

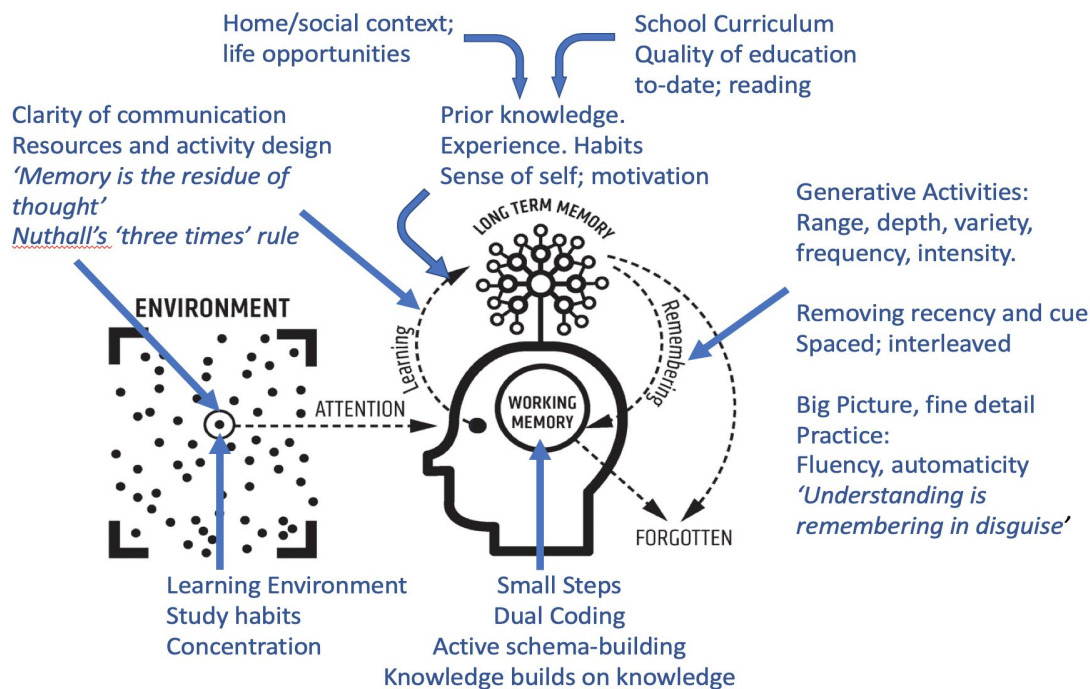


Teaching and Learning

As teachers at St Ursula's we are experts in our field and continually strive to improve our practice and knowledge through the use of current educational research and regular discussion about pedagogy and good practice. Combining this with excellent knowledge of our students and the recognition that success is a motivator, means that we expect every student to think hard and achieve their very best in every lesson. At St Ursula's we believe that the most learning happens when students make sense of ideas in relation to what they already know. Students have a wide range of prior knowledge which cannot be seen or entirely knowable; leading to significant variation in what students can and do learn from a common classroom experience or curriculum input. Making use of several seminal works of educational research we can provide consistent learning strategies to ensure all students receive a powerful knowledge to take them beyond their normal experience.

"Memory is the residue of all **thought**"
Dan Willingham - Why students don't like school.

"Learning happens when people have to **think hard**."
Prof Brian Coe 2013



Seminal Reading.

1. [Principles of Instruction – Rosenshine](#)
2. [What Makes Great Teaching – Coe et al via Sutton Trust](#)
3. [Cognitive Load Theory – Sweller via CESE](#)
4. [Improving Students' Learning – Dunlosky et al](#)
5. [Developing Great Teaching – Teacher Development Trust](#)

THE PRINCIPLES OF INSTRUCTION



TAKEN FROM THE INTERNATIONAL ACADEMY OF EDUCATION

This poster is from the work of Barak Rosenshine who based these ten principles of instruction and suggested classroom practices on:

- research on how the brain acquires and uses new information
- research on the classroom practices of those teachers whose students show the highest gains
- findings from studies that taught learning strategies to students.

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01 DAILY REVIEW



Daily review is an important component of instruction. It helps strengthen the connections of the material learned. Automatic recall frees working memory for problem solving and creativity.

02 NEW MATERIAL IN SMALL STEPS



Our working memory is small, only handling a few bits of information at once. Avoid its overload — present new material in small steps and proceed only when first steps are mastered.

03 ASK QUESTIONS



The most successful teachers spend more than half the class time teaching, demonstrating and asking questions. Questions allow the teacher to determine how well the material is learned.

04 PROVIDE MODELS



Students need cognitive support to help them learn how to solve problems. Modelling, worked examples and teacher thinking out loud help clarify the specific steps involved.

