GEMS Winchester School Dubai

Teaching & Learning Policy
(Whole School)

Person(s) Responsible: Vice Principals, Head of Primary & Head of Secondary
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Contents

1. Introduction

At GEMS Winchester School Dubai (WSD), we believe in delivering the highest quality learning opportunities for our students in every lesson. As 'teaching' and 'learning' are at the heart of this policy, it is important to begin with clear definitions of these two terms:

- By 'teaching' we mean creating situations in which learners will learn effectively
- By 'learning' we mean acquiring knowledge, understanding and skills, and being able to retrieve them readily in the future

The aim of this policy is to provide a shared understanding amongst all of our teachers of what our *typical* teaching might include with the aim of achieving consistently high-quality teaching. Therefore, at WSD, we emphasise using techniques that we believe work best to promote learning, such as:

- The crucial importance of balancing knowledge and skills for all learning
- The importance of developing high literacy levels so students can access learning
- The need for students to develop their Learning Skills by explicitly teaching competencies within the framework of each subject discipline
- The importance of reviewing previously-studied material regularly to make it stick
- The importance of using formative and summative assessments, as well as other assessment for learning strategies, to move learning forward
- The development of effective whole class questioning techniques that oblige all learners to think

At the heart of our approach to Teaching & Learning is the belief that, in promoting learning, some techniques work better than others, though we recognise that this might be subject or discipline-dependent. Through high-quality professional learning, we aim to train our teachers on what techniques work best and then expect to see them deliver this in their lessons.

Furthermore, our Teaching & Learning Policy does not try to present all of the techniques that may promote good learning – there may well be hundreds of those. Instead, the aim of this policy is to ensure greater consistency in WSD teachers' classroom-use of techniques that we believe will help to embed learning.

To that end, we are persuaded that Barak Rosenshine's 'Principles of Instruction' is a very useful summary of the evidence around effective teaching. Subsequently, Rosenshine's Principles are reflected throughout this policy.

At WSD, we firmly believe that it is hard to be prescriptive about how every lesson will be structured in the wide range of subjects that make up the WSD timetable. However, we do believe the following elements should form part of a teachers' typical teaching at our school. This does not mean they have to be part of every lesson but that, over time, their use should be typical of the teachers' practice.

The list below is designed to provide both teachers and leaders with a guide for teaching lessons that are consistent with the WSD Teaching & Learning Policy. In typical lessons at WSD, we expect to see:

1. **Learning Objectives and Success Criteria**, that are age appropriate and challenging, so that there is clarity about what is being learned and a way of checking that progress is being made. There should be a balance between knowledge and skill development in the design of this element of a lesson.

   For further information, please see this section on 'The Importance of Balancing Knowledge and Skills' in the Appendix.

2. A **'Starter or Task on Entry'**, which provides the students with an activity to complete while the class is settling and the teacher is preparing for the lesson ahead. For example, a question(s) linked to prior learning, a 'hook' question or similar. Using this as a way of interleaving prior learning and maximising learning time is a good idea.

3. **A review of learning**, most likely at the start and end lessons at least, of both recent and previous learning, to fill gaps in learning and address any misconceptions, as appropriate.

   For further information, please see this section on 'Retrieval Practice' in the Appendix.

4. **Clear explanations and instructions** - we tell students explicitly what they need to know, in plain language, and we often re-explain to ensure clarity. We present new material in small steps, with student practice after each step to minimise cognitive load. If it is appropriate, a well-written text-book provides consistent clarity for all teachers of a subject as well as promoting subject-specific literacy development, as well as tasks that can be used to support and challenge all learners appropriately.

   For further information, please see this section on 'Developing High Literacy Standards' in the Appendix.

5. The use of many **examples, worked examples and models**, with the teacher deconstructing examples and models and 'thinking aloud', which is powerful for learning. By 'example', we mean an actual piece of work, such as a student's answer to a question; by 'worked example', we mean an answer that the teacher has annotated, for example to draw attention to how a student has met the success criteria for a task; by 'model', we mean the teacher sharing, with students, an example of a strong answer to an essay question. It might also include teachers modelling an activity themselves before the students attempt this, as appropriate.

