

How does effective
modelling and
metacognition link?

Aims

- To discuss metacognition and understand the importance of metacognitive modelling within the classroom
- To identify and discuss metacognitive modelling strategies
- To implement research based approaches within own settings
- To identify next steps

Rosenshine

Why are we looking at metacognitive modelling strategies?

Rosenshine developed ten key principles which he argued underpin any effective approach to instruction in lessons.

Barak Rosenshine's

PRINCIPLES OF INSTRUCTION



A thematic interpretation for teachers by
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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



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 so that each can be practised.

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

4 Provide models



8 Provide scaffolds for difficult tasks



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coaching, where cognitive supports are given — such as how to structure extended writing — but they are gradually withdrawn.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



Teachers need 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.*

7 Obtain a high success rate



9 Independent practice



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"*

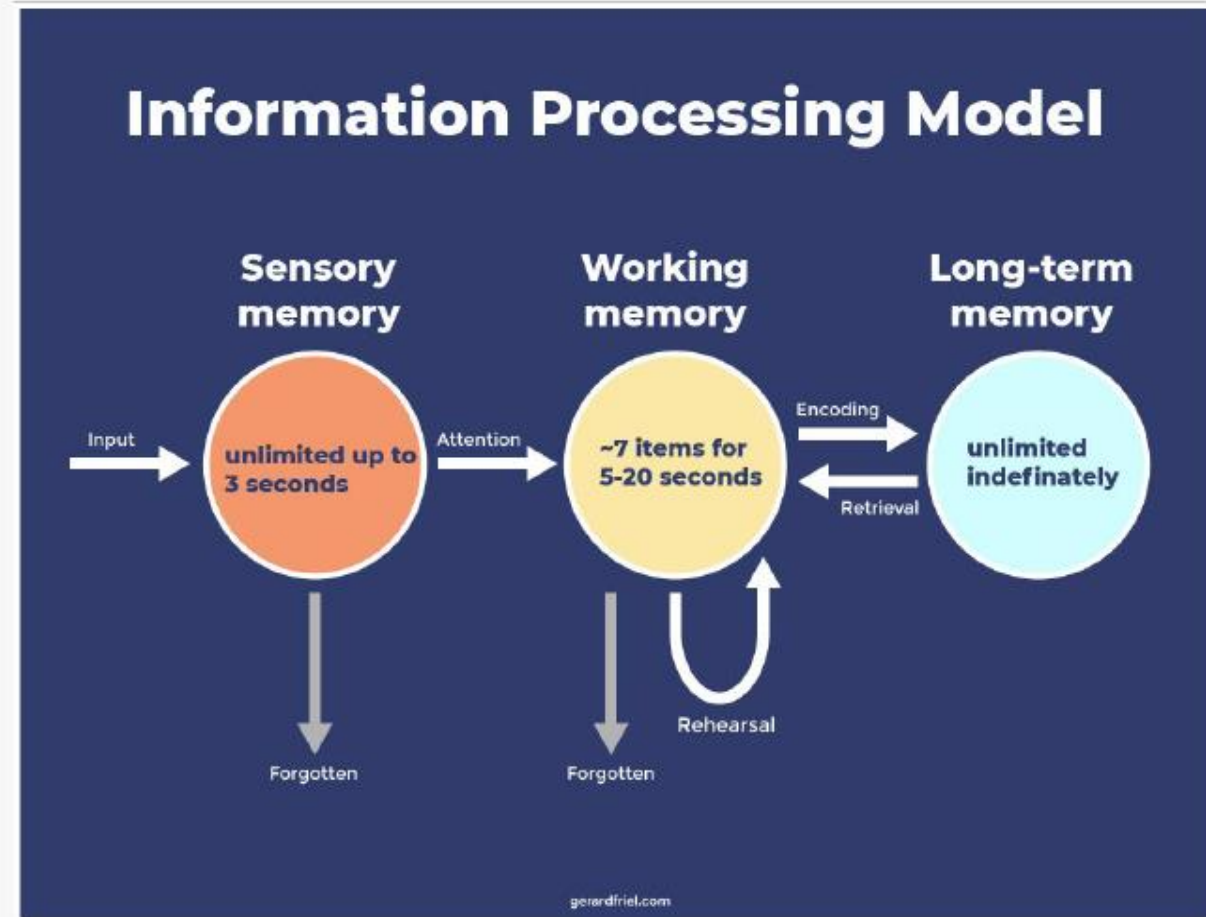
Cognitive Load Theory

Working memory - can only deal with limited information at one time.

