



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

The Bridge

v. 2.5

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.

I Used to Think . . . but Now I Think . . . By Glenn Whitman

I am certainly a better teacher today than I was when I taught my first history class in the fall of 1991. I am equally confident that I am a better teacher today than I was when this school year began in September.

Such improvement is based on the growing understanding I have developed alongside my St. Andrew's PS-12th grade colleagues in Mind, Brain, and Education (MBE) science research. When I have the privilege of presenting at a conference or collaborating with one of the CTTL's partner schools, I am often asked, "What are you doing differently today as a teacher because of MBE science research?"

I have been thinking a great deal about this question, especially in preparation for the opportunity to share the journey of St. Andrew's strategic vision of being the "destination school for [MBE] research-informed teaching and learning" at an upcoming Science of Learning event hosted by the Center for American Progress. The best way I can think of explaining this story is by utilizing one of the thinking routines from Harvard's [Project Zero](#) that is included in a must-have resource for teachers called, [Making Thinking Visible: How to Promote Engagement, Understanding, and Independence for All Learners](#).

Memory: I used to think that highlighting when reading, re-reading the highlights, and creating flashcards was the gold standard for studying and memorizing. However, I know now that merely re-reading one's notes for an upcoming assessment often creates the illusion of fluency and most students use flashcards incorrectly, without struggling before flipping them over to see what the answer is on the card's reverse side. I am therefore a big proponent of teaching students the research behind active retrieval of

information, interleaving, and the spacing effect. [The Learning Scientists](#) are a great resource for this way to rethink how to coach students on studying and memorizing.

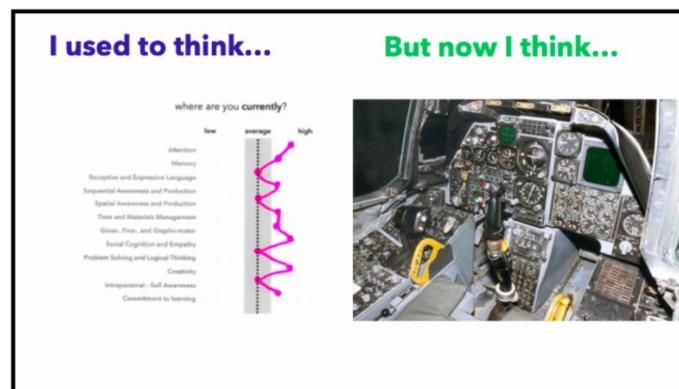


Who are we doing this for? When St. Andrew's first entered the MBE field, we were surprised that MBE research was most frequently being considered only to help enhance teaching and learning for struggling students. We quickly realized that all students, especially those achieving at the highest academic levels, can benefit from research-informed

strategies that make them more efficient, confident, and independent learners. But there's more. In addition to helping *all* students learn, we believe that we can actually *raise* the bar for challenge. By removing unnecessary barriers, adding the right scaffolding at the right time, doing a better job of building core knowledge, thinking about teaching and assessing in multiple modalities, and knowing and inspiring each child, we have become better at getting students to think hard on meaningful tasks. We have also broadened our vision of where learning occurs and where we should be using research to improve learning. Every student brings his or her brain to every facet of every school day, including the classroom, theatre, clubs, and sports fields. Therefore, MBE research has forced us to rethink things like homework, the daily schedule, training of sports captains, and cognitive load for all our students.

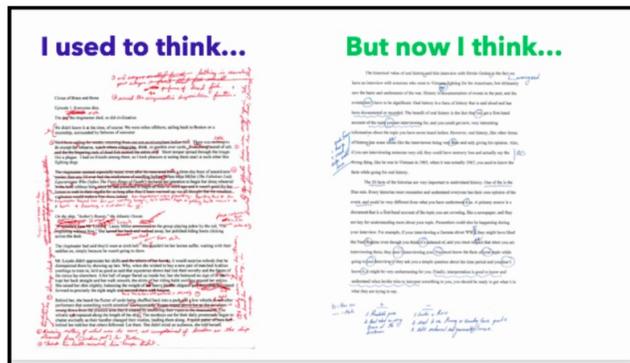
Multiple Modality

Instruction: Early in my career, I was instructed to "teach to the average" if you want to have the broadest impact on the group of students in front of you. It is here where we can confront learning styles, a neuromyth, while embracing multiple modality and multiple sensory



instruction. Rather than trying to teach to each student's preferred learning style, which no teacher should ever try to do, research on multiple modality instruction indicates a different approach. Using more than one modality helps, adding in a visual elements often (but not always) helps, but the most important factor is to choose the modalities of instruction you use based on the content of the lesson. For example, teaching Pythagorean theorem using an olfactory based lesson may not be as effective as one using auditory, visual and a manipulative.