6. Using **Assessment for Learning** techniques to check for understanding through responsive teaching: we don't guess, we check smartly* that the students 'get it' and we adapt our teaching (see Point 9), based on our students' strengths and needs. If it is clear from our checking that a significant number of students haven't 'got it', we re-teach.

   Less smart checking for understanding might involve the teacher generalising from the response made by one student or even several, and just asking students to say whether they have got it ('Fist to 5'; Red/Amber/Green etc...) and taking their word for it!

Smart checking for understanding might include Think/Pair/Share, live marking/going around whilst the students are working to see what they are producing; use of mini-whiteboards; use of multiple-choice questions (making sure that it's very hard for students to guess the right answer); quizzing/testing; asking students to explain what they have learned. The important thing is that the teacher is seeking to check all students' responses or using students to conduct well-constructed peer and/or self assessment.

7. **Questioning** that is aimed at making all of the students think, with think-time after the question is posed, and the opportunity for students to articulate their thinking (for example, through Think/Pair/Share).

   For further information, please see this section on 'Effective Whole-Class Questioning' in the Appendix.

8. **Guided and independent learning activities** – the teacher should not allow students to practise on their own until she/he is confident they can do so with a high success rate. Some students may need to use a 'scaffold', such as a sentence starter or writing frame, to get them going. Students need to do a lot of practice to help new learning to stick and to achieve automaticity in knowledge retrieval. Creating time in lessons for guided learning activities is also a great opportunity for students to collaborate with each other to work without significant input from the teacher.

9. **Adaptive Teaching** that ensures challenge and support for all by using scaffolding and extension tasks in every stage of the lesson. Teachers should know their students, by using assessment information, including current working levels/grades and information gathered through AfL. Teachers are expected to meet the needs of students with Individual Education Plans (IEPs), as well as the needs of students who don't have an IEP. Teachers at WSD typically respond to the needs of individual students and groups of students by:

   - Targeting their questions judiciously during whole-class questioning
   - Providing support to students that need it during guided and independent learning activities
   - Providing extension work to stretch and challenge students during guided and independent learning activities
   - For students with Individual Education Plans (IEPs), there are specific strategies that teachers are expected to use to ensure these students also make great progress
   - Teachers are reminded that a well-written text-book provides tasks that can be used to support and challenge all learners appropriately

10. **Developing Competency** – at WSD, we are persuaded by the research evidence that shows students do not have individual learning styles but, instead, learn in remarkably similar ways. However, we do believe that every child should develop their 'Learning Skills' through seven Key Competencies: We call these the WSD 7Cs. However, we also accept that these need to be developed within the context of each subject and a range of strategies have been shared for how teachers might do this effectively.

    For further information, please see this section on 'Learning Skills and the WSD 7Cs' in the Appendix.

11. '**Live Feedback**' – while students are getting on with work, the teacher is circulating to mark student work and give verbal feedback to help students move their learning forward. Teachers provide feedback on standards and make use of time to improve their work through 'Make A Difference' or 'Dedicated Improvement and Reflection Time', supporting, stretching and challenging students, and gaining feedback on what the students have understood well and what they have not yet understood well. Live feedback also helps teachers to decide whether they need to adapt their teaching, for example because students are making many errors which suggest they have not been given sufficient guidance yet.

12. A high standard of **student engagement and on-task behaviour built on strong relationships of mutual trust and respect** - students are working hard, there is very little (if any) wasted time; students are used to periods of silence whilst they work (if this is appropriate). Teachers should have high expectations and

standards of book presentation and are encouraged to use strategies such as 'PROUD' marking. Teachers at WSD are also expected to work hard to build relationships with students as this is the bedrock of successful learning.

13. **Closing the lesson with a review** that tests whether students can demonstrate the key learning covered in the lesson. The review will aim to consolidate the key learning, fill any gaps in the learning and address any remaining misconceptions. A final quiz, with oral or written questions based on the learning intention(s) and success criteria for the lesson, is a good example of an effective final review. You may also wish to show how the lesson will be useful in the future learning journey of the students.

Checklist for Planning

The following list is an 'aide memoire' checklist for teachers to use when planning lessons, based on research evidence on how we learn best:

- Build **STRONG RELATIONSHIPS** based on mutual trust and respect.

