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Teaching Students to

DRIVE THEIR

BRAINS

*Metacognitive Strategies, Activities,
and Lesson Ideas*

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Introduction to Metacognition

What do we want for children and teenagers? What do they need to succeed in school, in their future careers, and in the pursuit of their dreams? Wherever their ambitions lead them, they will benefit from becoming creative problem solvers, analytical thinkers, and effective communicators and collaborators. Guiding students to recognize that they can learn these vital skills and improve them provides a pathway to achieve the goals they set for themselves. Some of the most vital and versatile skillsets we can teach students to develop are the abilities to think about their learning; to be aware of factors that affect their intellectual performance; to know how, when, where, and why to use particular cognitive strategies; and to monitor and adjust their performance of learning tasks.

These abilities fall under the umbrella of *metacognition,* which refers to knowledge about and regulation of one's thinking. At the core of being metacognitive is taking a step back and observing one's thinking, as depicted in Figure 1, which is sometimes called the *reflective process*. Questions that might be asked during this process include What is the problem to be solved? What should I do? How am I doing? How well did I do? What can I do differently and better next time?

FIGURE I

The Reflective Process of Metacognition

Teaching students to become more metacognitive equips them with skills to "drive their brains" and become self-directed learners. As in driver's education, students need explicit instruction on how to steer their thinking, when they need to slow down and when it's OK to speed up, where they might take shortcuts to get to their learning goals, and when they might benefit from a leisurely road trip along the back roads of knowledge. Many teenagers yearn for their driver's license, but developing the abilities and mindset to take charge of their learning will take them further in life than the keys to any car. And students don't have to wait until their teenage years to take "brain-driving lessons." They can and should start learning about metacognition at an early age and apply it across all core subjects and in life lessons.

Innovative Approach to Teaching Metacognition

This text offers a practitioner-friendly guide for teachers who want to teach both *for* metacognition and *with* metacognition. Teaching for metacognition involves guiding students to become self-reflective, self-directed learners who understand why, how, when, and where to use metacognitive and cognitive strategies; teaching with metacognition entails reflecting on one's teaching approach and the outcomes of classroom practice. Improving student learning is at the center of both goals (see Figure 2).

In contrast to books on this subject that are written primarily for researchers, we take the practical perspective of educators who want to know how the research applies to the everyday tasks of teaching—formulating goals, planning and implementing lessons and activities, self-monitoring while teaching, and learning from experience, with the continual goal of increasing instructional effectiveness. Knowing how important it is for their students to

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FIGURE 2

The Aim of Teaching *for* and *with* Metacognition

Teaching Students to Wield Metacognitive and Cognitive Strategies

Improving Student Learning

Reflecting on One's Teaching Approach and Outcomes
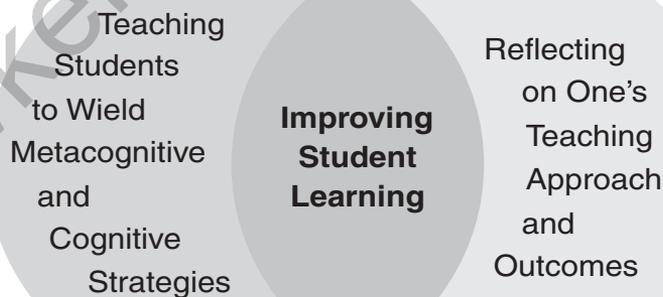
become metacognitive across contexts, teachers will also appreciate the concrete strategies offered here to teach *for* metacognition throughout the school year.

A second key difference is that our approach is based on our work with teachers during the last two decades. At the core of our framework is an understanding of cognitive assets as "workhorses of the mind," with metacognition as the overseer of that learning horsepower. For example, think about how crucial it is for students to use the cognitive asset of selective attention when working on an important learning task. Teaching students to be metacognitive about directing their attention goes well beyond reminders to "Pay attention!" Students benefit from explicit instruction on how to focus their attention, on monitoring how well they are applying this asset, and on practicing the use of selective attention across contexts in the classroom and in their personal lives. Metacognition and related cognitive skills are only helpful when they are used appropriately.

Third, this text relates "big ideas" in education (Wilson & Conyers, 2013a) to the importance of metacognition in teaching and learning. We explain the amazing potential of the human brain through new understandings about neural plasticity—in particular, experience-dependent synaptogenesis and dynamic, malleable intelligence. We tie together how deploying the cognitive assets when and how they are needed with metacognition helps students achieve more of their learning potential and become self-regulated, independent, and self-directed learners. This approach connects emerging neuroscience to metacognition in learning.

Fourth, we present metaphors that are beloved by teachers who use this approach—including the idea of students driving their brains—to make the complex concept of metacognition easier to understand and apply. We provide a variety of metaphors and step-by-step suggestions to illustrate the applications of metacognition and cognitive assets in classroom learning, in students' lives outside of school, and in their future educational and career pursuits. We share our own stories and real-life examples

from teachers about using these tools and the improvement seen in students' learning.

Throughout this book, we will explore extensive research on how academic achievement is affected when explicit instruction is provided on why, how, and when to use metacognition and cognitive strategies. This research forms the foundation for practical teaching strategies and classroom applications presented in each chapter:

• The sections on teaching with metacognition and specific cognitive strategies in mind offer a concrete approach to planning and delivering lessons in ways that encourage and support self-directed learning. Many of the ideas presented in these sections can be applied across core subjects.

• The sample lessons begin with recommendations on introducing students to the use of the cognitive strategies showcased in each chapter and then lead into an assortment of learning activities for specified grade levels and subject matters. The "extenders" suggest adjustments for younger or older students.

• The Metacognition Checkpoint boxes feature a short list of questions on how students can think more productively about employing the cognitive assets.

• Each chapter concludes with a discussion of how teachers can incorporate the featured cognitive asset into their professional practice, so that they are teaching *for* metacognition as well as *with* metacognition.

Many teachers have told us their classrooms have become more positive, even joyful, as students more often experience those "aha!" moments of learning that come from thinking about their thinking. In addition, educators report that teaching with metacognition has helped transform their classroom practice and attitude about their profession. As one teacher put it, "My students now have a teacher who has the strategies and tools to help them learn to think metacognitively and to teach the 'how' to become successful in school and in their personal lives." The what, why, and how of metacognition is the focus of Chapter 1.