Research Schools Network

Improving Progress of High Attainers

Ben Crockett

@BenCrockett1

researchschool.org.uk

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Education Endowment Foundation

Institute for Effective Education
Empowering educators with evidence

The neglected cohort?

Identifying our High attaining students is in itself a challenge and that is before we have even considered how to support them.

The problem with "high attaining students"

Do students know that they are high attainers?

- *Stop a student in your school and ask them if they are a high starting point student – could they answer?*
- *Students are poor judges of their strengths and weaknesses.*

Do teachers know who their high attainers are?

- *Judgements likely to be based on data that may not be reliable*

- **Are all high attainers the same?**
- *"There is huge variation in rates of learning between students with the same baseline attainment – Making Data Work, Professor Becky Allen*

No excuse for inertia….

- *We have a moral duty to stretch and challenge all students.*

- *While difficult to identify we can not pretend as if high attainers do not exist*
  - *intelligence is in some degree heritable (G is for Genes*, Kathryn Asbury and Robert Plomin).
  - *This not to say all intelligence is fixed, but genetics along with many other factors will mean that some of our students will be higher attaining than others and therefore we need to have a plan for them – Chris Runeckles*

Traditional Approach – streaming or setting

- **The idea is that teaching will be more efficient and effective due to narrowing of attainment range in the class.**

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On average, pupils experiencing setting or streaming make slightly less progress than pupils taught in mixed attainment Classes. (-1 month progress)

Grouping within class

Pupils with similar levels of current attainment are grouped together, for example, on specific tables, but all pupils are taught by their usual teacher and support staff, and they usually all follow the same curriculum.

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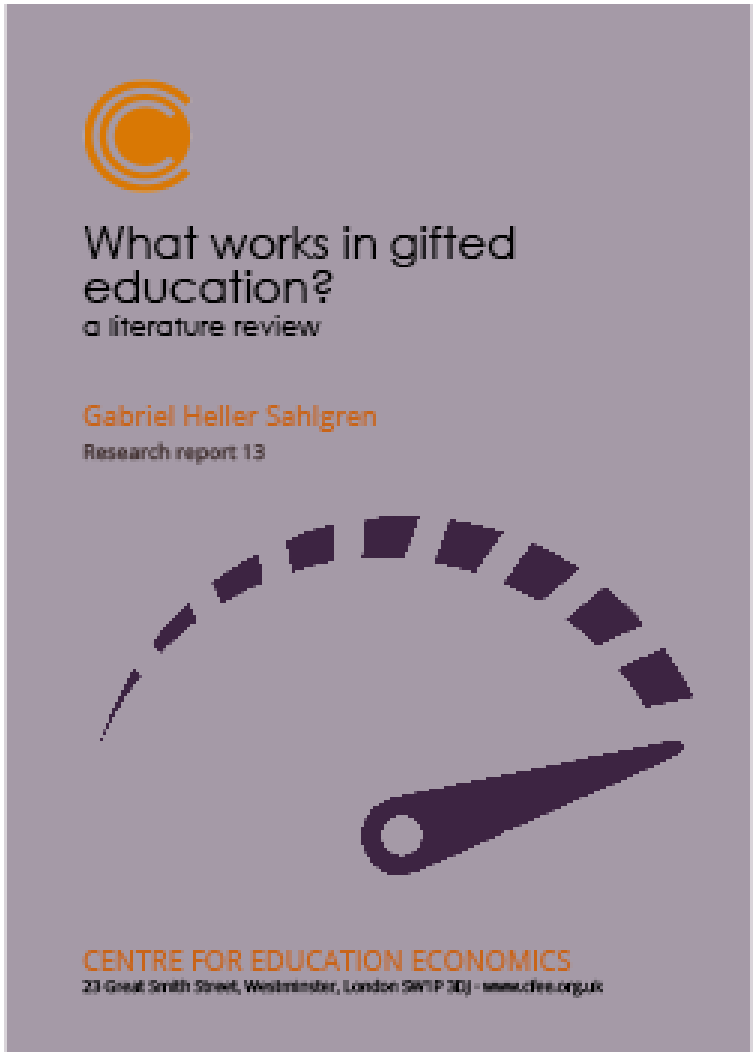
+3 months progress



"Overall, the review revealed a rather disappointing picture: there are few studies on the effects of gifted education from which it is possible to draw causal inferences."