- Ensure you have planned to **WELCOME THE CLASS** and have routines embedded to ensure a smooth start to learning and to ensure no lost learning time; this might include a **TASK ON ENTRY**

- Tell students what they should be learning (**LEARNING OBJECTIVES**) and how they can check whether they have been successful (**SUCCESS CRITERIA**).

- **REVIEW OF LEARNING**, at either the **START**, **DURING** (review) and/or **END** of the lesson.

- **EXPLAIN** things very clearly and use exemplars to show what a good one looks like, remembering to **PROMOTE LITERACY** through reading and sharing keywords, for example.

- **CHECK** 'smartly' that the students get it.

- Ask questions of everyone (**THINK PAIR SHARE** and **NO HANDS UP**).

- Set **CHALLENGING WORK** for everyone by **ADAPTING TEACHING**; we use **ASSESSMENT INFORMATION** to identify the students who need **SUPPORT**, as well as to **EXTEND** those that finish the work early, or who need an extra **CHALLENGE**. **IEPs** to help support our students who are identified as needing more support than most.

- We look for opportunities to develop the **LEARNING SKILLS** through the WSD 7Cs and use shared strategies for developing these in all subjects.

- Give '**LIVE FEEDBACK**' verbally or with a **RED/PINK** pen or highlighter, whilst students are working; give **VERBAL FEEDBACK** and ask students to note that verbal feedback has been given; correct **GROSS ERRORS** of spelling, punctuation and grammar (SPAG) and ask students to **CORRECT MISTAKES** in **GREEN** pen or highlighter.

- Insist on **HIGH STANDARDS OF WORK AND BEHAVIOUR**, as well as periods of individual work in silence (if appropriate), to help all students engage well and concentrate.

3. Teaching & Learning in the Early Years Foundation Stage (EYFS)

At WSD, we acknowledge that teaching in Foundation Stage 1 (FS1) and Foundation Stage 2 (FS2) might look different to the guiding principles identified above. As a British Curriculum school, key documents issued by the Department for Education in the United Kingdom underpin our approach to pedagogy in the Early Years – these are listed below:

- Statutory Framework for the Early Years Foundation Stage (DfE, 2021)
- Early Years Foundation Stage Profile handbook (DfE, 2022 handbook)
- Development Matters (DfE, 2020)

The EYFS Framework identifies four guiding principles which we use to shape our practice in school:

- Every child is a unique child, who is constantly learning and can be resilient, capable, confident and self-assured
- Children learn to be strong and independent through positive relationships
- Children learn and develop well in enabling environments with teaching and support from adults, who respond to their individual interests and needs and help them to build their learning over time. Children benefit from a strong partnership between practitioners and parents and/or carers
- Children develop and learn at different rates. The framework covers the education and care of all children in early years provision, including children with special educational needs and disabilities (SEND)

The EYFS framework includes seven areas of learning and development, all of which are important and interconnected. Three areas are crucial for igniting children's curiosity and enthusiasm for learning, for building their capacity to learn and form relationships and thrive. These are known as the prime areas. There are also four specific areas, through which the prime areas are strengthened and applied.

The Prime Areas	The Specific Areas
- Communication and Language - Physical Development - Personal, Social and Emotional Development	- Literacy - Mathematics - Understanding the World - Expressive Arts and Design

The EYFS Framework identifies three characteristics of effective learning. Both our curriculum and pedagogical approach have been developed with these characteristics in mind:

- Playing and exploring - children investigate and experience things, and 'have a go'
- Active learning - children concentrate and keep on trying if they encounter difficulties, and enjoy achievements
- Creating and thinking critically - children have and develop their own ideas, make links between ideas, and develop strategies for doing things

We believe it is essential to have a balance between adult and child-led learning in the Early Years. This allows children to practise new skills and take ownership of their learning by applying it in different situations. Carefully planned adult-led activities are important to ensure children learn specific skills and knowledge. During play, they can practise these skills and we can then see how much of this learning children have embedded.

Both FS1 and FS2 follow daily timetables which provide set times for adult-led sessions and time for children to learn through continuous provision. Teachers plan for both adult-led and child-led sessions based on children's

needs and any gaps in their learning. Staff will make on-going assessments of the progress and attainment of each child and use this information to aid future planning.

