independent practice so pupils can build and deepen their understanding.

This guidance is not prescriptive but intended to support teachers to reflect on effective lesson planning and support professional discussion. It shows how effective lesson planning and teaching is built around applying Rosenshine's principles, takes account of cognitive lead theory and can support pupils to build schema. The table below gives additional detail on the five key elements but is by no means exhaustive:

Element	Links to Rosenshine's principles	What might it look like?	Why do it?
Activate prior knowledge	**1 Review previous learning** **3 Ask questions**	• Retrieval practice e.g. ask questions that prompt children to recall/recap prior learning. • Provide opportunities for children to generate their own questions. • Provoke discussion and curiosity.	• Strengthen knowledge in long term memory. • Connect to prior learning.
Explicit instruction 'I do'	**3 Ask questions** **4 Provide models** **6 Check understanding** **8 provide scaffolds**	• Be clear about what is being taught (core/substantive knowledge) and ensure pupils are clear. Know what pupils have learned/already know. • Pupils watch and listen to the teacher as they guide them through a process, step by step before pupils make an attempt themselves. • Direct explicit teaching using a range of approaches: modelling, explaining, scaffolding, demonstrating. • Choose the most relevant and effective resources, models, images. • Use strategies such as 'thinking aloud' to make thinking explicit, e.g. 'What do I already know about this…I'm going to start by…'; make thinking explicit.	• Develop/deepen conceptual understanding. • Build on pupils' prior knowledge. • Help pupils connect knowledge. • Modelling metacognition.
Guided Practice 'We do'	**3 ask questions** **6 Check understanding** **8 Provide scaffolds**	• Use questioning, scaffolding etc. to explore concepts/knowledge *with* the pupils ('we do') drawing them into the process. • Ask them to try elements independently (orally/using mini whiteboards/independent activity etc) and check their understanding. • Encourage pupils to rehearse new learning with a partner before undertaking independent tasks ('we do'). • Focus and practise the fundamentals.	• Develop and deepen understanding; advance knowledge/concepts. • Check pupils' understanding and readiness for independent practice. • Connect knowledge/build conceptual understanding.
Independent practice 'You do'	**8 Provide scaffolds** **9 check independent practice**	• Design activities and tasks that and will enable pupils apply, deepen and remember specific knowledge and skills. • Tasks can be identical/similar or related to those modelled by the teacher or could continue those started in explicit instruction/guided practice. • Pupils complete tasks independently, in pairs or groups. • Adapt tasks as appropriate to pupils' needs so all pupils can access learning e.g. by providing scaffolding e.g. sentence starts/supporting resources. • Check understanding/support learning/feedback.	• Promote independent learning: practise, perseverance, resilience, exploration, reasoning, problem solving. • Deepen understanding. • Connect knowledge. • Promote retention • Assess pupils' understanding/identify misconceptions. • Provide challenge, enable success.
Review learning (assessment)	**3 Ask questions** **5 Guide pupil practice** **6 Check understanding** **7 Obtain a success rate**	• Summarise learning journey in lesson (so far). Ask questions/give tasks to check what has been learned at that point in the lesson. Systematically check for understanding to check pupils are ready to move on; address any errors/ misconceptions/misunderstandings. • Summarise and reinforce the key learning including vocabulary. • Use strategies to help pupils remember e.g. ask them to identify 3 important things they now know and need to remember.	• Address errors, misconceptions, misunderstandings • Reinforce learning and help pupils make links and connect knowledge. • Help pupils understand, use and remember important knowledge and vocabulary. • Assess if it is OK to carry on or need to adjust; inform next steps in planning subsequent learning.

Effective questioning

Rosenshine principle 3 says teachers should ask a large number of questions and check of the responses of all pupils. Effective questioning is an absolutely crucial part of effective teaching to both promote and assess learning. Questions help pupils practise new information and connect new material with their prior learning. Teachers should be clear on the ambitious learning goals and plan to use a 'string' of a mixture of closed, open and probing questions throughout a lesson that are well-matched to the core knowledge and pupils' needs and level of understanding. For example, in a primary setting to help develop pupils' understanding of fractions, a teacher might ask questions along the lien of:

