

15th Annual
Hawker Brownlow
**Thinking &
Learning**
Conference

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**DONNA WILSON &
MARCUS CONYERS**

SUNDAY 20 MAY
Session 2

**Metacognition and Cognitive Strategies:
Teaching Students to Drive Their Brains - Part 1**

MELBOURNE

DR DONNA WILSON

Donna Wilson, PhD, is an educational and school psychologist whose work in cognitive education focuses on areas including cognition in the classroom, metacognition, attention, memory, motivation, and improving teaching and learning. She is an adjunct professor and lead developer of graduate programs with majors in brain-based teaching with Nova Southeastern University and head of academic affairs for the Center for Innovative Education and Prevention.



DR MARCUS CONYERS

Dr Marcus Conyers is an international keynote speaker with a passion for improving human performance through original frameworks for connecting mind, brain, well-being, and leadership research to practice. He is the co-author of 20 books, including *Positively Smarter: Science and Strategies for Increasing Happiness, Achievement, and Well-being* (Wiley, 2015), *Smarter Teacher Leadership: Neuroscience and the Power of Purposeful Collaboration* (Teachers College Press, 2016), and *Introduction to BrainSMART® Teaching* (Hawker Brownlow Education, 2018).



Dr Conyers is co-developer of the world's first doctoral minor in Brain-Based Leadership and the first Educational Specialist and Master of Science degree programs in Brain-Based Teaching (BrainSMART® Programs) in partnership with Nova Southeastern University. He serves as a research supervisor for the Ph.D. program in Professional Practice: Psychological Perspectives with Canterbury Christ Church University. Research for his Ph.D. with the University of Westminster focused on improving practice through application of the education, mind, brain, and implementation sciences.

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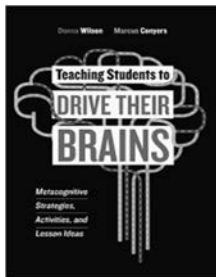
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Metacognition and Cognitive Strategies: Teaching Students to Drive Their Brains PART 1

Discover how our “drive your brain” metaphor can be used to help students use metacognition. Learn what a large body of research indicates about the benefits of metacognition across contexts and as lifelong learners. In this session, participants will apply practical strategies for guiding students to become more metacognitive by directing powerful cognitive tools such as brain-friendly goal setting, planning, self-monitoring and finishing power across a wide variety of settings. Leave this session knowing why we call metacognition the gift that keeps giving!

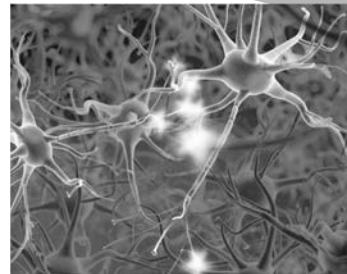
Objectives and Outcomes:

- **Research on metacognition as #1 skill across contexts**
- **Using our “drive your brain” metaphor to motivate students to think at higher levels**
- **Metacognitive and cognitive strategies for learning and thinking**



Presentation by
Marcus Conyers, PhD
and Donna Wilson, PhD
taken from their book,
*Teaching Students to
Drive Their Brains*

Great News for Adult Learners!



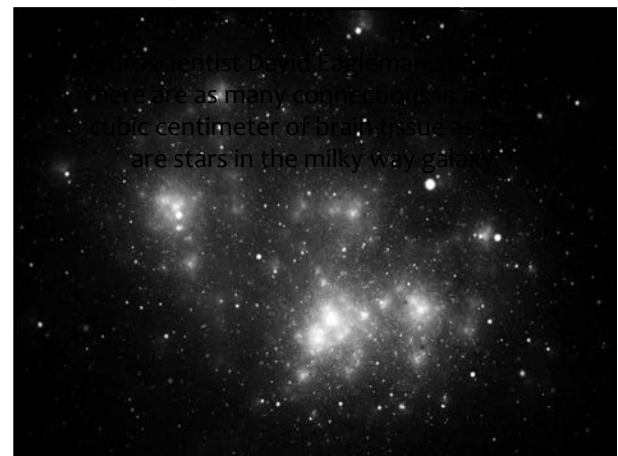
- Learning changes the structure and function of the human brain.
- Research suggests you can grow more neurons and make connections as you learn throughout life!

