



THE CENTER *for* TRANSFORMATIVE
TEACHING & LEARNING
AT ST. ANDREW'S EPISCOPAL SCHOOL

The Bridge

v. 3.1

Welcome back to *The Bridge*, the monthly newsletter of The Center for Transformative Teaching and Learning. Each month *The Bridge* analyzes a specific aspect of teaching and learning through a Mind, Brain and Education Science research-informed lens.

A Meta (Cognition) Time of Year by Glenn Whitman



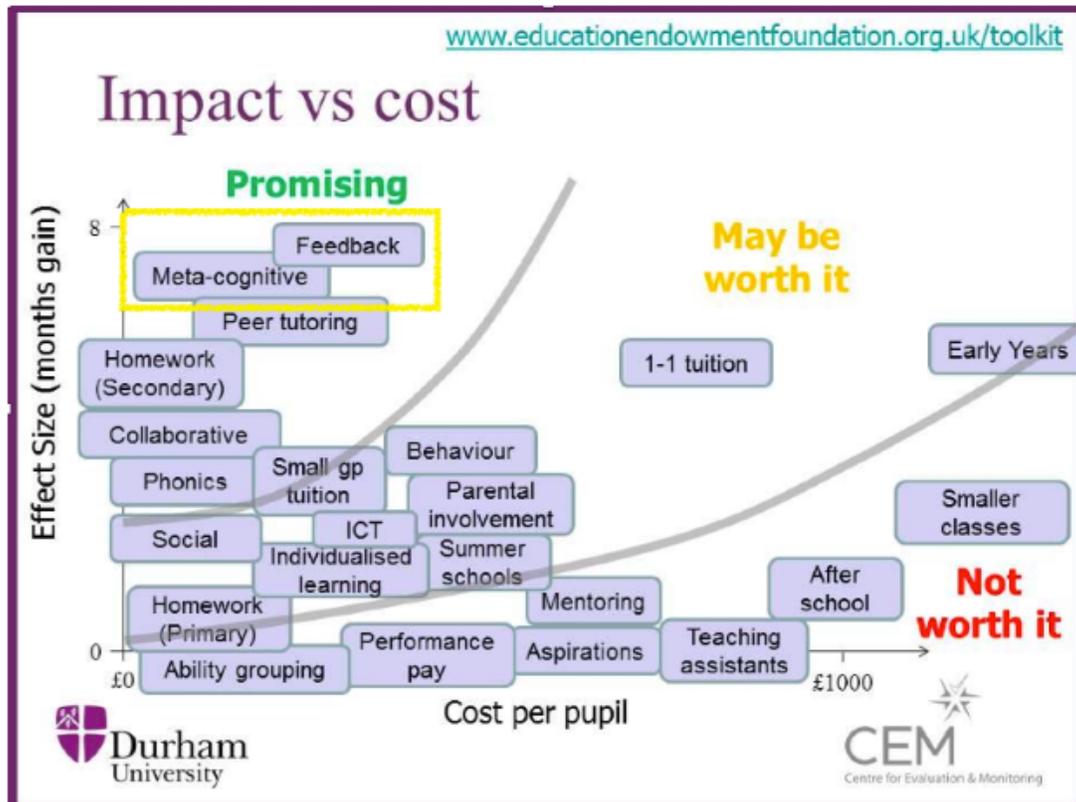
I have been percolating on this "Bridge" for the last month, which was inspired by Meg Lee, Supervisor of Advanced Academics within Frederick County Public Schools. The above Tweet captured a slice of our virtual idea exchange.

Though it is no longer October, this is still the time of year that students and teachers, along with parents, are reflecting on academic progress. Many students, including those at St. Andrew's, have just finished approximately one-third of their school year. St. Andrew's students returned from Thanksgiving Break to receive feedback on their *current* academic and effort grades for the trimester. More important than grades, however, is how students use this feedback along with their own reflection to change their behaviors and advance their learning within the context of each of their classes.