Reif 2010 definition -

'The cognitive load involved in a task is the cognitive effort (or amount of information processing) required by a person to perform this task.'

Why are metacognitive modelling strategies so important?



Challenges when teaching (cognitive overload)

What challenges
do you think
children face
during a lesson?

A cursive-style uppercase 'A' and lowercase 'a' are shown side-by-side.

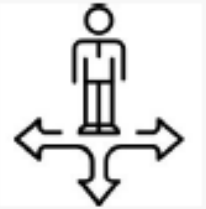
Letter formation



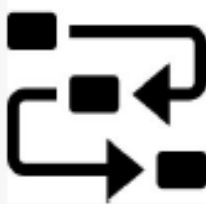
Sentence Structure



Phonics/Spelling



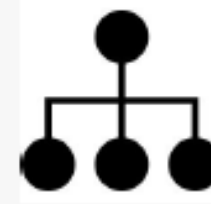
Word choice



Sequencing ideas



Deciding what to
say



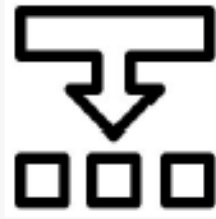
Organising their
ideas



Avoiding
repetition

Reducing cognitive load

What can we do
in the classroom
to help to
reduce the
cognitive load in
lessons?



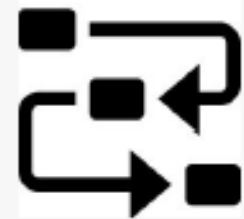
Breaking down
subject content



Considering
how material is
presented



Making links to
pre-existing
knowledge



Careful sequencing



Clarity in
explanations

Cognitive load – Key points

- Break down subject knowledge when introducing new concepts
- Pause regularly to check for understanding and to allow and ask questions
- Consider which information is necessary and vital for children to understand at this specific time
- Consider in advance how you will present this information
- Present information clearly without the use of too many sources
- Don't reduce the cognitive load too much and bring the challenge down

How can we develop metacognitive modelling strategies to help to reduce cognitive overload?

What is metacognition?

‘On a very basic level, it’s about students’ ability to monitor, direct, and review their learning. Effective metacognitive strategies get learners to think about their own learning more explicitly, usually by teaching them to set goals and monitor and evaluate their own academic progress.’

Chief Executive Sir Kevan Collins (EEF)



Developing metacognitive strategies

- Metacognitive strategies have the power to improve pupil outcomes by encouraging deeper thinking.
- Metacognition should enable pupils to think more cohesively about the subject content.
- It should also develop their ability to think critically, which is an essential skill in the 21st century.

Metacognitive modelling and teacher explanations

“Forms of instruction are much more effective than approaches that rely on students finding things out for themselves and that **novice learners cannot simply copy the behaviours of experts.**”

“Rosenshine’s research is clear that **more effective teachers are good at sequencing learning** from an initial phase of direct instruction to modelling in small steps, guided practice and independent practice.”

Metacognitive modelling provides us with an opportunity to present a new concept or strategy to pupils, which, if presented clearly and accurately, will allow for deep levels of understanding and hopefully learning from our pupils.