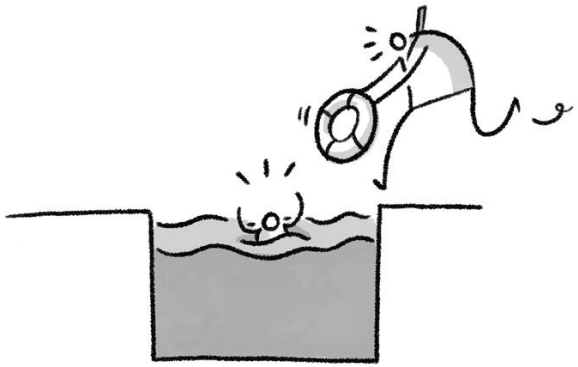
Summary

- Identifying high attaining students is in itself challenging
- Traditional strategies do not have an evidence base
- Strategies that may be successful do not have enough evidence
- While we know what doesn't work there is not sufficient data to make inferences about what definitely does work.

Challenging our H/H* pupils

- Long-term rather than a single lesson.
- An ethos rather than practical strategies.
- Difficult to pin down what teachers do to challenge.
- Think of challenge as an **end goal**.

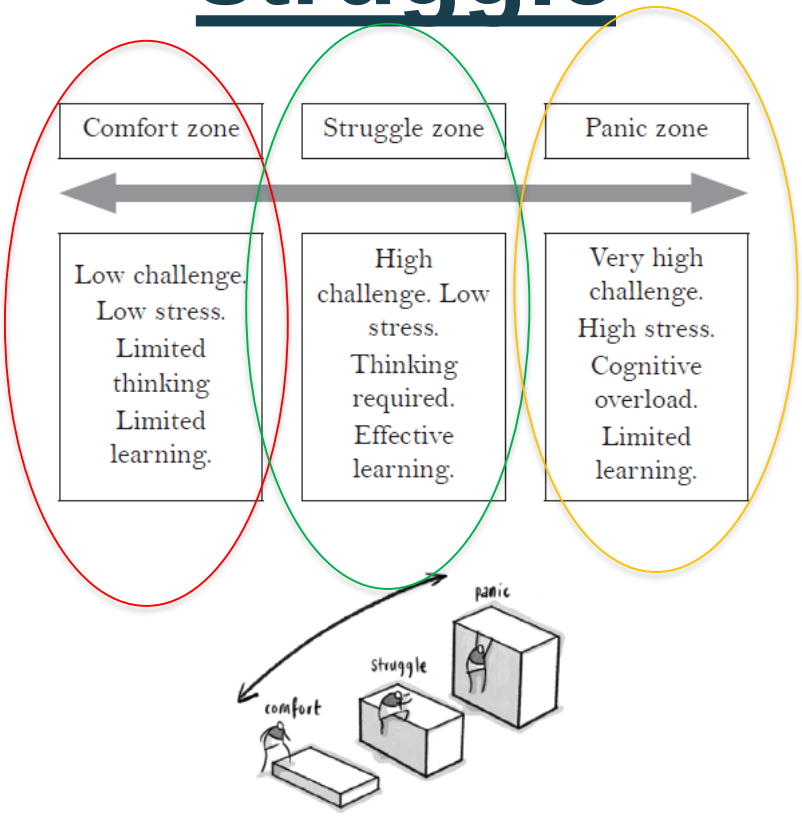
Professor Coe's questions



Improving Education: A Triumph of Hope Over Experience'

1. How many minutes does an average student on an average day spend really thinking hard?
2. Do you really want your students to be 'stuck' in your lessons?
3. If they knew the right answer but didn't know why, how many students would care?