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All students (and educators) arrive at school
with brains powered by 86 billion neurons...



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Neuroscientist David Eagleman says
there are as many connections in a single
cubic centimeter of brain tissue as
there are stars in the milky way galaxy.

Drive Your Brain

As educators, we need to give
children tools, and time to
practice those tools, so that they
become independent learners.

Once upon a time...

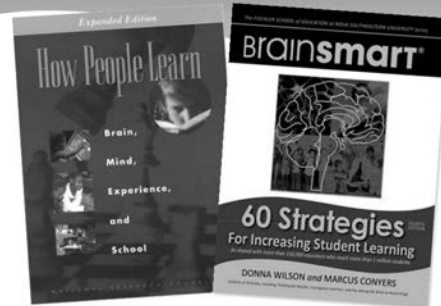
As the decade of the '80s emerged, both Marcus and I
wanted to know more about the mind and brain. In
particular I wanted to know how my students learned
so I could become a better classroom teacher.

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Fast forward to 2000:
Growth in research about how people learn
from studies in mind, brain, and education science



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First, we developed and tested our
“Drive Your Brain” strategies with children and youth...



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... and then we began sharing knowledge and
strategies with tens of thousands of educators.



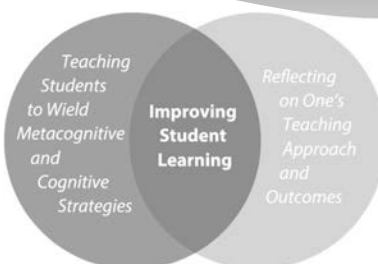
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We have shared science and strategies across the
states and in numerous other countries.



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Teaching For and With Metacognition



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Never question ability.
Always improve strategy.

Marcus Conyers

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13

Teaching with Metacognition



A metacognitive teacher might ask...

How can I help my students to understand their amazing potential to learn at school and in other areas of life?

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Students of all ages like to learn about their amazing brains and how change occurs during learning!



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Middle School Students Learn About Their Brain Connections



Photo credit:
Nicole Galincin

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Secondary Classroom Brain Study



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Basic Diagram for Use Across Grade Levels

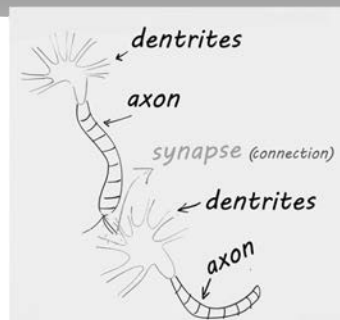


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Nicole Galincin

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Teachers enjoy using hands-on/minds-on activities...



for teaching students about their brains' capacity to become smarter in key ways!

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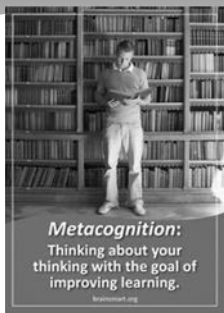
Understanding Brain Plasticity: Student Checkpoint



- * What does understanding brain plasticity mean for me as a student?
- * Are there subjects in school that are tough for me? Does that mean I'll never do well in those classes?
- * How can I get better?

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Our Definition of Metacognition

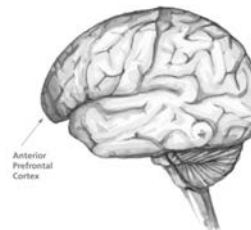


Metacognition:
Thinking about your thinking with the goal of improving learning.