Q: How could we share (this) apple fairly between two people?
Q: How many pieces would one person have?
Q: How can we show that in numbers?
Q: The way we usually see a half is ½. Which number shows us how many pieces we need?
Q: One person has 1 out of 2 pieces (demonstrate). If one person had two out of two, how might we write that?
Q: 2/2 means how many halves?
Q: How would you write 3 halves or 4 halves?
Q: Can you explain to your partner what the number at the top and the number at the bottom tell us?
Q: Can you use this to find ½ this strip of paper? What would be 2/2?
Q:Can you find ½ of anything in this way?
Q: What about ½ of this pot of pencils?
Q: How many equal groups would you need? Why?
Q: If you divide your whole shape, number or quantity into two equal parts to find a half, what would you divide your whole into to find ¼?

Teachers should provide sufficient thinking time so pupils have time to process questions and respond effectively. In the example above, pupils are also asked to show their understanding in response to questions different ways.

5 The importance of reading, oracy and vocabulary

Promoting reading, oracy and communication skills and understanding of vocabulary are at the heart of EMAT's curriculum. Being able to read is key to accessing the entire curriculum. EMAT is determined that every child will learn to read, regardless of their background, needs or abilities. The curriculum is planned so that any pupils who fall behind are supported to learn to read quickly. Reading and vocabulary are taught in all subjects. Our staff understand that teaching content in subjects such as history and geography is also teaching reading.

Reading is a complex process. The 'simple view of reading' conceptual framework identifies two dimensions to reading – 'word recognition' and 'language comprehension'.

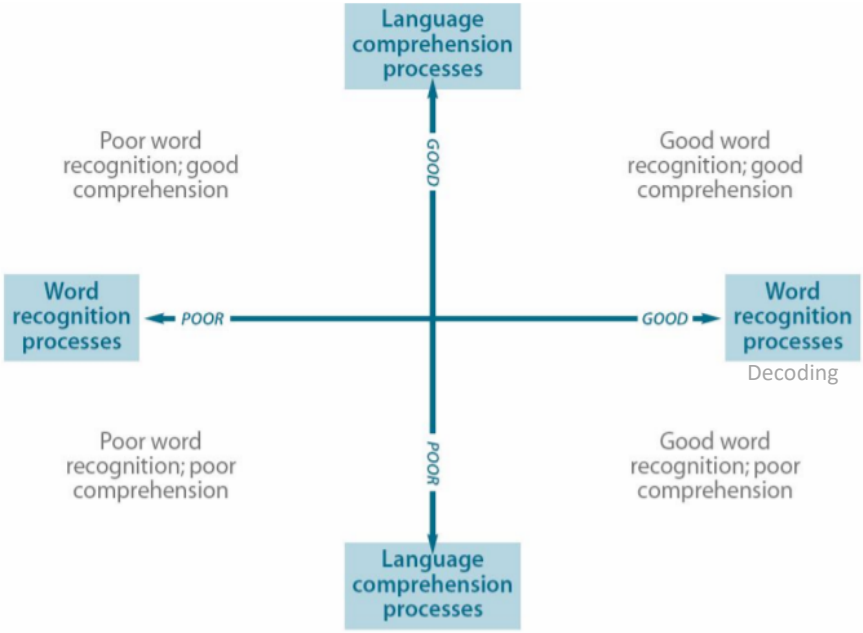


Image: Recommendations of the Independent review of the teaching of early reading (the Rose Report) March 2006

◀ The simple view of reading identifies 'word recognition' (decoding) on the x axis and 'language comprehension' on the y axis. To be successful readers, pupils need to decode and understand (upper right quadrant).