Challenge and struggle



- Cognitive load.
- Too little = no learning
- Too much = no learning.
- In the struggle zone the pupils have to think but this is made possible through careful support

Misconceptions around H/H* students

Long-term memory and working memory

Long-term memory - a huge storehouse of vocabulary, concepts and procedures

Working memory – the limited space in which we think and process information

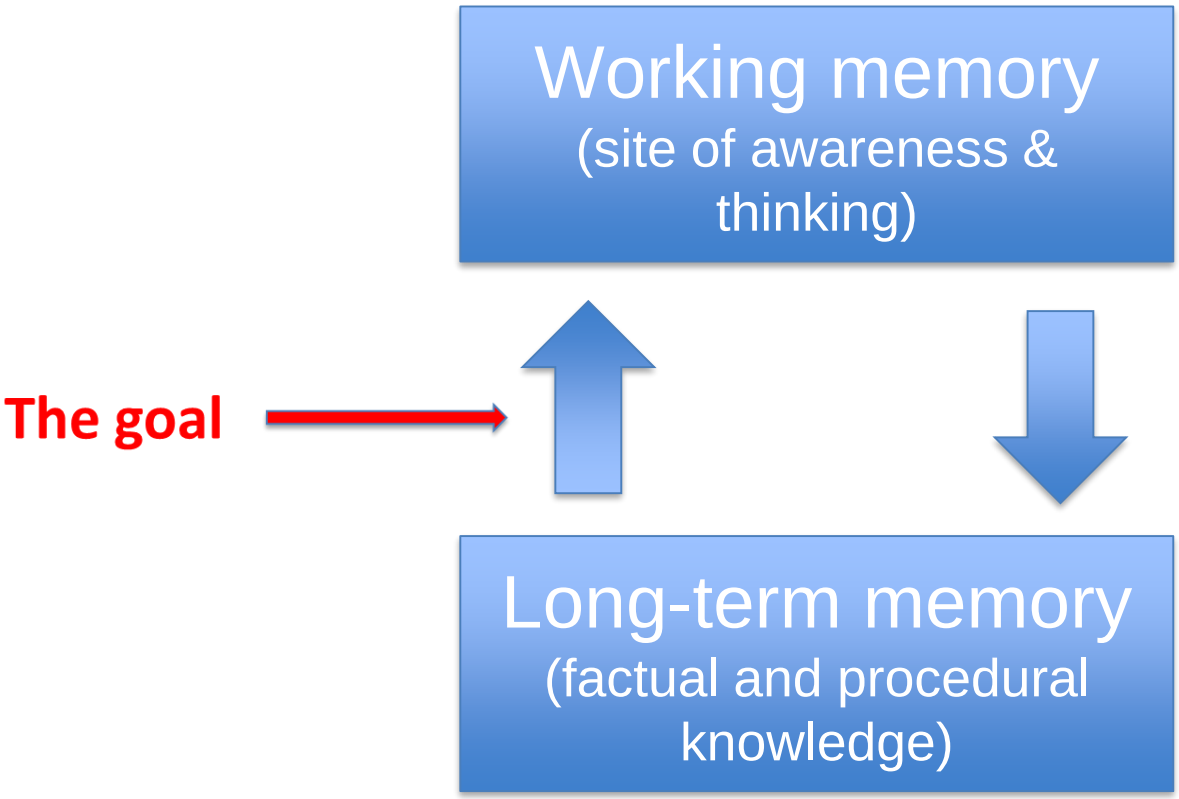
Long-term memory and working memory

Working memory
(site of awareness & thinking)

Long-term memory
(factual and procedural knowledge)