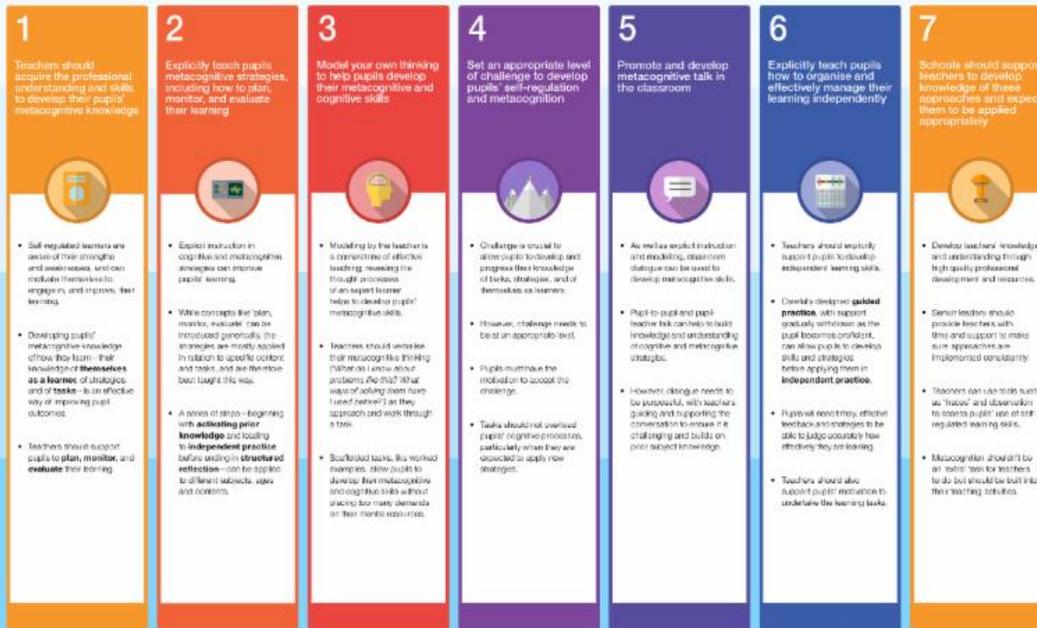
We use the word *current* intentionally when talking to students about their academic and effort work (so far, I have used the word *current* three times, and you might start experiencing *current* fatigue at some point in this piece). With deliberate practice, what might be a *current* weakness, such as writing a persuasive essay, could by year's

end become a strength. Students need to learn to think hard about what is *currently* working or not when acquiring knowledge or developing skills to achieve their goals.

Meta-cognition is defined as "thinking about your own thinking"[1] or "the ways learners monitor and purposefully direct their learning."[2] At the CTTL's [Science of Teaching and School Leadership Academy](#) during the summer of 2018, both Dylan Wiliam and Pedro de Bruyckere spoke about the importance of metacognition to a learner's self-awareness. Metacognition is also shown by this study from Centre for Evaluation and Monitoring at Durham University (U.K.) to be one of the cheapest but most impactful strategies to improve learning outcomes.



However, metacognition often requires students to think harder about themselves and their learning than they either want or know how to do. The challenge for teachers is to help students successfully engage in metacognition. Once again, the CTTL turns across the Atlantic for some guidance and inspiration: the Education Endowment Foundation's "[Metacognition and Self-Regulated Learning: Guidance Report](#)," published in 2018. We were interested in reading this report for our own goal of empowering students to be more independent, confident, efficient, and self-aware learners. This accessible article also includes a chart of its "Summary of Recommendations;" see below.



1 Teachers should acquire the professional understanding and skills to develop their pupils' metacognitive knowledge

- Self-regulated learners are aware of their strengths and weaknesses, and can make themselves engaged in, and progress, their learning.
- Developing pupils' metacognitive knowledge allows them to take their knowledge of themselves as a learner, of subjects, and of tasks, as an effective way of improving pupil outcomes.
- Teachers should support skills to plan, monitor, and evaluate their learning.

2 Explicitly teach pupils metacognitive strategies, including how to plan, monitor, and evaluate their learning

- Explicit instruction in cognitive and metacognitive strategies can improve pupil learning.
- While concepts like plan, monitor, evaluate can be introduced generally, the strategies are mostly applied in relation to specific content and tasks, and are therefore best taught this way.
- A series of steps – beginning with activating prior knowledge and leading to independent practice before ending in structured reflection – can be applied to different subjects, ages and contexts.

3 Model your own thinking to help pupils develop their metacognitive and cognitive skills

- Modelling by the teacher is a cornerstone of effective teaching, revealing the thought processes of an expert learner helps to develop pupils' metacognitive skills.
- Teachers should articulate their metacognitive thinking (rather than focus on the problems they solve) 'What was I asking myself? What was I seeing? What was I doing? What was I thinking?' as they approach and work through a task.
- Structured tasks, like worked examples, allow pupils to observe their metacognitive and cognitive skills without placing too many demands on their mental resources.