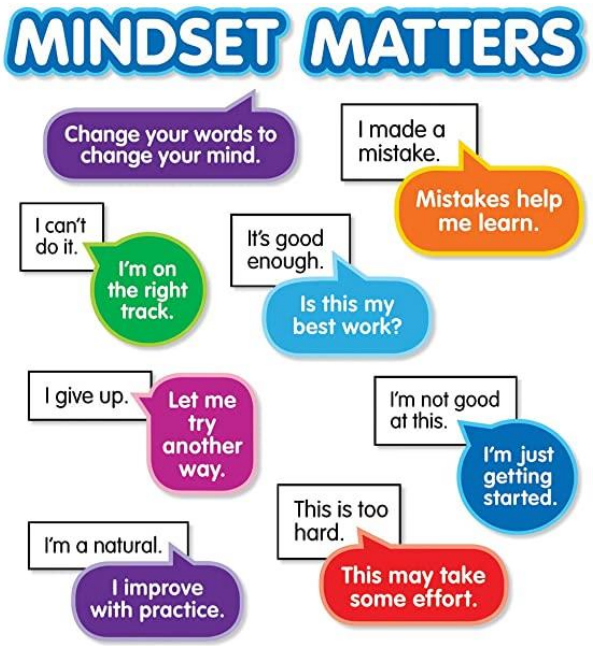
We know that the processes by which children comprehend spoken language are largely the same as those by which they comprehend words written on the page. The difference is that the first relies upon hearing the words and the second upon seeing the words in written form. To comprehend written texts, children must first learn to recognise, that is 'decode', the words on the page. When pupils are not fluent in decoding text, their short-term memory is easily overloaded and this means they will not be able to focus on meaning. For this reason, it is crucial our pupils learn to decode fluently as quickly as possible.

High-quality phonics teaching secures the crucial skills of word recognition that, once mastered, enable pupils to decode fluently and automatically, freeing them to concentrate on the meaning of the text. The balance between word recognition and language comprehension shifts as children acquire secure and automatic decoding skills and progress from 'learning to read' to 'reading to learn': for both purpose and pleasure.

EMAT sees oracy as a crucial element of effective learning as well as a life skill. EMAT academies and settings actively teach pupils To do this, we teach pupils how to speak and listen effectively and use the conventions of spoken language that enable pupils to speak, listen and work with others competently in a range of contexts using appropriate and precise vocabulary.

6 Adapting the curriculum to meet the needs of all our pupils

At EMAT we aim to ensure that all our pupils achieve their very best by accessing our ambitious, broad, balanced, and relevant curriculum. Our ambition is for all pupils to make progress by acquiring the key knowledge, skills, concepts and attributes to lead happy and successful lives.



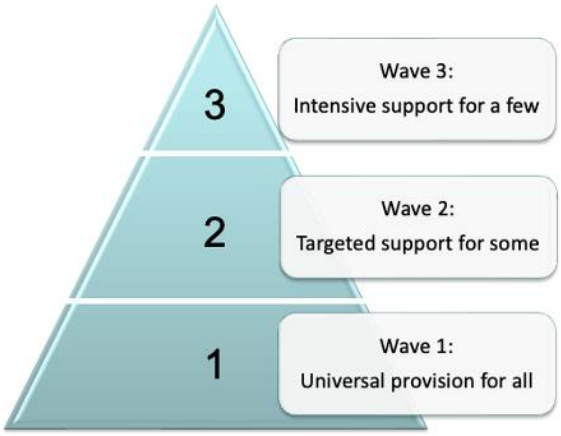
The majority of pupils, including those with special educational needs and disabilities (SEND), those who are disadvantaged and those who speak English as an additional language (EAL), will be working within the National Curriculum expectations for their age. Some pupils may access the curriculum at a different pace or depth than their peers. However, all pupils will access, and progress through, the same curriculum journey, and

build their expertise through carefully mapped opportunities and experiences.

Where required, our curriculum is adapted to meet different pupils' needs. Provision to implement the curriculum is made through a whole school approach using the 'Waves' model.

The Waves Model of Provision

The Waves Model of Provision describes how different levels or tiers of provision can be understood and strategically implemented across a school:



Wave 1 (Universal) describes high quality teaching that takes into account the learning needs of all the pupils in the classroom.
Wave 2 (Targeted) describes specific and additional interventions provided for some pupils who need help to accelerate their progress to enable them to work at or above age-related expectations.
Wave 3 (Intensive) describes targeted provision for a minority of pupils who require highly tailored and/or specialist intervention to accelerate progress or achieve their potential.

For those pupils who require a more bespoke curriculum offer, they will likely access wave 2 or wave 3 provision. However, the starting point for all pupils is wave 1, with teachers focusing on the adaptation of high-quality teaching (HQT) strategies. EMAT's *Inclusion Framework* gives more information about how we adapt the curriculum to meet the needs of all our pupils.