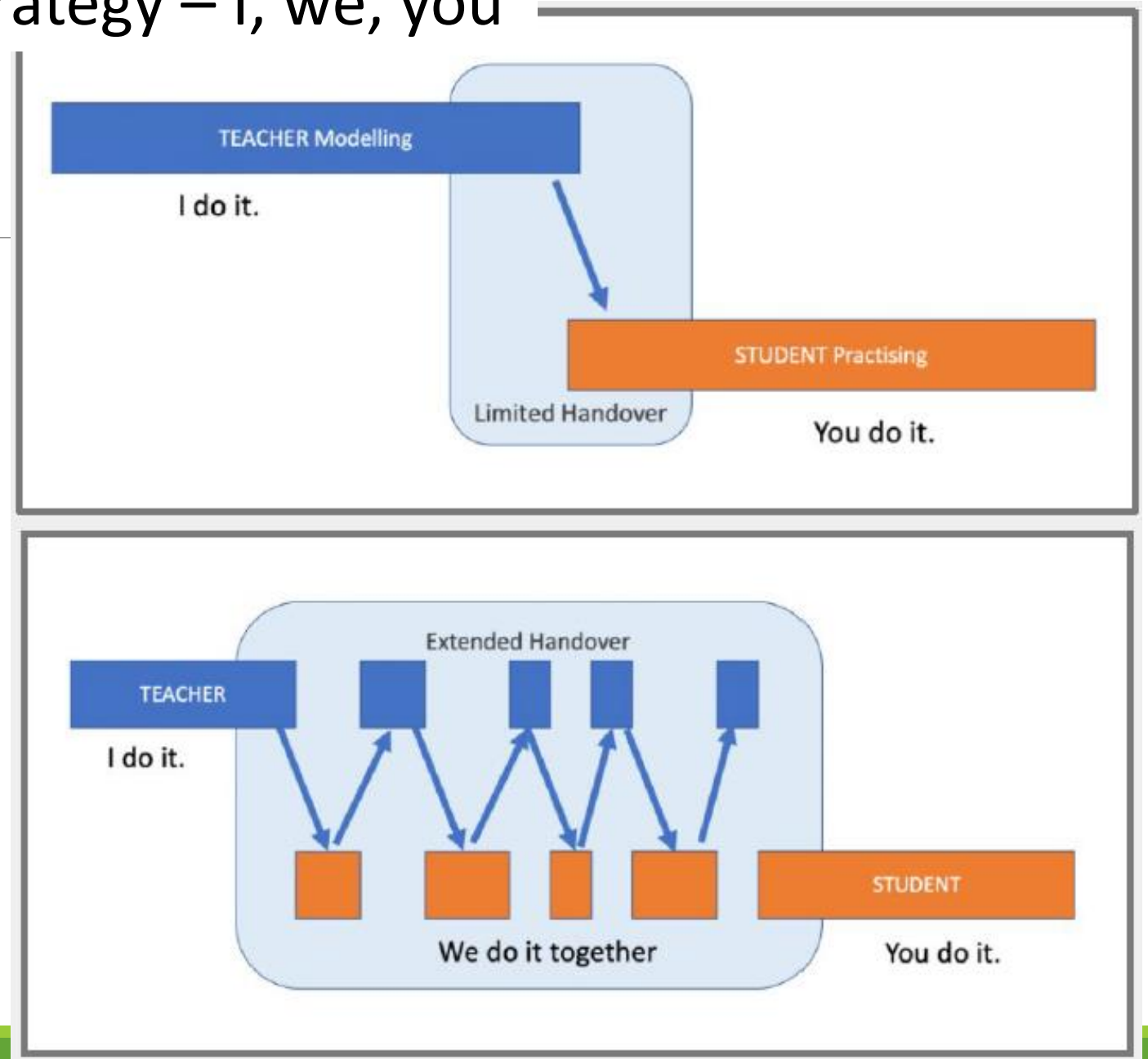
Metacognitive modelling

Metacognitive modelling demonstrates how to think in lessons. In this type of modelling adults in the classroom talk through their thought process while they complete the model on the board/in small groups. This thinking-out-loud approach, in which the adult plans and they explicitly articulate, should be the focus of adult talk.

Effective modelling should enable students to reflect on the processes of task completion and then gradually remove the modelling scaffolding, thus developing independent and highly metacognitive students.