05 GUIDE STUDENT PRACTICE



Students need additional time to rephrase, elaborate and summarise new material in order to store it in their long-term memory. More successful teachers built in more time for this.

06 CHECK STUDENT UNDERSTANDING



Less successful teachers merely ask "Are there any questions?" No questions are taken to mean no problems. False. By contrast, more successful teachers check on all students.

07 OBTAIN HIGH SUCCESS RATE



A success rate of around 80% has been found to be optimal, showing students are learning and also being challenged. Better teachers taught in small steps followed by practice.

08 SCAFFOLDS FOR DIFFICULT TASKS



Scaffolds are temporary supports to assist learning. They can include modelling, teacher thinking aloud, cue cards and checklists. Scaffolds are part of cognitive apprenticeship.

09 INDEPENDENT PRACTICE



Independent practice produces 'overlearning' — a necessary process for new material to be recalled automatically. This ensures no overloading of students' working memory.

10 WEEKLY & MONTHLY REVIEW



The effort involved in recalling recently-learned material embeds it in long-term memory. And the more this happens, the easier it is to connect new material to such prior knowledge.



Rosenshine's Principles of Instruction

Rosenshine (2010, 2012) has summarised over 40 years of research on effective instruction with a key set of principles that maximise its impact. The starting point for this evidence base is a set of correlational studies linking particular observed classroom teacher behaviours with higher student outcomes. Rosenshine ten principles puts teacher expertise at the heart of the classroom, where both teacher and student are highly active participants. It helps teachers link practice to cognitive psychology, supporting the formation of a sound theory of action– that mental model teachers need providing a link between their actions and the learning process.

1. Present new material in small steps with student practice after each step.
2. Ask a large number of questions and check the responses of all students.
3. Provide models.
4. Guide student practice.
5. Check for student understanding.
6. Obtain a high success rate.
7. Provide scaffolds for difficult tasks.
8. Require and monitor independent practice.
9. Engage students in weekly and monthly review.
10. Lesson starts: Begin a lesson with a short review of previous learning.



The principles are a very clear and helpful description of what effective teaching and learning looks like.

These 10 principles can be broken down into four very clear strands each becoming the focus areas for teacher pedagogy at St Ursula's and are described in more detail in this booklet.

1. **Sequencing and Modelling**
2. **Questioning**
3. **Reviewing Material**
4. **Stages of Practise**

KEY NOTE ** *Do the principles all apply to every lesson?*

No. Rosenshine's work is NOT a checklist that needs to be included in every lesson, but a framework to encourage teacher development. **Think learning sequence not lesson plan.** Different lessons in a learning sequence might have more explanatory modelling; more questioning or more independent practice. However, over a series of lessons that relate to a secure sequence, you might expect all elements of the Principles to feature in some form.

Video Masterclass - These videos contain over 2 hours of masterclass, so take your time to browse each section.

[Rosenshine Masterclass I Intro](#)
[Rosenshine Sequencing and Concepts](#)
[Rosenshine Questioning](#)
[Rosenshine Reviewing Material](#)
[Rosenshine Stages of Practice](#)

Recommended Books.

[Rosenshine's Principles in Action](#) (Kindle unlimited **FREE!**)
[Rosenshine's Principles in Action - The Workbook Paperback](#) £3



STRAND 1

SEQUENCING CONCEPTS & MODELLING

2 Present new material using small steps

4 Provide models

8 Provide scaffolds for difficult tasks



Due to the limitations of working memory, chunking bigger ideas into their component parts reduces cognitive load. Therefore, the more effective teachers do not overwhelm their students by presenting too much new material at once. Clearly, the implication here is that teachers need to invest time in analysing their curriculum material to see how it can be broken down. This should be continuous departmental work.

Scaffolding can take many forms but can be thought of as anything that lessens the cognitive burden of the task. This might include providing prompts to start the lesson, talking through the answer yourself out loud to show your own way of approaching it, using checklists or through the use of diagrams and images.

- Narrate the thought process - By making the implicit explicit, teachers are supporting students to form their own mental models which builds confidence. Modelling by the teacher reveals the thought processes of an expert which helps to develop pupils' metacognitive skills.
- Pupils take information in on both a visual and auditory channel. Dual coded scaffolds can decrease cognitive load significantly.
- Spoken words are transient and too many ideas overwhelm the working memory. By leaving a visual record of the explanation we are allowing them to use part of our teacher schema to support their work.
- Scaffolding is needed to develop expertise – where cognitive supports are given – such as how to structure extended writing – but they must be gradually withdrawn or faded.

WALK
THRU



Modelling

'So that students know how to apply the knowledge and skills.'

WHAT IS IT?