7 The role and uses of assessment

Formative and summative assessment is an integral part of teaching and learning and planning and delivering the curriculum. Effective assessment means that pupils experience a curriculum in which they can achieve their potential. Assessment is a continuous process derived from clear curriculum objectives outlined in long, medium and short-term curriculum planning. Assessment opportunities are planned within units of work or lessons and information gained informs subsequent our curriculum planning to ensure pupils' progress. We use three different types of assessment that serve different purposes:

(i) Formative assessment *for* learning

The formative use of assessment is '*The process of seeking and interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to go and how to best get there*' (Assessment Reform Group, 2002). We use regular formative assessment on an ongoing basis to check pupils can remember the most important knowledge and components including key vocabulary. We check if there are any gaps in pupils' knowledge and plan next steps. Formative assessment enables teachers to identify if any pupils are struggling, when they are fluent and when they are ready to deepen their understanding.

(ii) Summative assessment *of* learning

Summative assessments of pupils' learning are used to check what pupils can remember about what they have been taught for example, at the end of a unit, term or the year. Summative assessments include checking the key knowledge, components and composites that have been taught. These assessments help us evaluate the impact of teaching help teachers to plan for subsequent teaching and learning. National standardised tests and examinations are a form of summative assessment.

(iii) Assessment *as* learning

At EMAT, we also see assessments as a tool to help pupils remember some of the most important knowledge. These include the range of formative assessments as well as informal assessments such as quizzes, class discussions, spelling etc. Such assessments help pupils learn because the retrieval of knowledge strengthens long- term memory.

Providing feedback to pupils about their learning to improve their progress

Providing feedback to pupils is an essential element of assessment *for* learning and links to **Rosenshine's principles: 5**: *guiding pupil practice*. **6**: *check pupils' understanding,* **9**: *check pupils' independent practice.*

In lessons, teachers assess what pupils have understood well and also identify any errors, misunderstanding or is misconceptions (EMM):

- **errors** (i.e. pupil has simply made a 'mistake' but understands)
- **misconceptions** (a pupil understands much, but has not fully grasped something) or
- **misunderstandings** (a pupil does not understand).

It is important to be clear which is the case as the teacher's response will be very different. Teachers use this information to adjust learning, inform pedagogy and provide feedback to pupils to help them improve. When pupils respond to, and act upon feedback, we say the feedback has positive impact: it helps them better understand, use, apply or remember key knowledge and skills. If a pupil is not able to respond to a teacher's feedback, then it has no impact. Feedback has many different forms, but day-to-day teaching comprises key elements:

- ***Verbal feedback****: teachers give verbal feedback in lessons to individual pupils, groups or the class as a whole, verbally highlighting successes or errors, misconceptions or misunderstandings*.
- ***Distance marking****: teachers may take in pupils' work at specific focus points in the teaching sequence e.g. to support pupils' editing of their writing or give feedback on pupils' problem solving and reasoning work in mathematics. Teachers provide more focused written guidance, annotating to show where successful or EMM in relation to learning objectives.*
- ***Live marking****: teacher marks pupils' work (e.g. using an agreed coloured) in the lesson to indicate where a pupil needs to direct their attention. This can take the form of highlighting a success to remind the pupil what is important or making an annotation requiring the pupil to respond by e.g. making a correction or improving their work in some way such as adding more detail or more in-depth response.*
- ***Peer and self-assessment:*** *pupils are taught to evaluate/amend/correct/check their own and others' work. This can take the form of verbal feedback or marking/annotating by e.g. ticking/underlining to highlight successes or possible suggestions for improvement.*

Live marking is an approach in which staff provide written feedback *during a lesson* at the point of learning so pupils can respond to and act upon the teacher's guidance in the moment. This direct intervention means teachers can help pupils address errors and misconceptions and support them to make progress. Live marking is not detailed but takes the form of brief highlighting/signalling using words, short phrases, underlining, prompts or symbols accompanied by teachers' verbal guidance e.g. '*Please could you look at this again*'. Many teachers consistently use a specific-coloured pen so pupils can easily see, respond to and refer back to the teacher's prompts. Live marking could include, for example,

- **Underlining a sentence or calculation and asking a pupil to revisit, rewrite or add more.** The teacher might say at the same time: *This doesn't quite make sense when you read it. Can you rewrite it so someone else can understand what you have written?; Can you rewrite this neatly so someone else can read this; Can you say more/add a bit more?*