Willingham (2009), p28

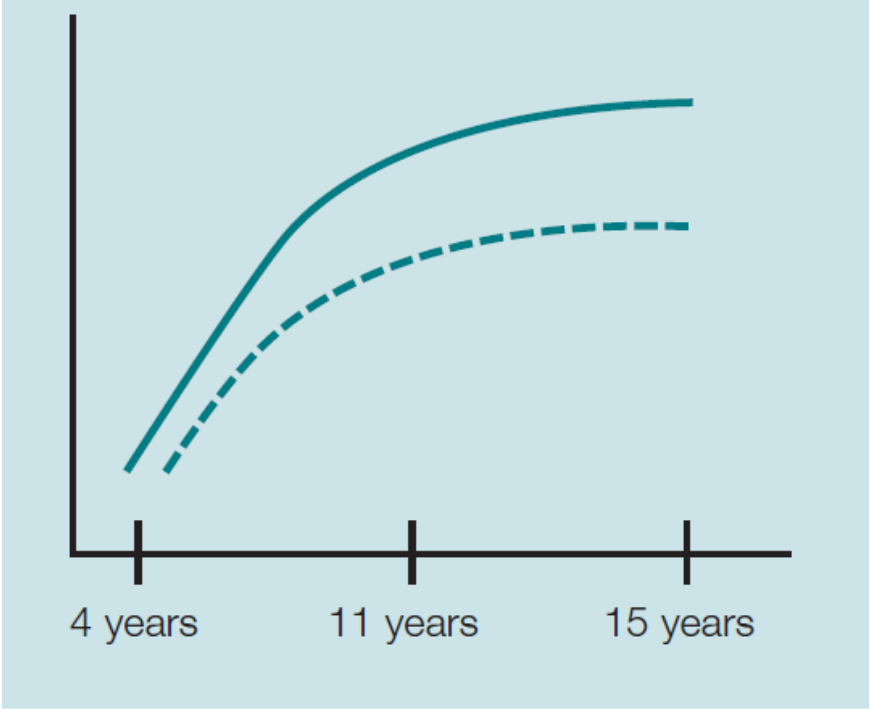
Long-term memory and working memory



Willingham (2009), p28

H/H* misconception 1: High starters have amazing working memory

- 30 second duration
- Small number of elements
- Magic number four

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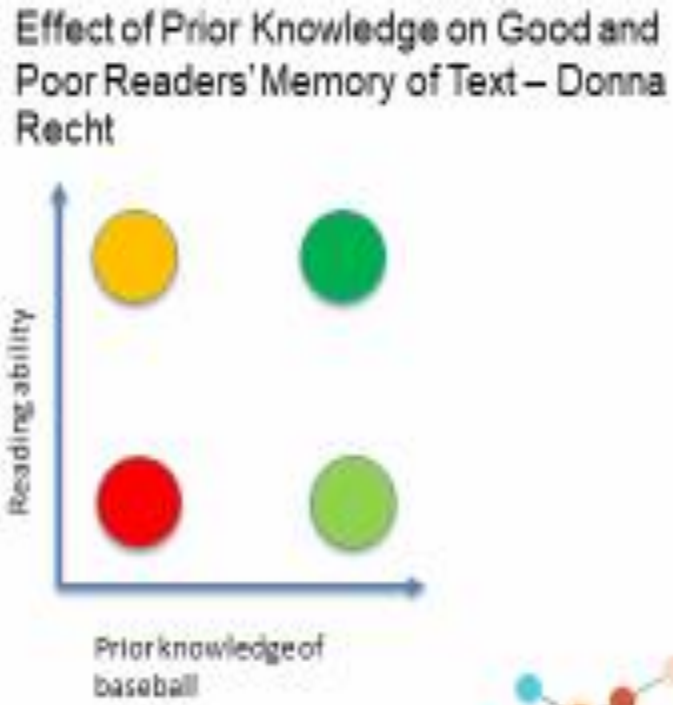
H/H* misconceptions 2: High starters are naturally good problem solvers

"Long-term memory is now viewed as the central, dominant structure of human cognition."

Clark, Kirschner and Sweller (2012)

Problem solving

H/H* misconceptions 3: High starters can rely on strong core skills (i.e. reading comprehension)



Reading comprehension.

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H/H* Misconceptions 4: High ability student are naturally capable of metacognition and self-regulation

"Unfortunately metacognition rarely fully develops in adolescents without support from metacognitively aware experts (Kuhn and Dean, 2004). In fact, Hartman (2001) notes that most students are unaware of metacognition and do not reflect on their thinking/learning strategies."

So what do we need to do? Or more importantly what can we do?

- Focus on getting students into the struggle zone
  - Through content, questioning and feedback
- Ensure our H/H* students have the base/prior knowledge to be successful
- Create a culture of excellence in your classroom, department and school
- Ensure an appropriate amount of cognitive load
- Develop self regulating and metacognitive students

How can we get our high attainers into the struggle zone?