4 Set an appropriate level of challenge to develop pupils' self-regulation and metacognition

- Challenge is crucial to allow pupils to develop and progress their knowledge and skills, strategies, and of themselves as learners.
- However, challenge needs to be at an appropriate level.
- Pupils must have the motivation to accept this challenge.
- Tasks should not overload pupils' cognitive resources, particularly when they are occupied by applying their own strategies.

5 Promote and develop metacognitive talk in the classroom

- As well as explicit instruction and modelling, classroom dialogue can be used to develop metacognitive skills.
- Pupil-to-pupil and pupil-teacher talk can help to build knowledge and understanding of cognitive and metacognitive strategies.
- However, dialogue needs to be purposeful, with teacher guiding and supporting the conversation to ensure it is challenging and builds on prior subject knowledge.

6 Explicitly teach pupils how to organise and effectively manage their learning independently

- Teachers should explicitly support pupils to develop independent learning skills.
- Clearly developed guided practice, with support gradually withdrawn as the pupil becomes confident, can allow pupils to develop skills and strategies before applying them in independent practice.
- Pupils will increasingly effective feedback and strategies to be able to judge accurately how effectively they are learning.
- Teachers should also support pupils' motivation to undertake the learning tasks.

7 Schools should support teachers to develop knowledge of these approaches and expect them to be applied appropriately

- Develop teachers' knowledge and understanding through high quality professional development and resources.
- Senior leaders should provide teachers with time and support to make such approaches an implemented consistently.
- Teachers can use tools such as 'traces' and observation to monitor pupils' use of self-regulated learning skills.
- Metacognition should't be an 'add-on' for teachers to do but should be built into their teaching solutions.

We encourage teachers to use this resource to think about how they *currently* integrate meta-cognition moments into their instructional design. What could metacognition look like in your class? Try:

Helping students tap into their prior knowledge and skills.

- When starting a new unit or assignment, don't just assume that students will be able to tap into their pre-existing store of knowledge and skills. Instead, ask students simple prompting questions and lead a discussion to help them see how their prior learning experiences can help them with the current unit or assignment.

Discussing ways to approach an upcoming assessment.

- Try elevating the use of metacognition in advance of an assessment by asking students to think about the following questions: Which study strategies will lead to success on this type of assessment? Which of my current strengths does it tap into? Which of my current areas of weakness does it challenge, and what strategies can I use to help me with this?

Create scaffolds for students to use prior assignments to help them with current assignments.

- Students should be active in this conversation around types of challenges and potential solutions. For example, if they are assigned a paper, ask them how they've completed previous writing assignments. What worked? What didn't? We know from research on feedback that lessons learned from one paper tend not to be carried over well to the next unless we add in small scaffoldings like this.

Asking students after an assessment to consider what went well or not so well and why.

- Consider asking questions such as: How did you prepare for this assessment? Describe a part of the assessment that you mastered; how did you prepare for this section? Examine the mistakes you made; given these, how can you improve on future assessments? Doing this can help students learn about themselves as learners.

How a teacher incorporates metacognition into his or her class can look quite different with our youngest aged learners than it might with our oldest age learners. Regardless, it is critically important in helping students become independent and self-aware learners. At the heart of thinking metacognitively are routines and questions that you might consider building into your instructional design that help students do two things: firstly, build their metacognitive knowledge of themselves as learners; and secondly, build metacognitive skills to apply their prior knowledge, skills and strategies to new learning tasks.

There are some resources not originally designed for metacognition that can help us make sure it is deliberately built into every grade level, course, and class. For example, the following two resources can help students activate their prior knowledge and connect a current assignment or learning moment to what they already know and can already do.

- [Visible Thinking](#) that emanated from Harvard's Graduate School of Education's Project Zero provides "thinking routines" that continue to be easy for teachers to integrate. The range of different types of routines create flexibility for teachers and brings novelty, something the brain likes, to the student experience. Ron Ritchart, Senior Research Associate at Project Zero, has written *Making Thinking Visible: How to Promote Engagement, Understanding, and Independence for All Learners*, which has been an invaluable resource and is a great starting point for teachers with many routines within its pages.
- [Right Question Institute](#) is a new favorite of ours. It provides great resources for teachers and students for developing the right questions that can be applied to thinking metacognitively about one's teaching or one's learning.