- **Underline/signal (→) e.g. punctuation or other errors:** *What do you need here? Can you check – is this correct?; Have a look at my marking yesterday … how does that help here? (underline).*
- **Write 1…2…3…. to prompt pupils to 'uplevel' their work by e.g. providing further/different examples:** *Some good ideas, but can you add a bit more here? What other examples can you think of? Can you think of a better way of …?*
- **A tick/mark to highlight success:** *Well done, this example is excellent – you have included x, y and z … can you do that here too?; Great example/method/sentence. But can you look at*' **(→).**

Live marking is **not** something teachers necessarily do in *every* lesson nor do teachers attempt to do this for every pupil in a lesson - this is not practical. Teachers will choose who and when they and other staff will live mark in lessons. In some lessons, teachers and other staff will work with focus groups identified through assessment to accelerate pupils' progress. After perhaps an initial 'sweep' to check pupils' understanding, teachers may choose where they focus their efforts to support and challenge e.g. low, middle or higher prior attaining pupils, based on previous assessment.

8 EMAT CPD, coaching and mentoring strategy

EMAT aims to develop academy and setting cultures that enable colleagues to grow, learn and refine their pedagogy. We know that if implemented well, the TLF principles will support high quality teaching and learning and enable schools and settings to meet Rosenshine principle 7: obtain a high success rate. To develop staff's understanding, confidence and expertise, EMAT and EMAT academies provide a range of CPD, training, mentoring and coaching to support staff - teaching assistants, Early Career Teachers (ECTs), experienced teachers and leaders - to implement the TLF principles effectively in the classroom and across schools and settings in all year groups, phases and subjects.

Mentoring is when a more experienced person acts as a guide to a less experienced person. Pedagogical feedback given by mentors to mentees will normally relate to the TLF principles, for example, the relevant Rosenshine principle.

Coaching is an approach in which a coachee is supported by a coach to reflect on and learn from their previous successes. It is a structured programme of professional dialogue about pedagogy and a means to build professional, rewarding relationships and create a culture in which education is the topic of conversation.

Our ethos is that every teacher whatever their career stage or role is entitled to dedicated time for professional discussion with a colleague to reflect on their teaching. All EMAT academies have some form of coaching strategy whether it be for individual, pairs or small groups of staff, and have trained coaches who use Jim Knight's 'instructional coaching' model to work alongside colleagues. Instructional coaching is not about giving 'instructions'; 'instruction' refers to teaching/pedagogy and coaching refers to professional dialogue based on positive, productive relationships. Coaches are not 'experts' who tell others 'how it should be done' but active listeners who ask the right sorts of questions to facilitate reflection and insight. Coaching is a developmental, dialogic, collaborative process to reflect on the way things are done rather than what is done and give staff the ownership and autonomy to try things out.

EMAT academies and settings use the 'WalkThrus' created by Tom Sherrington an Oliver Caviglioli because they align directly with Rosenshine's principles and are an effective tool to support coaching.

9 Quality assurance of our curriculum

We have well-sequenced curriculums for all subjects and phases and teachers apply the TLF to support effective, high-quality teaching and learning. If pupils remember the curriculum, they are making progress. We evaluate our curriculum by looking at subject planning, visiting lessons and looking at pupils' work. We talk to pupils about their learning and what they remember. We discuss with our staff, the teaching approaches they

use. We look at information from formative and summative assessments. The purpose of quality assurance is to ensure that pupils are making good progress and achieving well in all subjects and year groups. We evaluate:

Intent: leaders specifically plan what our pupils need to know in total, in each subject and the order to teach it. We evaluate to make there are clear ambitious end points and goals for our pupils – at the end of lessons, units of work, terms, or the year for different subjects and pupils in all year groups. EMAT's central team and academy leaders quality assure this by meeting with curriculum/department leaders, undertaking scrutiny of pupils' work and meeting with staff.

Implementation: how the curriculum content is taught: pedagogy. The curriculum for each subject is designed, over time, to maximise the likelihood that children will remember and connect what they have been taught. We evaluate if the curriculum is sequenced and taught well using the most appropriate pedagogical approaches. EMAT's central team and academy leaders quality assure this by visiting lessons, scrutinising pupils' work and speaking with pupils and staff.

