COGNITIVE SCIENCE AND THE CLASSROOM RESOURCE GUIDE

Links to Websites
- The Center for Transformative Teaching and Learning at St. Andrew's Episcopal School Research Base
- Conexiones: The Learning Sciences Platform and Youtube Channel

Books by Speakers
- Neuromyths: Debunking False Ideas About The Brain - Tracey Tokuhama-Espinosa
  - Mindsets for Parents: Strategies to Encourage Growth Mindsets in Kids - Margaret Lee and Mary Cay Ricci

Articles to Read/Podcast to Hear
- How Brain Research Helped Retool Our School Schedule for Remote Learning
- Why These Educators Meet Regularly to Align Instruction with Mind, Brain, and Education Research
- APM Reports on the Science of Reading
- The Role of Technology in Advancing Our Understanding of the Learning Brain
- The Future of Learning: The Evolving Classroom
- This Large District Uses Four Questions to Teach Every Educator How the Brain Works
- Every Educator Needs to Know How the Brain Learns

Twitter Handles
- Margaret Lee, @MegVertebrae
- Glenn Whitman, @gwhitmancttl
- Emily Hanford, @ehanford
Reasons For Neurymyths

Humans Want Simplicity

- Incorrect assertions based on good evidence
- Distortion of scientific facts
- Misinterpretations of experimental results
- Confirmation bias

Scientific Illiteracy

Commercial Benefits

- Unsubstantiated beliefs or misconceptions
- True for animals but not humans
- True using old technology but not new
- Studies based on good but sparse evidence

Popular Press

"Banwagonism"

- Correlation vs. Causation
- Absence vs. Existence
- Overgeneralization of findings
- Studies on adults, not children
- True in the lab but not classrooms

Source: Tokuhama-Espinosa drawn by Restrepo, 2017
STEPS TO ENSURE QUALITY INFORMATION
How to distinguish “good” information from “bad” in the emerging field

1. WHAT: a) What was the original study and its primary purpose? b) Is this a single study or a series of studies? (i.e. are findings in context?)

2. WHEN: a) Is the study sufficiently recent so that it reflects current state-of-the-art understanding in the field?

3. HOW: a) Is the study ecologically valid (does it have “comparative validity”)?

4. METHODOLOGY (2)
   a) How many subjects were/are in the study (i.e. is it a representative study)?
   b) What were the ages and characteristics of the subjects (i.e. does it match the students you work with)?
   c) Was there a control group of subjects who were matched with the subjects in the experimental groups?
   d) Has the study been replicated by other scientists using the same methodology?
   e) Are there any similar studies that have contradicted findings?
   f) Is the classroom practice qualitative or quantitative? Can it be replicated?

5. LEARNING OUTCOME / CLASSROOM CONTEXT: Does the study have learning outcomes (i.e. an application in a real setting)?

6. CONFIRMATION: Has the recommendation been implemented successfully in context?

7. Is the (new) activity practice- or evidence-based?

8. Has the practice been documented?

9. Likely use in MBE