Learning through play (child-led learning)

Learning through play and practical hands on experiences underpins our approach to teaching and learning in Early Years. Through play, children develop a number of skills such as language, their emotions and creativity, social and intellectual skills. Children are able to able to practise and learn new skills and revisit prior learning and experiences at their own level and pace. Independent learning takes place both indoors and outdoors and it is in these different environments that children explore and discover their immediate world.

For most children their play/independent learning is natural and spontaneous although some children may need extra help from adults. Adults model and provide time, space and appropriate resources which inspire independent learning opportunities and the imaginations of the children. They observe play and join in when appropriate, watching and listening before intervening. Adults will model, observe, facilitate and extend children's learning. They will often ask children questions about the independent learning in order to develop their language and communication skills. During these play-based opportunities, teachers will also carry out 'long observations' where they will observe a child or group of children. This is an extended written assessment that includes a verbatim record (exactly what the child said) of the language used by the child, level of involvement and other children that they play with. From this the teacher will use this to inform their planning to identify the child's achievements and next steps.

Adult-led learning

Through adult-led activities we can introduce children to new ideas, provide opportunities for them to develop their skills and ensure that they experience all areas of learning in the EYFS. In addition to child-initiated learning, children are provided with daily adult-led sessions. Both FS1 and FS2 have daily teaching sessions. These are normally Phonics, Literacy and Maths. Teachers also plan whole class/group inputs linked to other areas of the curriculum when appropriate. Children also have at least one daily story session. These whole class/group sessions help to develop vital habits of learning such as learning as a group and taking turns.

Teachers plan sessions based on the children's needs and differentiate them accordingly. Children are active learners during these sessions and they are provided with skills which they can then go and practise independently. Adult-led learning can also take place during continuous provision and indoor and outdoor activities are planned to help address gaps in children's learning.

Outdoor learning

Outdoor learning is a fundamental part of the Early Years and it has a positive impact on children's development. Being outdoors offers children the freedom to explore, use their senses and be physically active. It also offers opportunities to do things in different ways and on different scales compared to indoors.

Our outdoor environment provides a range of resources and activities for children to explore and we try to ensure each of the curriculum areas are incorporated into the outdoor environment each day. Both FS1 and FS2 have access to outdoor areas and they either have free-flow access or timetabled sessions inside and outside. Outdoors is both a teaching and learning environment, where there is a balance of child led and adult-led learning.

The outdoor area is comprehensively risk assessed and daily checks are completed by staff.

4. Monitoring, Evaluation and Review

At WSD, we use Monitoring, Evaluation and Review (MER) to help the leadership of the school know we are providing a high-quality Teaching & Learning environment for our students.

Throughout the year, all teachers receive regular feedback on the quality of Teaching & Learning that takes place in their classroom. This information is used to make judgements about the overall quality of teaching and learning, but also to inform individual teachers Appraisal & Performance management judgements.

In order to capture this information, WSD uses an online tool called 'Lessons Learned'. Through this platform, school leaders collate MER information and evaluate the effectiveness of our teaching provision. These are typically from the following forms:

- Formal Lesson Observations – typically full lesson observations, graded against the KHDA framework
- Formal Learning Walks – typically 20 minutes long, graded against the KHDA framework
- Inclusion Learning Walks – typically 20 minutes long, looking specifically at the effectiveness of our adaptive teaching practices
- Book Scrutiny – proforma to evaluate the effectiveness of feedback and the quality of work produced
- Planning Scrutiny – proforma to check the quality of lesson planning to ensure the principles for effective teaching are being followed

Furthermore, school leaders will also produce an annual MER Calendar to guide Middle and Senior Leaders through the successful completion of the MER identified above.

For further information about our use of Lessons Learned, including how we complete forms for Formal Lesson Observations, Formal Learning Walks, Book and Planning Scrutinies, as well as Inclusive Learning Walks, please click here.

5. Professional Learning and Development

As part of our continuing drive for improvements in teaching and learning, GEMS Winchester School Dubai provides all our staff with Professional Learning and Development (PLD) opportunities to improve their practice.