Impact: how well pupils make progress; we evaluate whether pupils, including those with SEND, EAL or those who are disadvantaged know and remember what they have been taught in different subjects. EMAT's central team and academy leaders quality assure the impact of the curriculum by visiting lessons, scrutinising pupils' work, speaking with pupils and reviewing progress and attainment data.

Summative assessment enables school leaders to monitor the performance of pupil cohorts to identify where extra support may be required to ensure pupils make sufficient progress and attain well. National data and standardised assessment information enables leaders and those responsible for governance to benchmark their academy's performance and effectiveness against others locally and nationally.

EMAT's *Effectiveness and Improvement Strategy* sets out how EMAT supports academies and settings, and the systems and processes we use to know about standards.

10 Appendices

Appendix 1. Rosenshine's principles of instruction

Barak Rosenshine's

PRINCIPLES OF INSTRUCTION

A thematic interpretation for teachers by **Tom Sherrington**

@teacherhead

VISUALISED BY OLI CAV Oliver Caviglioli @olicav

REVIEWING MATERIAL

1 Daily review

10 Weekly and monthly review

Daily review is important in helping to resurface prior learning from the last lesson. Let's not be surprised that students don't immediately remember everything. They won't! It's a powerful technique for building fluency and confidence and it's especially important if we're about to introduce new learning – to activate relevant prior learning in working memory.

QUESTIONING

3 Ask questions

6 Check for student understanding

The main message I always stress is summarised in the mantra: ask more questions to more students in more depth. Rosenshine gives lots of great examples of the types of questions teachers can ask. He also reinforces the importance of process questions. We need ask how students worked things out, not just get answers. He is also really good on stressing that asking questions is about getting feedback to us as teachers about how well we've taught the material and about the need to check understanding to ensure misconceptions are flushed out and tackled.

SEQUENCING CONCEPTS & MODELLING

2 Present new material using small steps

4 Provide models

8 Provide scaffolds for difficult tasks

Small steps – with practice at each stage. We need to break down our concepts and procedures (like multi-stage maths problems or writing) into small steps that each be practised.

Models – including the importance of the worked-example effect to reduce cognitive load. We need to give many worked examples; too often teacher give too few.

Scaffolding is needed to develop expertise – a form of mastery coaching, where cognitive supports are given – such as how to structure extended writing – but they are gradually withdrawn. The sequencing is key. Stabilisers on a bike are really powerful aids to the learning and confidence building – but eventually they need to come off.

STAGES OF PRACTICE

5 Guide student practice

7 Obtain a high success rate

9 Independent practice

Teachers needs to be up close to students' initial attempts, making sure that they are building confidence and not making too many errors. This is a common weakness with 'less effective teachers'. Guided practice requires close supervision and feedback.
High success rate – in questioning and practice – is important. Rosenshine suggests the optimum is 80%. I.e. high! Not 95-100% (too easy). He even suggests 70% is too low.

Independent, monitored practice. Successful teachers make time for students to do the things they've been taught, by themselves... when they're ready. *"Students need extensive, successful, independent practice in order for skills and knowledge to become automatic"*

Barak Rosenshine's

Principles of Instruction

How our teachers help us learn

We review our learning daily – this is to help us to remember!

We review our learning from previous weeks, months and even years!

Our teachers ask us questions to help us think harder!

We explain how we solve problems, not just give the answer.

Our teachers break down our learning into small steps and ask us to practise.

We have models and examples which help us understand.

We are given support in different ways to help us to complete our work.

Teachers help us become more confident and make fewer mistakes.

Teachers help us to be successful when answering questions.

We complete work by ourselves when we are ready.

Bibliography and further reading

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(note: many of these texts are available in your school's as well as the training hub's CPD library)

Below are links to some thought-provoking blogs writing about teaching and learning:

Alex Quigley: https://www.theconfidentteacher.com/

Christine Counsell: https://thedignityofthethingblog.wordpress.com/

Clare Sealy: https://primarytimery.com/

Craig Barton: http://www.mrbartonmaths.com/blog/ (including links to podcasts)

Daisy Christodoulou: https://daisychristodoulou.com/blog/

Doug Lemov: https://teachlikeachampion.com/category/blog/

The Learning Scientists: https://www.learningscientists.org/blog

Mary Myatt: https://www.marymyatt.com/blog

Tom Sherrington: https://teacherhead.com/