Modelling is a key element to be used in teaching. In order for students to learn how to do something, they need to be able to watch the expert as they guide them through the process, step by step.

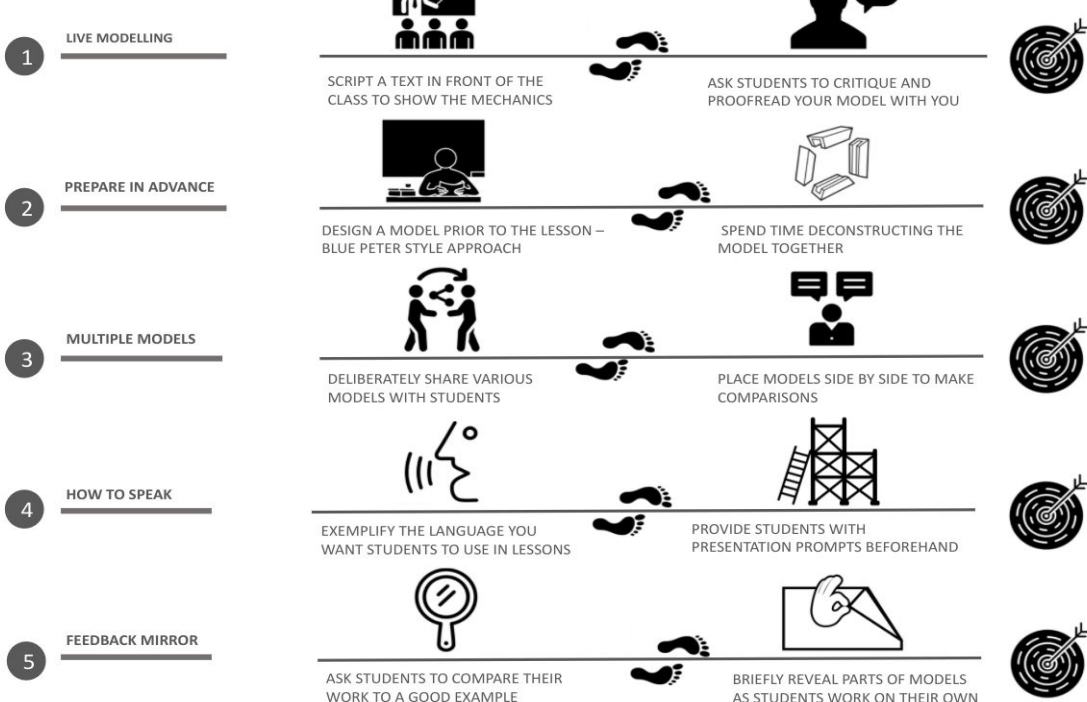
THE RESEARCH

In his Principles of Instruction Paper, Barek Rosenshine research found that modelling a procedure in small step-by-step chunks, then opportunities for focused practice, followed by more modelling and practise, is more effective in supporting students to grasp processes and concepts in lessons.

SUMMARY

Teachers are modelling every lesson, every day. We shouldn't assume that students know how to do something and always provide high quality models that benchmark excellence in your subject.

TAKEN FROM MAKE EVERY
LESSON COUNT BY SHAUN
ALLISON AND ANDY THARBY



Pocket Pedagogy Modelling/Worked Examples

Modelling thought processes, high quality examples and approaches to problems is an essential part of classroom practice. Rosenshine tells us [here](#) that more effective teachers spend more time guiding student practice. If we ask students to work independently without ensuring they have acquired and built up the relevant knowledge, their progress will be limited. Students firstly need declarative knowledge and secondly procedural knowledge in order to begin solving problems. By using worked examples and modelling, teachers are able to demonstrate how students can apply the knowledge they have worked hard to store in their long term memories through retrieval practice, as well as supporting students to develop their domain-specific procedural knowledge. John Sweller (1988) concludes [here](#) that approaching problems by working backwards from the problem and subsequently identifying how to close the gap between your current position and the end goal, imposes a 'heavy cognitive load.' Instead, we need to ensure students have acquired the relevant declarative knowledge and then expose them to multiple opportunities to engage with approaches and strategies to problems.

Top Tips

1. If you feel uncertain about live modelling, ask a peer or your coach to do some rehearsal with you. Just like our students, we need to practise in order to improve.
2. Use mistakes as a learning opportunity for students when modelling. If you change your mind about a word choice or get something wrong, acknowledge it and explain why this happened or utilise questioning to ask students to explain.
3. Support students with metacognition by asking them to talk through how they are going to approach a problem/question before they work independently. Challenge students to justify their thought process.
4. Do not allow lack of time to pressure you into rushing worked examples and modelling. Students cannot move from seeing one example straight into independent work. If you are concerned about time, speak to your Director or a peer about how you can approach this.