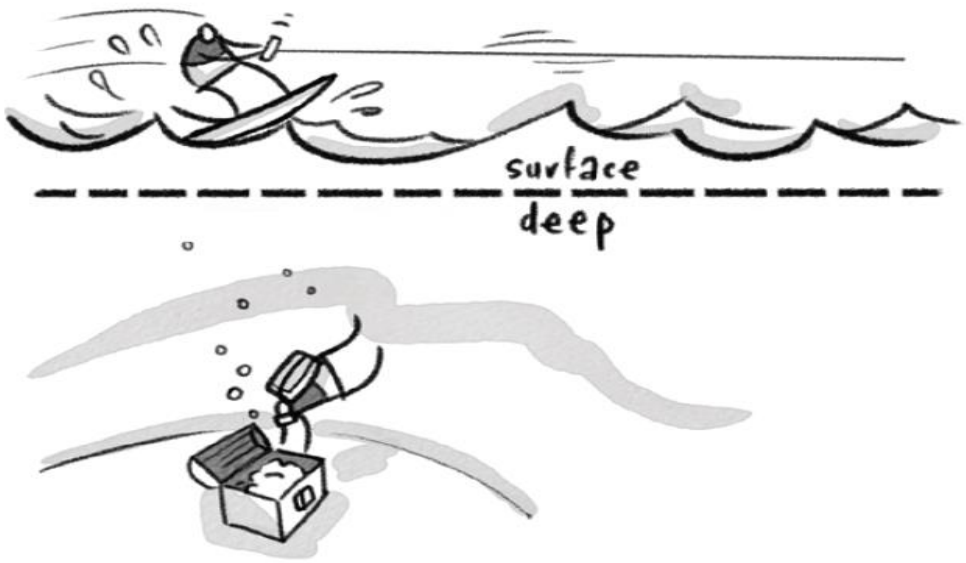
Subject knowledge:

- Teach above your specification (i.e. A Level content fed down to GCSE)
- Identify the “platinum” knowledge needed for the highest success.
- Use department meetings/CPD to deepen teacher knowledge and discuss this platinum knowledge .
- Get the experts in your team to teach the rest of you

Ask high attainers elaborative questions:

Interrogate high attaining students with a sequence of questions that force them to deeper thinking.

The reward for a correct answers should be a harder question



Socratic Questioning:

The overall purpose of Socratic questioning, is to challenge accuracy and completeness of thinking in a way that acts to move people towards their ultimate goal.

Conceptual clarification questions

Get them to think more about what exactly they are asking or thir go deeper.

- *Why are you saying that?*
- *What exactly does this mean?*
- *How does this relate to what we have been talking about?*
- *What is the nature of ...?*
- *What do we already know about this?*
- *Can you give me an example?*
- *Are you saying ... or ... ?*
- *Can you rephrase that, please?*

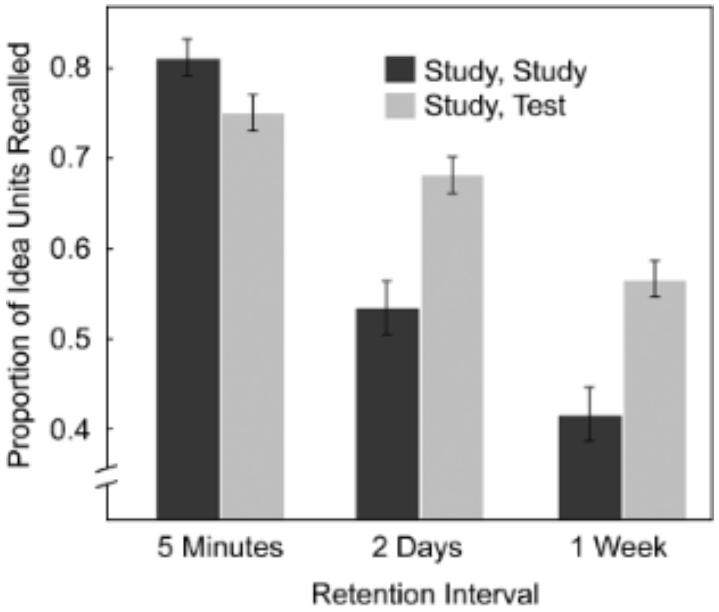
Probing assumptions

Probing their assumptions makes them think about the presuppos should get them really going!

- *What else could we assume?*
- *You seem to be assuming ... ?*
- *How did you choose those assumptions?*
- *Please explain why/how ... ?*
- *How can you verify or disprove that assumption?*
- *What would happen if ... ?*
- *Do you agree or disagree with ... ?*

Regular Testing

- Content knowledge should be regularly assessed through formative methods such as low stake quizzing and MCQ. When doing so have the highest expectation of students and the answers they give.
- strategies, to formatively assess the work of all students, including your H/H* attainers, **and adapt subsequent teaching**. Do not assume they are getting it!
- When using MCQ ensure that there are high quality "false" answers that challenge students and may give you an insight into misconceptions.