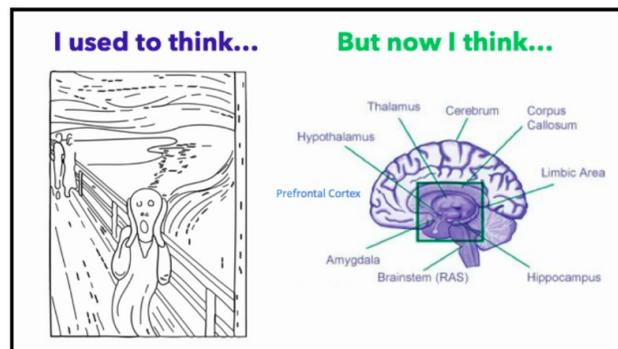
Todd Rose's book and [TedTalk](#), *The End of Average*, also has me thinking about doing a better job of supporting students at the fringes. This research has brought greater differentiation to my classes, including the elevated use of the arts to help transfer knowledge via multiple mediums, and offering students a carefully constrained degree of choice at times on topic or mode of assessment. It has also led me to teach students about study strategies that use multiple modalities, such as dual coding where they might combine words with a related image to help store information in their brain.



Feedback: Many teachers use instructional strategies that their own teachers used on them when they were a student. So, when I first began teaching, like my former teachers, I would mark papers leaving students to decipher comments that look like they were pulled from the Battle of the Marne. Research behind feedback was

truly transformative for me as a teacher. Too often, feedback is diluted and incomprehensible, and students aren't allowed a chance to use feedback to improve. As Dylan Wiliam said, "Feedback, no matter how well designed, that is not acted upon by the student is a waste of time." As the two marked papers suggest, I am actually grading papers faster because I am giving less feedback to students, but the feedback I do give forces them to work harder to understand their errors and make decisions on how and what to improve on a revised draft. To make this work, I spend some time early in the year to teach students how to use feedback, and give them opportunities to use the feedback. This takes a bit of time from 'delivering content,' but I get that time back plus a whole bunch more through the course of the year. "Feedback should result in more work for the student than the teacher" is another of Dylan Wiliams' quotes. When I first began teaching, this was certainly not the case. Now, by making students think hard, my feedback does meet this standard.

Emotions and Cognition: I used to think that one's emotions have no impact on cognition early in my career. I had never heard of the limbic system, which includes the brain's emotional traffic, or the amygdala, now my favorite part of the brain. A student brings his or her emotions, identity, home-life, peer relationships, and health to class



each day. And it all impacts their ability to learn. Teachers cannot ignore stress, anxiety, lack of sleep, or other components of a student's well-being as they find the right level of challenge and support for each student. We know from neuroscience research that cognitive and emotional functions in the brain are highly interlinked, so as teachers we need to teach with the emotional considerations of our students in mind if we are to challenge them to reach their fullest potential. To help this, we at St. Andrew's give teachers a certain amount of knowledge regarding neuroanatomy to dispel the neuromyth that any one part of the brain controls any singular element of learning, and we

encourage teachers to consider how teaching and learning lead to structural changes in the brain. Teachers are brain changers, and this is especially important when we as educators think of 'emotions and cognition' as two interdependent parts because the consequences of doing so can make profound lifelong differences

Conclusion:

In many ways, each of these "but now I do this" mindsets, knowledge, and strategies are what the CTTL considers "low-hanging fruit" that can be integrated as soon as the next day of class. Like all research we suggest to St. Andrew's teachers, its applicability is context and student dependent. Certain research-informed strategies might help one student, some students, or maybe, in those rare instances, all students. The important thing is to try something out, see how it works, and iterate from there. Imagine what could happen if teachers and school leaders better understood the research around emotion and cognition, feedback, the myth of the "average student," and memory to inform, validate, and transform how they design schools, classrooms and work with each individual student. How could your class or school look different if you did?

In the book *Neuroteach* that I co-authored with the CTTL's Head of Research, Dr. Ian Kelleher, our final chapter is titled, "The 10% Challenge." Take on this challenge by picking one of the above slides and adjusting at least 10% of your instructional design, assessments, feedback, and work with each individual student. Let us know how this research-informed strategy changed your thinking by tweeting us @thecttl. Good luck!



Upcoming CTTL Events

[A Night of Design Thinking, Inspiration and Activities](#)

January 31, 2018

[Diversity in the DMV: A Regional Student and Educator Conference](#)

February 23, 2018

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

June 18-20, 2018

[Creating Innovators Through Design Thinking](#)

June 18-20, 2018

National Diversity Directors Institute

June 24-27, 2018

[Science of Teaching and School Leadership Academy](#)

July 22-26, 2018

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