Metacognitive modelling strategy – I, we, you

“In a real world lesson context the ‘We do it together’ process is the key to modelling. Ollie Lovell refers to this as the ‘alternation strategy’. **This is where students get a sense of what it feels like to do the task successfully**, working towards the moment of independence. **Students who struggle need this to be longer, with more smaller steps, more iterations of to and fro until they are up and running.**”

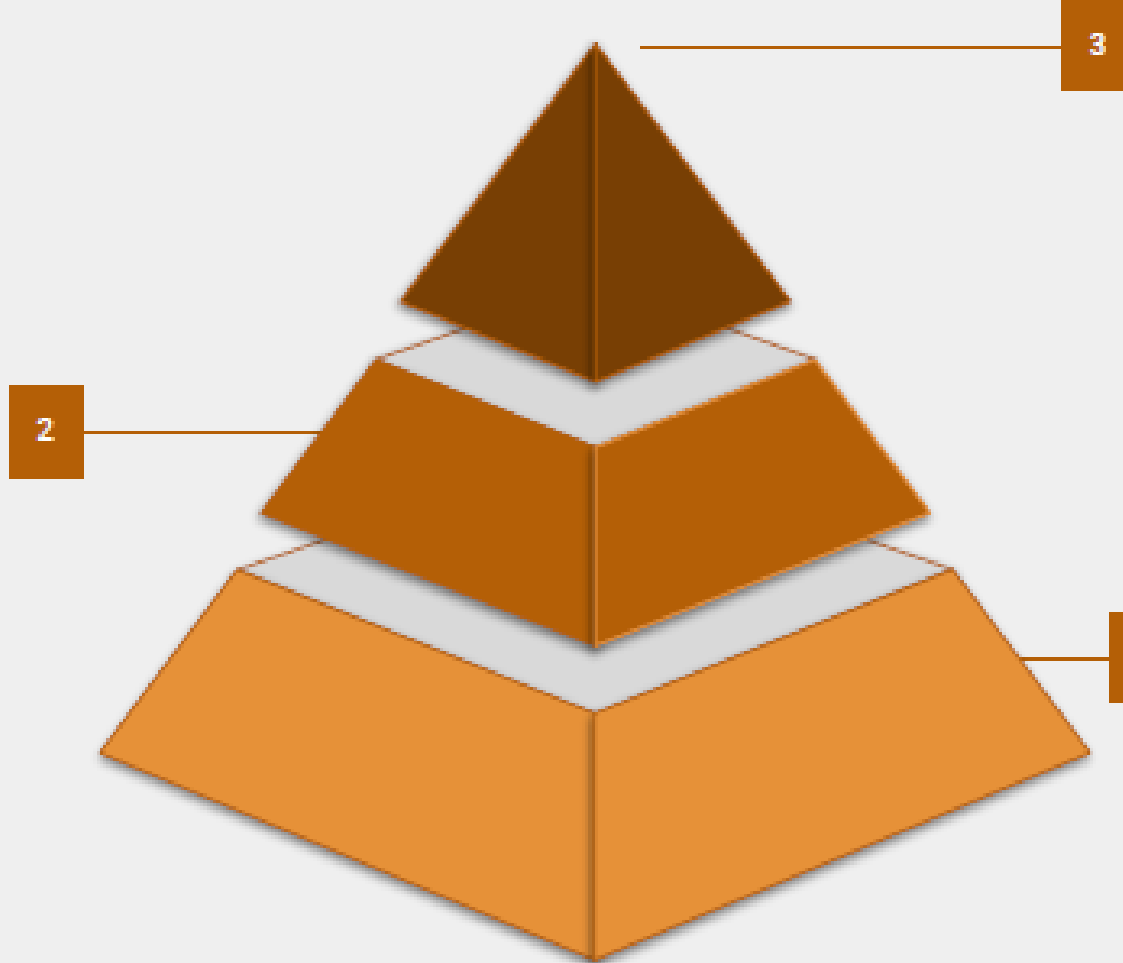


Metacognitive modelling strategy – I, we, you

We model

We work together to create the next part of the model.