Roediger, H. L., and Karpicke, J. D. - The power of testing memory: basic research and implications for educational practice.

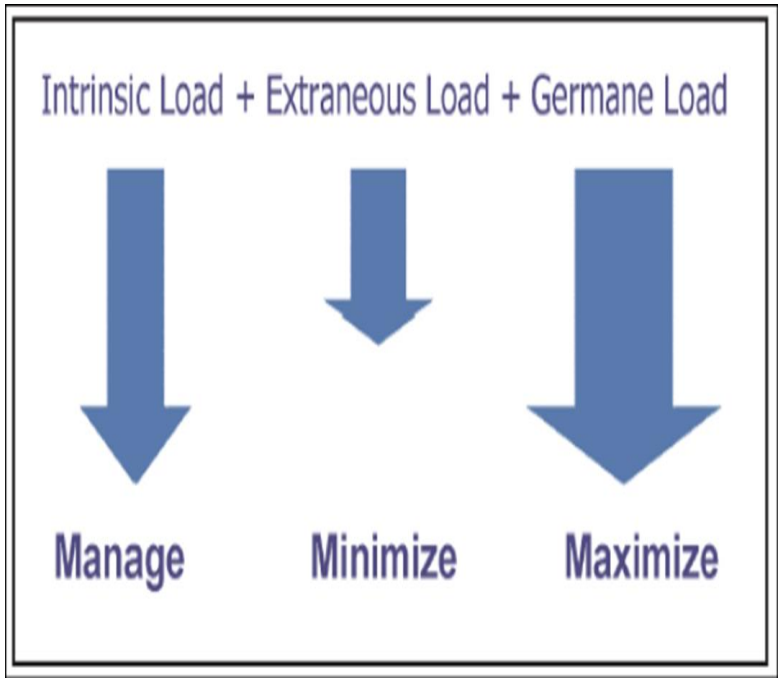
Culture

- Develop a culture in which H/H* students feel like a distinct cohort and are competitive in their desire to improve – i.e. DHS Platinum Geographers
- Give H/H* students the opportunity to use each other to support learning, encourage your higher attaining students to unpick tasks collaboratively, discuss and challenge ideas with their peers.
- Actively encourage and celebrate struggle and the subsequent success of our H/H* attainers.
- **Normalise struggle – model it/talk about it.**

Getting the cognitive load right…

Cognitive Load Theory - John Sweller, late 1980s

intrinsic load (inherent challenge)
+
extraneous load (unnecessary information)
+
germane load (productive thinking)
=
total cognitive load



How to manage the intrinsic and reduce the extraneous load….

- Teach in short bursts
- Avoid split attention – i.e. multiple resources/split over pages
- Reduce superfluous stuff – i.e. unnecessary images
- **Don’t speak over students when they are working**

Metacognition - is about the ways learners plan, monitor, evaluate and direct their own learning.
"THINKING ABOUT THINKING"

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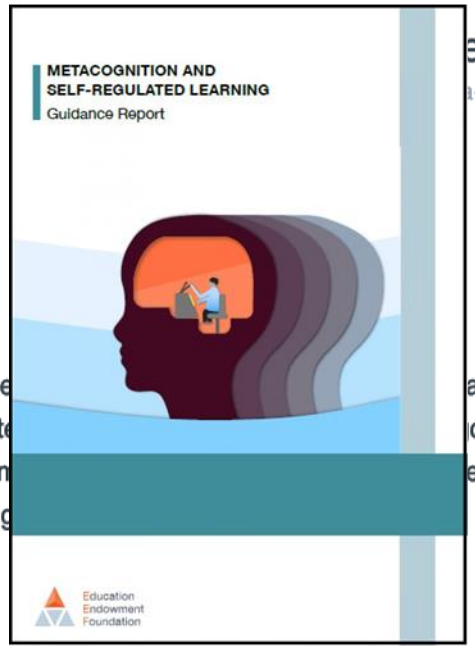
Meta-cognition and self-regulation

High impact for very low cost, based on extensive evidence.

Meta-cognition and self-regulation approaches (some
their own learning more explicitly. This is usually by t
own academic development. Self-regulation means n
pupils a repertoire of strategies to choose from during

How effective is it?