What follows is a short summary of the opportunities for PLD offered to our staff that are aimed at explicitly improving the quality of Teaching & Learning. Further information about professional learning and development opportunities at WSD can be found by visiting our bespoke PLD website: https://wsdpld.weebly.com/

Appraisal & Performance Management

In order to improve the quality of Teaching & Learning at WSD, all colleagues set objectives aimed at improving their teaching practice through our annual Appraisal & Performance Management system. At WSD, we take the Appraisal & Performance Management of our staff very seriously - after all, we know that our people are the most important aspect of ensuring our students and families get a fantastic educational experience.

For further information about this, please click here.

Coaching and Mentoring Programme

Staff who express a desire for bespoke professional development, or in some cases those who have been identified as staff who would benefit from extra support/guidance, may be assigned a mentor as part of our 12-18 weeks mentor programme. Those on the programme will have a dedicated mentor for weekly meetings, feedback from observations, target setting and general guidance.

For further information about this, please click here.

Teacher Training Programme

Staff on this programme will go through WSD's bespoke teacher training programme, delivered by SLT and Middle Leaders. Sessions are aimed at developing pedagogical understanding across key areas, with follow up tasks to ensure participants can put the learning into practice and get feedback.

For further information about this, please click here.

Pre-Induction Training Programme

Staff who are new to WSD will be expected to engage in a series of online training videos that help to prepare teachers in joining our school. After each module reflection exercises must be completed and these are shared with their line manager when they join the school.

For further information about this, please click here.

GEMS Network

Further to the PLD provided in school, all teachers have access to extensive opportunities for development provided by the GEMS network. This includes mandatory training for all staff, as well as opportunities for development at a cluster level.

6.   Links to Other Policies

The school policy on the Teaching & Learning embraces WSD's aims and ethos, reflected in its policies and procedures. Key policies which are explicitly linked are:

- Curriculum Policy
- Appraisal & Performance Management
- Inclusion Policy
- Home Learning Policy
- Safeguarding & Child Protection Policy
- Assessment & Feedback Policy
- Health and Safety Policies
- Behaviour Policy

7.   Appendices

The following Appendices have been included to provide greater guidance on the key aspects of this Teaching & Learning Policy. They have also been included to provide guidance for any professional learning and development opportunities afforded to all staff.

- The Importance of Balancing Knowledge and Skills

- Developing High Literacy Standards

- Learning Skills and the WSD 7Cs

- Retrieval Practice

- Effective Whole-Class Questioning

'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.' (Barak Rosenshine, 'American Educator', Spring 2012)

'What you already know determines what you can learn and how you think. Learning proceeds quietly and efficiently when what is new builds directly on what is already secured.' (John Hattie and Gregory Yates, The Science of How We Learn,' 2014)

At WSD, we believe that knowledge is the foundation of all learning. We want our students to build a bank of knowledge in their long-term memory, including knowledge of many facts and 'inflexible' knowledge because, as students accumulate knowledge over time, the interplay between different pieces of knowledge will allow for deeper learning to occur. This deeper learning will, in turn, encourage 'inflexible' knowledge to become flexible - capable of being used in a variety of ways and across subjects.

Knowledge really matters because, as Daniel Willingham says, *'The processes of thinking are intertwined with the content of thought'* (Willingham, 2007, 'Critical thinking: why is it so hard to teach?') or, put more simply, thinking well requires knowing facts - to think well, we have to have something 'in there' to think about.

For clarity, inflexible knowledge is knowledge that, at the point of being acquired, is tied to a specific context and cannot yet be generalised from. For example, a student is studying a poem and learns for the first time that the words 'the snake's soft sounds of hissing' are an example of alliteration in the poem. The student is taught that alliteration means the repetition of the same first letter, the 'S', in this case, in three adjacent words, but the knowledge may not be sufficiently embedded to ensure she can spot the alliteration in a different poem she reads six months later when it is not pointed out by the teacher. The ability to spot instances of alliteration in other texts, at different times, would suggest strongly that the student's learning about alliteration had moved from being inflexible knowledge to being flexible knowledge.

What some people view as 'natural talent' is invariably the result of the accumulation of knowledge over time; when layers of knowledge are combined through deliberate practice into a process, this process is often described as a skill: serving in tennis; playing chess; writing a grammatically correct sentence and so on. In other words, we view skills as layers of knowledge, honed through practice, that become a process or task.