I guide them through the creation of the second part of the paragraph.



You model

The 'you' doesn't feature until we have had several, varied examples from me.

I model

The 'I' dominates the process and is the foundation.

I talk through the process as I write.

I can cross through mistakes and explain why I've amended something. I talk through the basics too: the punctuation I'm using and the choices I make.

Re-read it. I read it aloud and then they have a chance to read it independently. Then we discuss.

Metacognitive modelling strategy - Explicit justifications

Every correction, strategy choice and assumption has to be clearly explained to pupils.

Sometimes the choices that you are selecting, changes that you are making and assumptions you are taking are not clearly explained to pupils. This prevents a pupil from truly understanding where these changes, choices and assumptions are coming from.

Through discussing these areas explicitly, we are unmasking our implicit metacognitive thinking.

Pupils should understand where your decisions are coming from. Through careful consideration of language and an emphasis on why you are making choices, changes and assumptions, pupils learning will very quickly start to think deeper.

Metacognitive modelling strategy - Strategy comparison

One way to upskill pupils is to provide them with a range of alternative strategies that they have access to. A range of strategies will ensure that students can be fluid in their strategy choices, adapting and meeting the demands of new questions and problems.

Sometimes we provide pupils with the opportunity to use different strategies but do we provide pupils with sufficient time to evaluate each strategy?

One solution to this is through a very visual comparison of strategies. This would allow you to build a dialogue and for pupils to explore strengths and weaknesses in the strategies available to them.

Metacognitive modelling strategy – Model scaffold use

We've all been there when a pupil is struggling and we reach for the nearest scaffold – a dictionary, word mat or knowledge organiser.

This is great however we need to consider explaining to the pupil who is using the scaffold the exact purpose of the scaffold. By providing students with an understanding of what the scaffold does, it also provides them with an understanding of what their area of weakness is, as well as what they can use in the future to provide them with support.

Metacognitive modelling strategy – Oracy and metacognition



*“I’m not quite sure what X meant by that so I’m going to ask them a clarifying question”
“I noticed that X didn’t explain their reasoning so I’m going to ask them to justify their idea”*



“I’m going to use scientific terminology here to support my explanation”

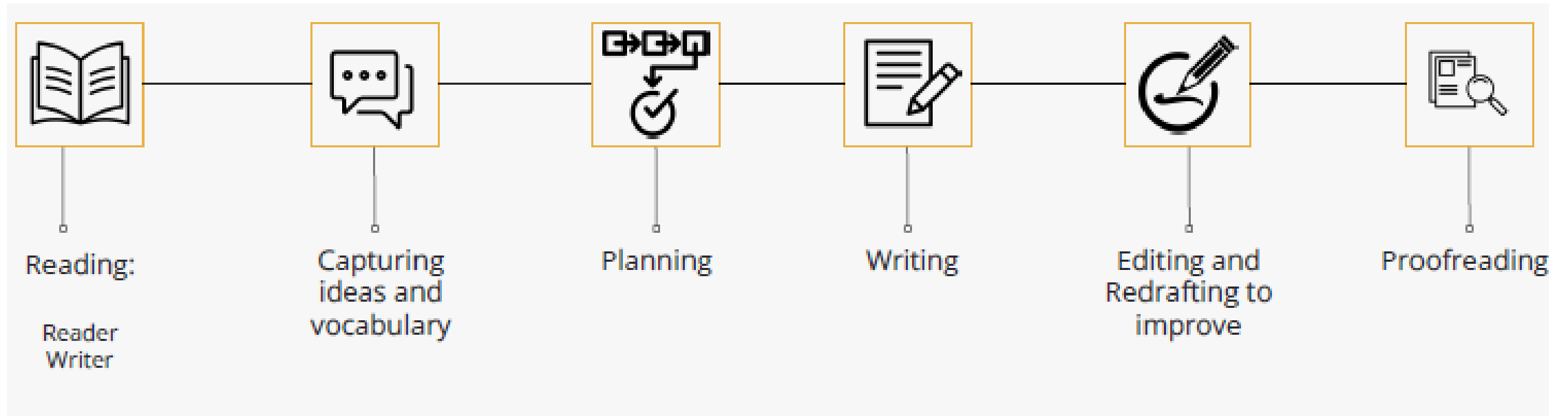


“I’m going to make sure that I make eye contact with who I’m talking to ensure they are engaged and listening”