Reflection Questions:

- ✓ How much time are you dedicating to modelling in your lessons and what is the impact of this?
- ✓ Have you ensured your students have secured adequate declarative knowledge before exploring worked examples?
- ✓ How effectively are your students working when they reach a level of independence? Are they demonstrating the steps you have worked through? Do you need to intervene to address misconceptions?

Want to know more? Take a look at...

Rosenshine's Principles in Action, Tom Sherrington, **pages 15-25.**

How Learning Happens: Seminal Works in Educational Psychology

The Secret of Literacy, David Didau, **pages 33-38**

Teaching Walkthrus, Tom Sherrington and Oli Caviglioli, **pages 66-87**

BLOG: [Andy Tharby- A Simple Approach to Modelling](#)

Key Approaches/Strategies

I, We, You

I- teacher models steps to students, narrating their choices and process. Make the implicit, explicit.

We- Teacher and students co-construct a further example of work collaboratively through a problem.

You- Students work independently through the steps they have encountered in the first two stages.

Live Modelling

This involves the teacher modelling their thoughts, choices and approach to a question, problem or task in real time in front of the class. A great support for metacognition, it allows students to see all the micro decisions made and understand why they have been made.

Deconstructing High Quality Examples

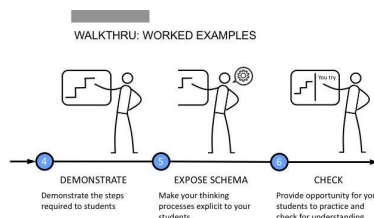
Pre-prepared examples allows you to ensure that the work you present contains everything you want it to. Make sure there is opportunity to deconstruct these as a class, allowing you to question students about the contents.

Faded Worked Examples

Present students with worked examples to varying levels of completion. After working through an example together, present another with a step missing and ask students to complete it. This can then be repeated with increasing levels of omission.

Use of the Visualiser

The visualiser is one of the most supportive tools you have at your disposal! It can be used to support all of the key strategies we have looked at. Supplement your models and worked examples by displaying students' work instantly and asking them to narrate their process/approach.



QUESTIONING

3 Ask questions



6 Check for student understanding



One of the strongest implications from Rosenshine's 'Principles of Instruction' is that effective questioning lies at the heart of great instructional teaching. Lined up with the work of Nuthall, William and others, it's clear that this needs to be a highly interactive, dynamic, responsive process.

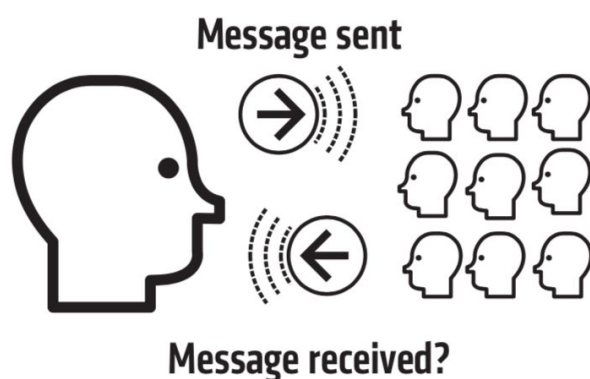
Ask more questions to more students in more depth. A strong message from Rosenshine is that more effective teachers ask more questions, involving more students, probing in more depth and taking more time to explain, clarify and check for understanding. In addition, they ask students to explain the process they have used to answer a question – to narrate their thinking.

Questioning Techniques

Cold Call	No hands up or calling out. If we want all students to learn all the material then they should all be involved in engaging with the teacher-student dialogue with time to think, and not be allowed to hide, dominate or be overlooked. This should be used routinely. <u>Ask everyone, allow thinking time, finally select who answers.</u>
No Opt Out	Students need to be secure to make mistakes but we don't lower expectations. Students who don't know or won't try should be given the opportunity to gain confidence by consolidating correct answers. Turn 'I don't know' into a success by helping students, rephrase the question, bounce to another student but always return to the original student to ensure they practise getting it right. <i>'Embrace – rather than apologise for – rigorous content, academic challenge, and the hard work necessary to scholarship.'</i> – Lemov (TLAC)
Probing Questioning	Make each question and answer exchange a mini dialogue, probing to explore student's understanding, developing their schema and modelling thinking. <ul style="list-style-type: none">That's interesting, what makes you say that? That's true, but why do you think that is? Can you give an example of where that happens? Can you explain how you worked that out? So, what happens if we make it bigger or smaller? Why? Are you sure? Is there another explanation? Which of those things makes the biggest impact? What is the evidence that supports that suggestion? Does anyone agree with that? Why? Does anyone disagree? What would you say instead? Why is that different? How does that answer compare to that answer? But what's the reason for that? Is that always true or just in this example? Is that a direct cause of the effect or is it just a coincidence, a correlation?