<http://donnawilsonphd.blogspot.com/2014/01/a-3-word-that-is-worth-every-penny.html>

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Metacognition Is a Key Skill Across Contexts



- * The anterior prefrontal cortex is thought to be the center of executive functioning, the mental processes that enable us to reflect, think about our thoughts, focus attention, and manage tasks.

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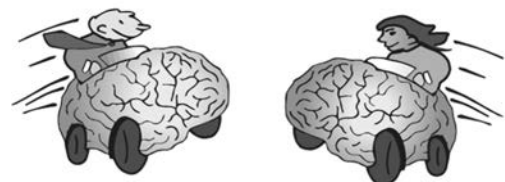
What the research says...

Our analysis of the research reveals that metacognition is one of the most important factors for supporting student achievement. However, studies suggest this and other strategies for learning success are not being explicitly taught in most classrooms.

D.L. Wilson and M.A. Conyers

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We Developed the Metaphor Drive Your Brain



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Then we began sharing the framework and strategies with over 160,000 teachers over 20 years.



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Teaching Thinking with Shakespeare



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Ms. Cabadaidis teaches self-regulation, a gift that keeps giving!



Designed by Freeph

My students (ages 3-6) ...
“Peter Rabbit wasn’t thinking. He didn’t have self-regulation. He went into Mr. MacGregor’s farm when his mother told him not to, and he got into a lot of trouble. He lost his brass buttons to his new blue coat!”

D.L. Wilson & M.A. Conyers,
Flourishing in the First Five Years, p. 98

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Using Metacognition: So, a student might ask...



What am I learning?
How well am I learning it?
How am I learning it?
Which strategies am I using?

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28

Teaching with Metacognition



A metacognitive teacher might ask...

How can I help my students to become more optimistic and motivated to learn?

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Why is it important to focus on positive engagement for learning?

It has been found that most classrooms and schools tend to be emotionally flat or neutral, often with low levels of thinking.

It used to be thought that this was ok as long as the classroom was not extremely negative. We now know that flat and neutral is not good enough.

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30

In our review of recent research we found that sustaining a positive state is key to supporting motivation, engagement, and student achievement. By being metacognitive students [and educators] can be more effective at developing and maintaining a state of practical optimism.

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31

An Important Aspect of Metacognition is Practical Optimism



Stimulating practical optimism to drive motivation to read, write, think, and achieve in other areas.

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Guiding Students to Become Practically Optimistic



- * Use questions like “What was the best thing that happened today?”
- * Model a state of practical optimism.
- * Share examples of how you have overcome obstacles.
- * Share positive stories.

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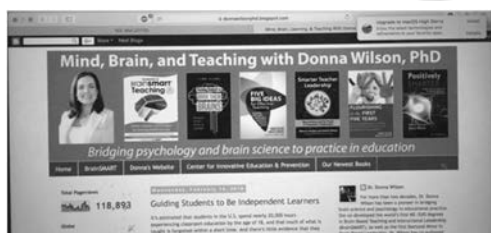
Creating More Optimistic Schools



<http://www.edutopia.org/blog/unleashing-power-positivity-your-school-donna-wilson-marcus-conyers>

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Inspiring Progress Toward Learning Goals



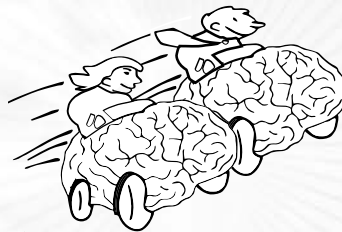
Metacognition and Cognitive Strategies:

Teaching Students to Drive Their Brains

PARTS 1 AND 2

Metacognition in the Brain

Although educational research on the power of metacognition for increasing student achievement has been building for a number of decades, scientists have only recently begun to pinpoint where the center of metacognition is in the brain. Researchers at the University College London have discovered that subjects with better metacognition had more gray matter in the anterior (front) prefrontal cortex (aPFC). Studies are ongoing to determine just how this brain area contributes to the critically important skill of metacognition.