At WSD, we also recognise that teaching students the skills they need to make use of this knowledge and utilise it in tests, assessments, exams and real-life is an essential part of learning. Being able to spot alliteration in a text is important, but will not gain the student many marks when assessed. In order to gain high grades in an assessment about the text, students need the skill of explaining and analysing the impact of that literary device – in this case alliteration - on the text and the reader; they need the skill of constructing an argument relating to the impact of the device, as intended by the author; they need the skill of articulating that argument in a concise, convincing and linguistically accurate manner. Knowing and identifying alliteration is the knowledge; constructing an argument to justify the impact of that device in a text is a skill.

Thus, at WSD, we recognise that finding a balance between teaching students the knowledge they need in a subject, alongside teaching and practising the skills that serve as a means by which to show off that knowledge, is our fundamental role as a centre of education.

2. Developing High Literacy Standards

Addressing standards in literacy is central to promoting learning in all areas of the curriculum. Typically, we develop students' literacy through reading texts in class. When reading in class, we:

- Model reading aloud and we model quality standard language - that is, the teacher reads to the class
- Insist students follow text closely, for example by using a ruler
- Call on students to read aloud in class, applying support and challenge judiciously
- Identify and teach vocabulary and language which may present a challenge in terms of students' comprehension, transfer to active productive use, or spelling
- Re-read texts to develop comprehension and fluency

3. Learning Skills and the WSD 7Cs

At WSD, we are persuaded by the research evidence that shows students do not have individual learning styles but, instead, learn in remarkably similar ways. However, we do believe that every child should develop their 'Learning Skills' through seven Key Competencies: We call these the WSD 7Cs.

These competencies are valuable across a range of subjects and we believe that developing these competencies will be important for our students both at school as well as when they move onto the next phase of their lives. However, while we feel strongly that these competencies should be developed in our students, we are clear that they can only be developed through subject specific contexts.

The following table summarises the WSD 7Cs and describes what each competency means:

Competency	Description
Collaboration	Effectively work with others, whether in pairs or as part of a larger team. They collaborate in a positive respectful manner that results in productive outcomes.
Critical Thinking	Students can apply classroom-based learning to real world context and make connections across areas of learning. They analyse results to form sound judgements, as well as evaluate their work in order to identify possible improvements. Plans to achieve their goals are well thought out.
Curiosity	Students can engage in and take responsibility for their learning. They actively seek answers to the bigger questions of 'how' and 'why' to quench their thirst for knowledge. Enquiry skills are a strength and students are able to complete independent research both with and without the use of technology.
Creativity	Students are given opportunities to break away from convention as they explore ideas attributed to their unique way of thinking. Students are innovative and resourceful in their approach and are not afraid to take calculated risks. They are able to think outside the box, whilst still maintaining any design brief.
Communication	Students can communicate effectively with peers and adults alike. They use a wide range of interactive learning strategies, including roleplay, peer teaching and presentations. In addition to being able to clearly express themselves, explain their work and articulate their ideas, students are also active listeners.
Consciousness	Students can demonstrate strong social awareness and possess the ability to make moral judgements that inform decision making. Students are culturally aware and emotionally intelligent, showing appreciation and tolerance of the views of others, even when they differ from their own.
Confidence	Students take risks in their learning while maintaining firm belief in their ability. They grasp opportunities to make decisions, take responsibility and lead wherever possible. Students thrive on challenge and have the mindset to keep going, even when it is tough.

In order to help our staff and students understand how they can develop our 7Cs, we have produced a rubric that outlines how students can develop these competencies over time. For each of our competencies, we have developed three levels of challenge, from which students can review if they are 'Experienced' in a competency, 'Proficient' or 'Masters'.

For more information about these rubrics, please access these via our WSD PLD Website using either the Primary Phase link, or the Secondary Phase link.

4. Retrieval Practice

At WSD, we recognise the importance reviewing learning as a way of checking what students remember as well as 'warming them up' in preparation for new learning. Just because teachers have 'taught' something doesn't mean that students have learned it, so we need to create multiple opportunities for our students to retrieve their learning. One of way of doing this is teacher-quizzing, self-quizzing and internal tests/exams.