Questioning Techniques

Think Pair Share	Allocate talk partners, set a question with a time limit. Ask students to think hard first, use mini-whiteboards to allow them to write down their first thought, only then should they turn and discuss, then report back.
Say it again better	It is common for students first answers to not be fully formed, accept students' rough half-formed responses but allow them an immediate opportunity to add detail, fitness and then help them to reframe a better more complete response. Rewarding a mediocre answer lowers expectations.
Whole Class or choral Response	Use techniques like mini whiteboards or ABCD fingers to provide <i>simultaneous responses</i> from a whole class. Allow the class to respond chorally.
Check for Understanding	<p>The wrong way to check for understanding is to ask only a few questions, call on volunteers to hear their (usually correct) answers, and then assume that all of the class either understands. Another error is to ask, 'Are there any questions?' and, if there aren't any, assume that everybody understands. Another error is to assume that it is not necessary to check for understanding, and that simply repeating the points will be sufficient.</p> <p><i>Always, instead of 'Have you understood?', you should ask 'Can you tell me what you have understood?' It's a radically different question.</i></p> <p>It's especially powerful to ask multiple students, often yielding various different responses which throw up subtle points for further teaching. This can be combined with all-student response questioning with mini whiteboards or other short writing tasks where everyone generates a response to show their understanding as the teacher circulates the class.</p> <p>There are two key benefits from checking for understanding: The teacher gains feedback about which part of the material might need to be revisited, re-taught or given more practice time. In rehearsing their understanding, students are likely to be elaborating on the knowledge in the relevant schemata which will strengthen connections between different ideas and improve long-term retention. The checking helps them remember more the next time they check.</p>



1 Daily review

10 Weekly and monthly review



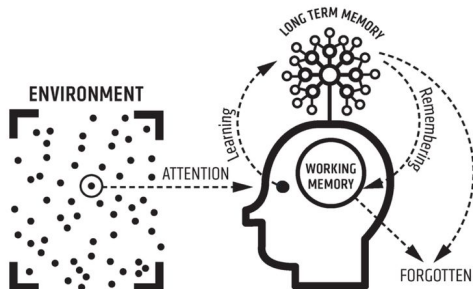
A major issue in learning is the inevitable, predictable and natural process of forgetting. Unless we review what we've learned, our memory of that information diminishes. Retrieval practice supports building our long-term memory and is a powerful technique for building fluency and confidence. So, an effective sequence of instruction begins *before* the first lesson starts and begins before the new content is introduced. A core part of Rosenshine's work is the principle of reviewing prior content regularly and effectively.

Daily review is a process for activating prior learning in readiness to build on it during the lesson. You set a question or task that makes all of your students think about ideas they've encountered before, related to today's lesson, so that they can start to make new links; to continue to build their schema. Weekly and monthly review are processes for ensuring that we are spacing practice over time, attenuating forgetting and strengthening retrieval. At the same time, by looking back, we'll be making links between areas of learning, deepening students' understanding. It's likely that monthly review will span a wider content range than daily review, so that the learning is more synoptic and avoids the 'cue' effect.

Vary the diet: mix up the use of teacher-led, self-quizzing, written and verbal quizzing, self-and open-response tests, rehearsing explanations, summarising, creating knowledge maps, demonstration and performance of learned techniques, routines and procedures. This will allow students to explore their schemata in different ways, strengthening future recall.

Make it time efficient: A good technique can be used repeatedly in an efficient manner without dominating whole lessons.

Make it workload efficient: The best methods do not involve the teacher checking the students' answers, creating unsustainable workload. A teacher might choose to check the occasional test but for routine practice, students should do it themselves.



Firstly remember the guidelines.



From memory only
No notes! No 'revision'



Low Stakes—
no grading.



Mistakes are OK



Feedback **MUST** be
given



Make it high
challenge



Silence
Limit extraneous load

Pocket Pedagogy Retrieval Practice

Retrieval Practice is the process by which students are directed to retrieve previously learned information from their long term memory back into their working memory, thus strengthening the memory for them to more easily recall in future. Ebbinghaus' Forgetting Curve outlines how quickly information can be forgotten after a few hours of learning it. By regularly retrieving this information, students will be supported to store it in their long-term memory and can reduce a student's cognitive load leaving them able to take on more knowledge in a lesson.

"Forgetting focuses remembering and fosters learning; remembering generates learning and causes forgetting; learning causes forgetting, begets remembering, and supports new learning." – Bjork, 2011

Key Approaches/Strategies

5-a-Day Questions

Present students with five questions at the start of the lesson that test them on prior knowledge. You can tailor this to the focus of that lesson or use a range of questions testing them on different topics.