Introduction to the "Drive Your Brain" Teaching Approach

Students who succeed academically often rely on being able to think effectively and independently, to take charge of their learning. These students have mastered fundamental, but crucial, skills such as sustaining practical optimism for learning, completing tasks on schedule, making a plan for learning, monitoring their learning path, and recognizing when it might be useful to change course. They do not need to rely on their teacher as much as others who are more dependent on guidance to initiate learning tasks and monitor their progress. Students who do not learn how to "manage" themselves well as they proceed through school experience more setbacks, become discouraged and disengaged from learning, and tend to have lower academic performance. They may also be responsible for more classroom management issues.

Many teachers we know enjoy teaching students how to wield one of the most powerful thinking tools wisely: metacognition. We refer to metacognition as being able to think about your thoughts with the aim of improving learning. A metaphor that resonates with many students is that learning cognitive and metacognitive strategies offers them tools to "drive their brains." The good news for teachers and their students is that metacognition can be learned when it is explicitly taught and practiced across content and social contexts.

A student who is excited about being in the driver's seat and steering toward learning success may well be destined to become an independent thinker on the way to charting a responsible course for school, career, and life. Being metacognitive can be likened to being more conscious, reflective, and aware of one's progress along the learning path. Teachers have told us they feel an extraordinary sense of pleasure teaching their students useful strategies that can be applied in all aspects of their lives in and outside of school.

Metacognition and Cognitive Strategies: Teaching Students to Drive Their Brains**Teaching Students About the Capacity of Their Brilliant Brains!**

Explicitly teaching students about neuroplasticity can have a transformative impact in the classroom. A central facet of our work as teacher educators is teaching about how the brain changes during learning. Many teachers have told us that these findings have had a positive effect on their expectations for their students and on students' perceptions of their own abilities.

Lessons on discoveries that learning changes the structure and function of the brain can engage students, especially when combined with explicit instruction on the use of cognitive and metacognitive strategies that guide them to learn how to learn (Wilson & Conyers, 2013). Using these strategies effectively produces learning gains, which motivate students to take charge of their learning, which leads to further academic success and may have the additional benefit of alleviating

classroom management issues. When students see this process as changing their own brains, the result is a powerful and positive cycle.

The force behind this cycle is students' belief that they can get smarter through study and practice, which enhances their commitment to persist in the hard work that learning sometimes requires. Classroom research involving seventh graders who were taught that learning changes the brain and that intelligence is expandable did better on math tests than peers who did not receive that instruction.

The same dynamic of persisting to succeed applies to teaching. Keeping the idea of brain plasticity at the forefront of your professional practice offers a constant reminder than when students struggle with lessons, it isn't because they can't learn, but because they need more practice and instructional support.

BrainSMART® Topics for Metacognition and Cognitive Strategies: Parts 1 and 2
from Dr. Marcus Conyers and Dr. Donna Wilson

- ◆ **Brief history of our seminal work in a practical approach to teaching metacognition.**
- ◆ **Concretizing the teaching of this abstract process with our "Drive Your Brain®" framework.**
- ◆ **Teaching with and for metacognition.**
- ◆ **Discovering the power of the capacity of our brilliant brains.**
- ◆ **Activities for teaching students about neuroplasticity and how learning changes the brain.**
- ◆ **Assisting students to become aware of their level of optimism for learning.**
- ◆ **Intervening in negative thinking.**
- ◆ **Rewiring the brain to think more optimistically.**
- ◆ **Strategies for increasing student (and our own) practical optimism.**
- ◆ **Guiding students to set their own learning goals.**
- ◆ **Strategies for keeping the brain engaged in learning and higher order thinking.**
- ◆ **The importance of movement for learning and thinking.**
- ◆ **Guiding students to increase their attention to learning.**
- ◆ **Teaching students how to internalize effective listening behaviors.**
- ◆ **How to teach students how to self-monitor their learning.**
- ◆ **Using a key skill: finishing power.**
- ◆ **Tips and tools for facilitating the "Drive Your Brain®" approach.**
- ◆ **Bonus: If time permits we will share some extra cognitive strategies that we have found make the greatest difference.**
- ◆ **Royal Roundup!**
- ◆ **How to follow-up with your facilitators, Marcus and Donna, as you practice using this approach to teaching students how to be metacognitive.**