Low Stakes Quizzing and Testing

Over 100 years of scientific research suggests that low stakes quizzing and testing can have a powerful impact on remembering and forgetting. After all, if nothing has been retained in long-term memory, nothing has been learned. Regular low stake quizzing and testing, by ensuring students retrieve their learning regularly, can arrest the forgetting process and help ensure they remember for the long term; in other words, a key purpose of testing is retrieval practice.

Retrieval practice is important to help our students develop automaticity in their learning. Studying material that we already feel we know again and again so that we can retrieve it automatically is very helpful for both overcoming the natural forgetting process and for freeing up space in our working memory, reducing cognitive overload. For example, the ability to retrieve the times tables automatically is a good example of how 'overlearning' can facilitate the acquisition of more complex mathematical knowledge.

Drilling

By 'drilling', we mean the techniques we use, usually in class, to ensure repeated practice with the aim of embedding knowledge in students' long-term memory and facilitating retrieval in the future.

Drilling happens principally during the teaching/input stage of a lesson and it is usually oral (although it can be written or include a written element). Through drilling, the teacher is aiming to reinforce key points and facilitate automaticity in the retrieval of key information by students. Drilling aims to engage all students; it is active and participatory, and it is often fast-paced.

Key drilling activities are:

- Repetition: the teacher says something and the students repeat it a number of times.
- Finish my sentence: the teacher starts a phrase or sentence and this acts as a prompt to help students finish it off: 'The square root of 81 is 9. The square root of 81 is…'
- Cold calling: the teacher asks a question and calls on a student or group or the class to answer it. For example, 'What's the square root of 81, everyone?' 'The square root of 81 is… John?'

Drilling works by being done multiple times, including during review. Since it often involves the use of questions, it is closely linked to quizzing/testing.

<u>Reviewing</u>

By reviewing, we mean going over, with students, the key learning from work they have previously done. Unless we regularly go over material that students have already studied, much of what they have 'learned' will be lost or very hard/impossible to retrieve over time. Teachers should systematically:

- Review current key learning
- Review recent key learning, for example key learning from the previous lesson or two
- Review previous key learning, for example from the previous unit(s) of work, alongside the 'new' learning (this is an example of both spacing AND interleaving).

The best way to review learning is through testing. Regular review over time, with new and old learning interleaved, has the greatest chance of making learning stick.

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5. Effective Whole-Class Questioning

The main reason for asking questions is to oblige students to think; learning comes from thinking. Whole-class questioning should encourage all of the students to think. During whole-class questioning, directing questions at individual students can be a tool for ensuring accountability ('You all need to think about this because in a minute I may ask YOU!'), but this should be in addition to what the teacher has already done to oblige everyone to think. At WSD, teachers ask a lot of questions because, in addition to obliging students to think, questioning is a good way of flushing out misconceptions so they can be tackled.

An example of effective questioning is the strategy 'Think/Pair/Share'. This is an example of how questions can be directed at everyone; if done correctly, it has strong advantages over questions directed at individual students:

- It invites everyone to think about the question
- It provides everyone with an opportunity to articulate their thinking (the process of articulating our thinking can improve it)
- Students can learn from each other in a relatively non-threatening environment ('Tell your partner your answer' is far less threatening than 'Tell your answer to the whole class')
- The 'sharing' can provide the teacher and the students with an opportunity to check whether the students have 'got it' (the other main reason for questioning - helping the teacher to decide what to do next, such as re-teaching a key point or moving on).

The power of whole-class questioning is maximised by asking everyone; directing questions at individual students during whole-class questioning should be an infrequent activity and there should be a sound reason for doing it, such as challenging a student's inattention (classroom management).

Teachers need to allow students time to think after they have asked a question and before they ask for a response; questioning without providing students with time to think is, largely, a waste of time. Think-time should also be heavily structured. For example, the teacher asks the whole class: 'What poetic device is being used in the line 'The snake's soft slithering'? Think about that for a moment'. After a moment, the teacher then says, 'Turn to the person next to you and tell them what you think'. Asking the question this way hits four key buttons:

1. Everyone has been asked to think;

2. Everyone has been given a moment to think;
3. Everyone has the opportunity to articulate their thinking and
4. Students have the opportunity to learn from each other.