Knowledge Dump

Select a concept/topic/focus that you want students to recall for the lesson. Give them enough time to write down as much as they can recall before checking as a class.

Retrieval Grids

Present students with a 12 box grid containing questions in each one. Questions vary from recently learned to knowledge learned 2 weeks, 3 weeks ago and so on with points allocated accordingly. Give students a set time to gain as many points as possible.

Recall using Narrative

Tom Sherrington discussed this approach in Masterclass IV [here](#). If you want students to recall a process, system or sequence, ask them to write a narrative of this. Check the key knowledge as a class- did they all include A? Why did so many miss out B?

Reflection Questions:

- ✓ What impact is RP having on the progress of my students?
- ✓ What actions am I taking when a number of students answer the same question incorrectly?
- ✓ Are my students experiencing enough success?
- ✓ How am I challenging students beyond factual recall?
- ✓ Am I encouraging students to make links between topics?

Want to know more? Take a look at...

[St Ursula's Retrieval Practice Newsletter 2019](#)

Retrieval Practice: Research and Resources for Every Classroom, Kate Jones.

Teaching Walkthrus, Tom Sherrington and Oli Caviglioli, **page 110-131**

Rosenshine's Principles in Action, Tom Sherrington, **pages 35-40**.

Battle Hymn of the Tiger Teachers, **pages 16-27**

Make It Stick: The Science of Successful Learning, Brown, Roediger III and McDaniel.

VIDEO: Daisy Christodolou for ResearchEd: [How to remember anything, forever.](#)

Cog Sci Sci RP Module: [CPD Module- Retrieval Practice](#)

BLOG: [Tom Sherrington- 10 techniques for retrieval practice](#)

Top Tips

1. Create opportunities for success:

Whilst you don't want the RP task to be too easy, success is a key part of students engagement with retrieval practice. If students are achieving low scores on a regular basis, stop and reflect. This means RP is not having the desired outcome and a change is needed.

2. Keep it low stakes:

The purpose of RP is to support students' learning and knowledge acquisition and not to track numbers. Of course you want to be aware of things that students get wrong (see Tip 5) but a simple hands up, circulation/checking or on the spot questioning can achieve this.

3. Ensure completion and involve everyone.

Experience suggests that when a class are quietly working on RP, it is very easy for an individual to not engage and not be noticed. It is essential that the teacher uses this time to circulate, giving you the opportunity to redirect, ensure notes are not being accessed and identify early misconceptions.

4. Discourage use of notes:

For RP to be really effective, students need to use their memories. Do not allow students to use their notes to complete their RP unless it is more limiting for them not to..

5. Make effective use of students' responses:

Rob Coe has argued [here](#) that RP may not necessarily lend itself to higher order thinking. This may be true of the initial RP question itself, but your follow up questions allow for you to challenge students further: *Why did you think it was that? How did you know it wasn't X? Does that link to any of the other answers? What does that mean? Why might X have said it was Y? Etc.*



STRAND 4

STAGES OF PRACTICE

5 Guide student practice

7 Obtain a high success rate

9 Independent practice



Pupils benefit from guided instruction and having material presented in small chunks. It is important that they **do** something with this material as soon as possible. Teachers needs to be up close to students' initial attempts making sure that they are building confidence and making too many errors.

Guided practice requires close supervision and feedback. Feedback on the task, on tackling misconceptions, needs to be tackled immediately to prevent the error being embedded.

'An important finding from information-processing research is that students need to spend additional time rephrasing, elaborating, and summarizing new material in order to store this material in their long-term memory.' Using the information cognitively, processing the information so that the **schema-forming** process is successful. Practise means **thinking hard** and this means you are more likely to remember it later."

'THE INSTRUCTIONAL CORE'



WALK
THRU



FEEDBACK

'So that students think about and further develop their knowledge and skills.'

WHAT IS IT?

The process of providing students with feedback is a key principle of learning. Students need to be provided with timely and precise feedback to keep them on track to achieving the learning goal and moving onto the next one.

RESEARCH

The Education Endowment Foundation Toolkit explores and range of education interventions, with feedback rated as having one of the highest impacts on student attainment. Hattie's research suggested that quality feedback contributed towards improving the rate of learning in one year by at least 50%.

SUMMARY

When considering the different strategies for providing students with feedback it should be responsive, with the evidence drawn from the performance of students used to inform future teaching.