*“X hasn’t spoken yet so I’m going to invite them into the discussion”
“I think I should wait to share my idea as not many other people have had chance to share their idea yet”*

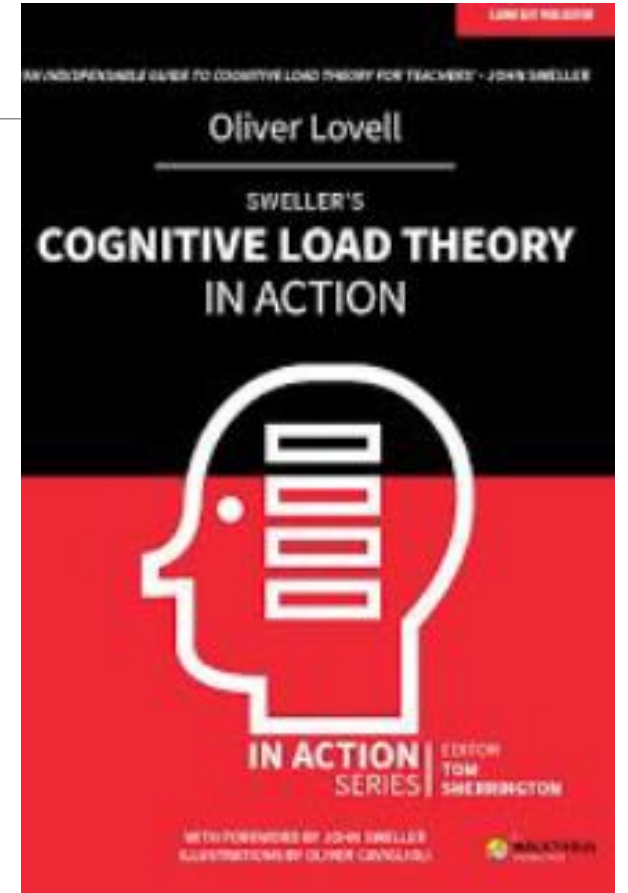
Metacognitive modelling



How could we use metacognitive modelling strategies at each stage of a writing sequence?

Worked examples

- Clear models provided
- Children given appropriate time to process
- Children are encouraged to ask questions
- Guided practice that students do before working independently
- Structured to minimise extraneous load
- Persistence with worked examples for longer than traditionally seen as necessary



Impact of metacognitive strategies

- Primary school study (Inner City Primary School) Impact magazine – issue 14.

“Regular reflection of learning helped the students to organize and manage their learning more effectively.”

“Themes emerged from the transcripts of interviews such as the impact of teacher modelling.”

“Students were explaining that they knew how to learn.”

Impact of metacognitive strategies



- Metacognition goes to the heart of the learning process (Sherrington)
-



- Teachers modelling their thinking increased classroom reflection on learning and providing students with useful monitoring strategies were repeatedly noted as useful by students and teachers.



- Provides disadvantaged students with practical tools and an awareness of themselves as learning – mitigating some of the barriers to learning that their advantaged peers may not face clearly without the use of too many sources



- Can increase self efficacy in learning which can have a greater impact on disadvantaged students.

Conclusion

Metacognitive modelling provides us with the perfect opportunity each lesson to support student understanding. It is our gateway to provide students with new learning and understanding.

Reflection

How could you adapt methods for wider curriculum?

What will you take back or do in school as a result of this session?

Next steps

- Implement ideas shared in the session in your own practice
- Identify the impact of strategies used
- Share good practice within settings