When asking whole-class questions, we avoid inviting hands-up from students as, in Dylan Wiliam's words *'Hands-up makes the smart kids smarter!'* We oblige everyone to think, not just the confident/keen/higher-performing students. Therefore, our general rule is no hands-up except to ask a question or to vote.

Furthermore, the quality of questions asked is equally as important as how you oblige all learners to think and engage with your questioning. The table below is a useful guide, linked to Blooms Taxonomy, for asking increasingly complex questions by providing question stems:

BLOOM'S TAXONOMY : More extended examples of skills, cue words and question stems

Competence	Skills Demonstrated	Question Cues:
Knowledge	• Observation and recall of information • Knowledge of dates, events, places/major ideas • Mastery of subject matter • Factual recall	list, define, tell, describe, identify, show, label, collect, examine, tabulate, quote, name, who, when, where, etc
Knowledge Question stems:	Tell me about …? • Can you list …? • How many …? Where did …? • Who are the …? • Who said …? When did …? • Who wrote …? • When was …?	What date did …? • What is …? • Where can you find …?
Comprehension (understanding)	• Understanding information and grasp meaning • Translate knowledge into new context • Interpret facts, compare, contrast, order, group, infer causes and predict likely consequences • Suggest connections	summarise, describe, extend, interpret, contrast, predict, associate, distinguish, estimate, differentiate, discuss, extend.
Comprehension Question stems:	Can you list the sequence …? • What happened after …? • How do you know …?	Who can explain …? • What is the difference between …? • How would you describe …?
Application	• Use information • Use methods, concepts, theories in new situations • Solve problems using required skills or Knowledge • Visualise actions in a real life/applied situation	apply, demonstrate, change, calculate, complete, classify, illustrate, show, solve, test, examine, modify, relate, do, make, construct, discover, manufacture, make.
Application Question stems:	How could this have happened in…? • What factors would you change if …? • How would you react when …?	What would you do if …? • What questions would you ask if …? • What would you need if …?
Analysis	• Seeing patterns & organization of parts • Recognition of hidden meanings • Identification of components • systematically consider data sets	analyse, separate, order, explain, connect, classify, arrange, divide, compare, probe, explain, deduct, infer.
Analysis Question stems:	How was this similar / different to …? • What was the problem with …? • What evidence proves …?	Why did … precede/follow …? • What are some of the motives behind …? • Do you think that …?
Synthesis	• Use old ideas to create new ones • Generalize from given facts • Relate knowledge from several areas • Predict and draw conclusions • Redefine what is known • Reconceptualise for new situations	combine, integrate, modify, re-arrange, substitute, plan, create, design, invent, what if?, speculate, compose, formulate, prepare, rewrite, generalise, propose, model.
Synthesis Question stems:	How would you design … for …? • What would happen if …?	What if we found out that …? • Could you see a possible solution to …?
Evaluation	• Compare and discriminate between ideas • Assess value of theories, presentations • Make choices based on reasoned argument • Verify value of evidence • Recognise subjectivity • Balancing evidence using criteria	assess, decide, rank, grade, test, measure, recommend, convince, select, judge, explain, discriminate, support, conclude, compare, appraise, summarise.
Evaluation Question stems:	Do you believe …? • How would you choose/assess …? • What would you judge …?	Do you think … is a good or bad thing? • How effective is/are …? • On balance, what is the argument for…?
Creativity	• Applies all of the previous categories to inform thinking and actions • Identifies and solves problems • Thinks independently and in new ways, able to originate and innovate • Collaborate as part of a team or be independent • Can empathise and shift perspective as needed	design, imagine, conceive, innovate, hypothesise, investigate, produce, invent, experiment, craft, fashion, generate, inspire, excite, compose, vision, wrought,
Creativity Question stems:	How would you respond to …? • How could you collaborate to …?	Can you imagine how …? • If you had to find a new way to …?

Adapted from: Bloom, B.S. (Ed.) (1956) Taxonomy of educational objectives:
The classification of educational goals: Handbook I, cognitive domain. New York; Toronto: Longmans, Green.