TAKEN FROM MAKE EVERY
LESSON COUNT BY SHAUN
ALLISON AND ANDY THARBY

1 GET DITTY

2 SYMBOL MARKING

3 MARK LIVE

4 FIND THE BEST BITS

5 SWITCH THE ONUS



RING FENCE TIME FOR STUDENTS TO READ AND RESPOND TO YOUR COMMENTS



INSIST THAT STUDENTS WORK ON THEIR OWN GRITTY EDITING



USE CODES WHEN RESPONDING TO STUDENT WORK TO REDUCE REPETITION



EMBED A CODING MARKING POLICY TO ESTABLISH CONSISTENCY



USE A CORNER OF THE ROOM TO CALL STUDENTS UP TO DISCUSS THEIR WORK



TARGET A BETWEEN 8-10 STUDENTS A LESSON TO REVIEW THEIR WORK



WHEN GIVING FEEDBACK CLARIFY WHAT THEY ARE DOING WELL



ENCOURAGE STUDENTS TO SELF-VERBALISE THEIR SUCCESSES



EMBED A CULTURE WHERE WORK IS MARKED WHEN IT HAS BEEN PROOFREAD



INSIST THAT STUDENTS INDICATE WHERE THEY WOULD LIKE FEEDBACK



WHAT IS IT?

'Practice makes permanent'. If we want our students to improve, then we must allow time for students to conduct quality practice. It is the role of the teacher to shape learning so that simple misconceptions and misunderstandings do not become immovable.

TYPES OF PRACTICE

We can define practice under two types.

Practice for fluency – where knowledge is established in the student's long term memory, allowing them to be able to recall it effortlessly.

Deliberate practice – where students are involved in a healthy struggle that challenges them to meet or exceed the learning objective.

SUMMARY

When considering the amount of practice in a lesson it will be determined by the confidence of the students in accessing the new learning materials. We should monitor carefully the performance and make decisions on whether to increase the level of independence as their confidence and fluency increase.

**TAKEN FROM MAKE EVERY
LESSON COUNT BY SHAUN
ALLISON AND ANDY THARBY**

1

THE POWER OF THREE

TEACH LESS CONTENT TO ALLOW FOR TIME TO REHEARSE AND PRACTICE



CREATE HOMEWORK TASKS TO DRILL AND PRACTISE KEY CONCEPTS AGAIN



2

MEMORY PLATFORMS

CREATE CLOSED QUESTION QUIZZES TO ENCOURAGE RETRIEVAL PRACTICE



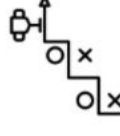
GIVE STUDENTS TIME FOR REFLECTIVE TASKS TO REVIEW WITHOUT NOTES



3

GO MICRO

SPEND TIME FOCUSING ON THE COMPONENTS OF AN ANSWER



GIVE THEM TIME TO PRACTISE THESE MICRO-DETAILS BEFORE ADDING GREATER COMPLEXITY



4

MAKE THEM THINK

PROVIDE CHECKLISTS FOR STUDENTS TO TICK OFF THE STRATEGIES USED



ENCOURAGE SLOW WRITING BY PROVIDING GUIDED WRITING



5

WITHHOLD SCAFFOLD

INSIST THAT STUDENTS 'GIVE IT A GO' FIRST BEFORE OFFERING GUIDANCE



PLAN YOUR INTERVENTIONS CAREFULLY AND USE ONLY WHEN NECESSARY



Further Development Tom Sherrington for ResearchEd

Rosenshine and the Curriculum: What's the Connection?

Presentation: <https://www.youtube.com/watch?v=JZGpFfsZuuk>

In this presentation for ResearchEd Home, Tom Sherrington discusses elements of Rosenshine's principles and their application to curriculum planning. The reflection questions below are designed for those involved in curriculum planning and design at both a whole school and subject level to consider and use to generate actions and next steps.

Watch and Stop at...	Reflect...
7:30	Where are we at with our curriculum planning? Do we need to go into detail even more to define the specifics of what we would like to teach? Or is our issue that we are not getting it through rigorously enough to all of our students?
9:50	Thinking about the curriculum in your area, are you actively engaging prior knowledge in a deliberate way and constructing activities that make students think about that?
12:04	Tom talks here about knowledge building on knowledge and how we have to be prepared to move backwards and forwards when students don't know something or remember something. How flexible is your curriculum design? To what extent does it allow for this?
15:32	Tom shows an example of a primary school curriculum map that is written in time order but accounts for revisiting. To what extent is your curriculum planned with an awareness of where each topic fits into a wider scheme? Does everyone have this knowledge?
18:00	Think about your curriculum design and everyone who is contributing to its implementation. How confident do you feel that it supports the need for all students to have learnt the required knowledge- ' <i>Do all of you know all of it?</i> ' and how confident do you feel that everyone involved in its implementation knows how to ensure all students know all of it?
24:30	Consider retrieval practice and its place in the curriculum. To what extent does your curriculum allow for opportunities for this? Do all teachers involved in delivering this curriculum have an understanding of its purpose and different approaches?
34:47	Tom discusses the sequencing of concepts here and a need for us know what the order is and why. How much have you discussed this as a department? Do you think everyone has an understanding of why students need to know the knowledge you have planned in your curriculum?
43:08	This section of the presentation discusses the need to provide concrete examples for abstract ideas. Consider elements of your curriculum that might require this. Have you planned for this? Does everyone involved in delivering the curriculum know why they are important and how to demonstrate them?
44:15	Do you feel confident that all teachers know what prior knowledge is needed before they teach a topic? How much has this been discussed and established as a department?
51:21	At this point, Tom prompts you to consider how your curriculum is supporting students with their writing. To what extent do you think you have ensured this is written into your own curriculum plan? Have you included opportunities for writing to be modelled and scaffolded?