Metacognition and Cognitive Strategies: Teaching Students to Drive Their Brains

Guiding Students to Be Independent Learners

It's estimated that students in the U.S. spend nearly 20,000 hours experiencing classroom education by the age of 18, and that much of what is taught is forgotten within a short time. And there's little evidence that they know how to apply effective learning strategies when they arrive at college.

In essence, many students have not learned how to retain and apply knowledge. Fortunately, current research offers fascinating insights about the brain's capacity to learn at higher levels when effective learning strategies are used.

In the quickly evolving workplace and at a time when graduates are competing for jobs and careers with others around the world, the capacity to change rapidly and apply new skills is paramount.

Bottom line: Learning how to learn is a game changer in the global knowledge economy, and it's never too early to teach students how to begin to learn more independently.



Engaging Parental Support for Smarter Thinking

Given that students spend much more time outside of school than in the classroom, partnering with parents can be an effective way to help children and youth enhance their executive function. Reinforcing messages and strategies related to taking charge of their thinking at home also illustrates how truly useful it can be to be the boss of your brain.

Many parents won't be familiar with the concept of executive function—or indeed the idea of guiding students to learn how to learn. In their own K-12 education, today's parents likely never encountered lessons about how the human brain learns and how people can become more effective learners. As a result, it will be helpful to share three key messages with parents:

1. The term executive function refers to the capacities of the human mind to develop and carry out plans, to get and stay organized, to make decisions, to hold information in working memory, and to focus attention on the task at hand. A helpful metaphor is to think of executive function as the brain's CEO directing other parts of the brain, such as those that control the senses and body movement, to take action to carry out plans and perform tasks.
2. Many people believe that these kinds of thinking skills are inherent (for example, you're either naturally organized or you're not), but researchers have established that it is possible to improve various aspects of executive function through conscious effort and practice. For instance, over time, you can improve your working memory, which makes it easier to solve problems and remember all the steps in a task.
3. There are simple strategies that you can use at home with your children to help them—and you—learn to think smarter. Enhancing executive function can make a difference in schoolwork, on the job, and in personal pursuits such as hobbies and other pastimes.



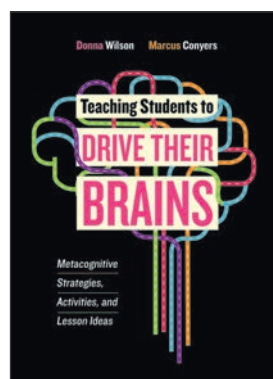
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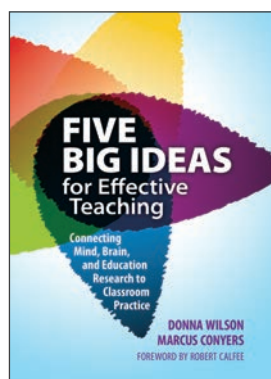
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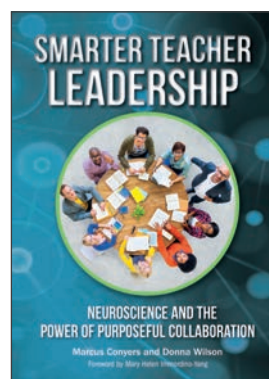
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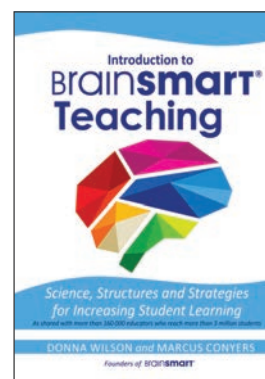
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