In many schools, "metacognition" is divorced from the context of where learning takes place—often incorporated in a beginning of the year goal setting process, which is revisited periodically through the year when students receive grades and comments from their teachers. Research suggests that this is not a particularly effective way to build metacognitive knowledge and skills. A better practice is to build metacognitive activities as seamlessly as possible into the everyday story of the work in each class. Metacognition, at its heart, is a set of skills that helps students learn; as such, these skills are best developed when they are embedded in the context of learning. Doing so helps answer two important motivational questions for students regarding metacognition: *How to do I do it?* and *What is the value in doing it?*

Practicing metacognition is not limited to students. It is always a great time of year for teachers to ask for feedback from students, implement it, and ask themselves metacognitive questions to evaluate the effectiveness of teaching methods. Early in my teaching career, I decided to collect feedback at the end of the trimester rather than the end of the year so that I can adjust my pedagogical practice in partnership with my students. The vital metacognitive element within this process is then reflecting on

questions such as: What am I doing that is helping students learn? What unexpected things did students pick up on, and what things were unexpectedly absent? What barriers to learning exist that I was either unaware of or that I underestimated? And how can I use this all these insights to change my practice? One simple way educators can put this into practice: immediately after class, write in lesson plan a short note about what went well, what didn't go well, and what to do next time as a guide for the next lesson. Spending time on these metacognitive moments is essential for educators to advance on their own journey of self-awareness.

The CTTL has been privileged to engage with teachers and school leaders in CO, IA, MD, VA over the last few months. There is a growing movement of teachers and schools using strongly supported research strategies. In many ways, we see metacognition as an achievable goal for many schools that are enhancing their integration of research-informed strategies. Let us know how it works for your school in your classroom with your students. And, if you were keeping score, this article currently has 13 currents in it, and hopefully it altered some of your current thinking on metacognition.

Have you planned your summer professional development.... YET?

[TAKOM: The Principles and Strategies of Neuroeducation](#)

June 17-19, 2019

Join us for a workshop for K-12 educators and school leaders, approaches the science of learning through academic themes (e.g., listening, speaking, reading and writing) and provides tools and activities for next-day classroom use.



[Creating Innovators Through Design Thinking](#)

June 17-19, 2019

Join us for a three-day seminar that explores the instructional philosophy, tools and activities that nurture essential innovative thinking. This workshop develops the different strategies necessary to build creative, collaborative, and design-minded classrooms.



National Diversity Directors Institute

June 24-26, 2019



Designed specifically for those who want to sharpen their skills and deepen their practice around creating equitable and inclusive school communities, the 3-day program will:

- engage participants with interactive sessions that will deepen core knowledge around diversity, identity, and inclusion
- provide a framework for developing and implementing trusted practices
- give members an opportunity to plan their diversity efforts at their school with support from institute faculty throughout the year in a formal mentoring program

Science of Teaching and School Leadership Academy

July 21-25, 2019

A five-day deep dive into Mind, Brain, Education science and how this research can inform, validate, and transform teaching and learning. For more information, [visit our website](#) and/or email academy@thecttl.org.



[Visit our website to learn more!](#)

Neuroteach Global: In January 2019, the CTTL will launch [Neuroteach Global](#), which provides reinforcement and spaced practice with the MBE research and strategies that were foundational to the Academy. Visit neuroteach.us or email neuroteach@thecttl.org if you are interested in being part of the first cohort of Neuroteach Global users. [Here is a recent press release with more information about this innovative, MBE resource.](#)

NEUROTEACH GLOBAL

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NEUROTEACH GLOBAL is a digital-first micro-learning initiative delivering research-informed, Mind, Brain, and Education science professional development to PK-12 teachers & school leaders around the world.

Educators can master the science of teaching and learning, and work towards earning CEUs, micro-credentials, and becoming an MBE Certified Teacher or School



Learning
Environments



Curriculum
Design



Pedagogy &
Assessment



Student
Success &
Well-Being

Resources for this Bridge:

Quigley, A., Muijs, D. and Stringer, E. "Meta-cognition and Self-Regulated Learning: Guidance Report." [Education Endowment Foundation](#)

de Bruyckere, Pedro. "Metacognition: Teaching Your Pupils and Students How to Learn, [The Ingredients for Great Teaching](#). SAGE Publications Ltd; 1 edition (April 28, 2018)

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