Next steps...

- ✓ Consider areas explored that you think need more attention and discuss these with your colleagues. How can you adjust or review your curriculum plans in light of this?
- ✓ Be selective with what you takeaway from your reflections. It is not always a good idea to try and improve lots of things at once. Consider your students and your context- what will have the most impact on their progress at the moment?



Examples of ineffective practices

A potential problem with lists of 'best practice' is confirmation bias. By stopping doing things that are either ineffective or inefficient, we allow more time to focus on things that will make more difference.

The following are examples of practices whose use is **NOT** supported by research evidence:

Poor Proxies for Learning

(Easily observed, but not really about learning)

1. Students are busy: lots of work is done (especially written work)
2. Students are engaged, interested, motivated
3. Students are getting attention: feedback, explanations
4. Classroom is ordered, calm, under control
5. Curriculum has been 'covered' (ie presented to students in some form)
6. (At least some) students have supplied correct answers (whether or not they really understood them or could reproduce them independently)

Use praise lavishly

Praise for students may be seen as affirming and positive, but a number of studies suggest that the wrong kinds of praise can be very harmful to learning. For example, Dweck (1999), Hattie & Timperley (2007). Stipek (2010) argue that praise for success on an easy task can be interpreted by a student as evidence that the teacher has a low perception of his or her ability. As a consequence, it can actually lower rather than enhance self-confidence.

Allow learners to discover key ideas for themselves

Enthusiasm for 'discovery learning' is not supported by research evidence, which broadly favours direct instruction (Kirschner et al, 2006). Although learners do need to build new understanding on what they already know, if teachers want them to learn new ideas, knowledge or methods they need to teach them directly.

Encourage re-reading and highlighting to memorise key ideas

This finding has already been mentioned in summarising the review by Dunlosky et al (2013). Re-reading and highlighting give a satisfying – but deceptive – feeling of fluency and familiarity with the material (Brown et al, 2014). However, a range of studies have shown that testing yourself, trying to generate answers, and deliberately creating intervals between study to allow forgetting, are all more effective approaches.

Address issues of confidence and low aspirations before you try to teach content Teachers who are confronted with the poor motivation and confidence of low attaining students may interpret this as the cause of their low attainment and assume that it is both necessary and possible to address their motivation before attempting to teach them new material. In fact the poor motivation of low attainers is often a logical response to repeated failure. Start getting them to succeed and their motivation and confidence should increase.

Present information to learners in their preferred learning style A belief in the importance of learning styles seems persistent, despite the prominence of critiques of this kind of advice. The psychological evidence is clear that there are no benefits for learning from trying to present information to learners in their preferred learning style (Pashler et al, 2008; Geake, 2008; Riener and Willingham, 2010; Howard-Jones, 2014).

Ensure learners are always active, rather than listening passively. The 'learning pyramid' which shows precise percentages of material that will be retained when different levels of activity are employed have no empirical basis and are pure fiction. Memory is the residue of thought (Willingham, 2008), so if you want students to remember something you have to get them to think about it.

Mistaking performance for learning Students scoring well in tests or lessons does not mean they information is secure in long term memory. Cramming before a test may result in good scores but that recall is temporary. Revisiting information, interleaving and spacing the learning and the checking of learning is vital.



St Ursula's Convent School

A Humanities College and Teaching School

STRAND 1

SEQUENCING CONCEPTS & MODELLING

2 Present new material using small steps

4 Provide models

8 Provide scaffolds for difficult tasks



STRAND 2

QUESTIONING

3 Ask questions

6 Check for student understanding



STRAND 3

REVIEWING MATERIAL

1 Daily review

10 Weekly and monthly review



STRAND 4

STAGES OF PRACTICE

5 Guide student practice

7 Obtain a high success rate

9 Independent practice