Meta-cognition and self-regulation approaches have consistently high levels of impact, with pup
months' additional progress. The evidence indicates that teaching these strategies can be parti
older pupils.



University of Brighton

School of Education

MA Education

Benjamin James Crockett
October 2018

Can direct metacognitive instruction enhance 13-14 year old high school students' metacognitive awareness and capabilities?

In partial fulfilment of the requirements for the degree of
MA Education

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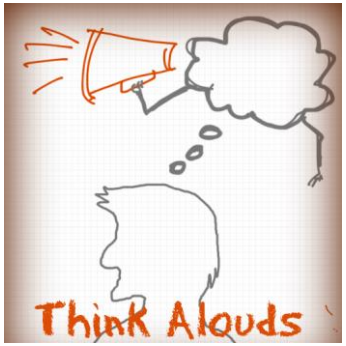
“Whilst subject experts inherently embed metacognitive skills in their thinking (Chauhan and Singh, 2014); whether our students do likewise is questionable.”

1. Live Model:
- Consciously model our metacognitive strategies to our students. Providing them with a finished product without making the process of achieving this visible to students has minimal impact.

2. Think Aloud
- Ask questions that go beyond the knowledge but ask students to consider why you or them are doing something – i.e. “so why would we use that phrase?”, “where would be the next logical step?”, “Why is that not an appropriate strategy?”
- Encourage them to think like a subject expert – “Why am I doing this way?”



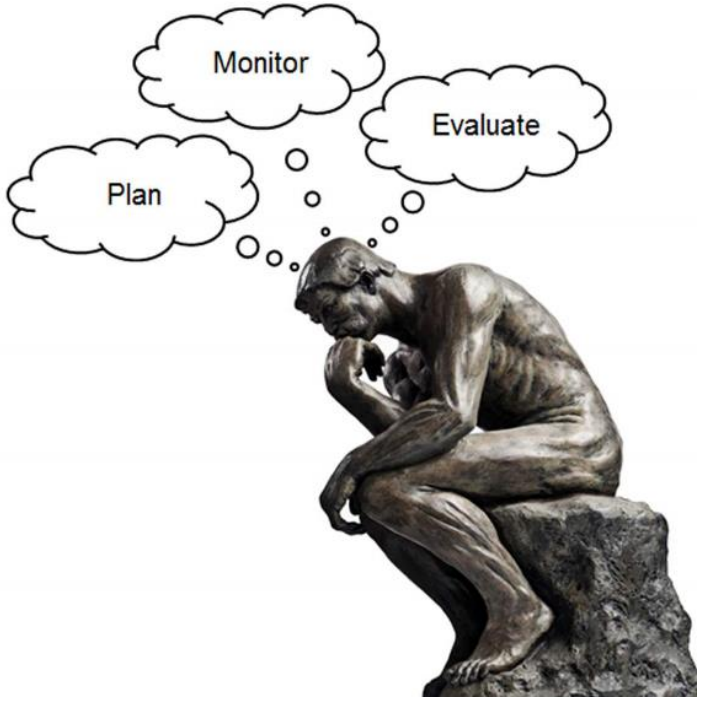
3. Provide prompt and scaffolds to make metacognition explicit
- Exam wrappers
- Metacognition prompt sheets
- Embed reviewing points in written tasks.

1. ***Tacit learners*** *are unaware of their metacognitive knowledge. They do not think about any particular strategies for learning and merely accept if they know something or not.*

2. ***Aware learners*** *know about some of the kinds of thinking that they do such as generating ideas, finding evidence etc. However, thinking is not necessarily deliberate or planned.*

3. ***Strategic learners*** *organise their thinking by using problem-solving, grouping and classifying, evidence-seeking and decision-making etc. They know and apply the strategies that help them learn.*

4. ***Reflective learners*** *are not only strategic about their thinking but they also reflect upon their learning while it is happening, considering the success or not of any strategies they are using and then revising them as appropriate*



'Four Categories of Metacognitive Learners', by Perkins (1992)

Do I check that my H ability students have the base knowledge to succeed?

Do I consider the cognitive load placed on my H ability students?

Do I ask elaborative questions to my high attaining students?

Are my high attaining students equipped to monitor and evaluate their learning?

Is my subject knowledge strong enough to stretch and challenge all students?

Any questions?

@bencrockett1

@DurringResearch

research@durring.com