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DEVELOPING GROWTH MINDSETS

Principles and Practices for
Maximizing Students' Potential

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Introduction

The developmental sculpting of the brain's networks through learning is akin to the process of growing a botanical garden.

—Mary Helen Immordino-Yang,
Linda Darling-Hammond, and Christina Krone,
*The Brain Basis for Integrated Social, Emotional,
and Academic Development* (2018, p. 1)

Every school day, learners of all ages arrive in classrooms, each with a brain powered by some 86 billion neurons. Many of these neurons make approximately 10,000 connections to other neurons, which is an astounding amount of activity. Just one cubic centimeter of the human brain is estimated to have as many connections as there are stars in the Milky Way galaxy. Breakthrough research indicates that learning changes the structure and function of the brain and that the creation, strengthening, and pruning of neural connections are key to the learning process.

In essence, human beings have tremendous potential to acquire new knowledge, develop new skills, and improve their brains throughout life. Applying effective learning strategies enhances this process. These vital discoveries from mind, brain, and education research are seldomly explicitly taught to students,

and this information is not necessarily a major emphasis in teacher education programs. We stand at a unique time in human history, with the opportunity to empower all learners through an understanding of their brains' awesome capacity to change as the result of learning and to equip them with practical learning strategies that can significantly improve the growth of knowledge and skills.

In our work with teachers, we have found that explicitly teaching fundamentals of brain plasticity is a critical component for fostering what Stanford University psychologist Carol Dweck describes as a *growth mindset* (2016a, 2019). Discovering that learning changes their brains helps students develop this mindset—the belief that they can improve their knowledge and skills through the use of learning strategies and with guidance and support from teachers, coaches, and mentors. In a very real sense, understanding brain plasticity provides a scientific basis for adopting a growth mindset. And when educators model and teach effective learning strategies, students experience academic gains, which in turn support the process of sustaining a growth mindset to persist even through progressively more difficult learning tasks (Hattie & Anderman, 2020).

These concepts are at the foundation of our work in developing the BrainSMART® programs for improving teaching, learning, and leading through the innovative applications of mind, brain, and education science. Some 165,000 educators around the world over the past two decades have studied these programs through pioneering master's and educational specialist degree programs, doctoral minors, and live professional development events. A key part of these programs has always been developing the learning mindsets that support higher levels of academic and life achievement. This has been achieved in part through the combination of explicitly teaching learners about brain plasticity and *malleable intelligence* (the concept that they can become functionally smarter through effort) and by modeling and teaching specific learning strategies that help them experience higher levels of success.

A hallmark of our approach is including many methods that educators can use “as is” or modify for their practice. This comes from the finding that, in professional development, it is the experience of using a new method in the classroom that makes a positive difference for teachers rather than only learning about a new belief system. As Thomas Guskey (2002) states, “teachers experience the most significant changes in their attitudes and beliefs *after* they begin using a new practice and observe positive effect on student learning.” We developed this formula to represent this dynamic:

Mindset + Methods = Growth

The *mindset* in the formula refers to the learners’ set of assumptions and beliefs about their potential to learn and grow. We define *potential* as “the neurocognitive capacity for acquiring the knowledge, skills, and attitudes to achieve a higher level of performance in any domain” (Conyers & Wilson, 2015a, p. 4). This definition connects well with the idea that functional or successful intelligence, defined as “one’s ability to succeed in life,” can be improved (Sternberg, 1999, pp. 292–293; Sternberg, 2018). Mindset can be the engine of motivation (Hattie & Anderman, 2020). When we assume that we can make progress through effort and the use of effective strategies, we are motivated to invest more energy in the learning process. The growth mindset also keeps us going in the face of difficulties and setbacks, as such occurrences can be regarded as feedback telling us we need to use different strategies, ask for help, or invest more time and effort to achieve the desired results.

The *methods* in the formula represents a suite of learning and teaching strategies, skills, lesson ideas, and frameworks, such as those presented throughout this book, for improving learning. As the sum of these components, *growth* refers to ever-increasing levels of knowledge and skills over time. The three elements in this formula work together in a positive feedback loop.

Learning, Teaching, and Mindsets

When I (Donna) first became a teacher and then a school psychologist many years ago, I encountered countless students from across the continuum of socioeconomic status who appeared to be bored, disengaged, and disinterested in school, although I had no doubt they had the potential to succeed. Some of the students I met had experienced circumstances that affected their learning ability at school, such as living in poverty or moving frequently and having to acclimate to new schools. However, many students I encountered had none of these issues yet seemed to feel disconnected from school and generally without hope for succeeding academically, much less enjoying their educational experiences. What became clear was that all of these students could greatly benefit from having what we now know as a growth mindset.

At the same time, I knew colleagues like myself who were working hard with the tools we had to try to motivate students to learn. I found that these educators, like those we have since met around the world, wanted their students to become the best they could be. Through experience, we have learned that it is critically important to build the belief that everyone can and will learn under the right conditions. To create those conditions, we need to build growth mindsets among every stakeholder in education, from students to policymakers.

By modeling some key beliefs, knowledge, and methods in many live workshops, we have witnessed positive transformational changes in educators. Many of the successful methods we use are described in this book, and some are modeled through examples of the positive impact that graduates have been achieving in their classrooms and schools. For example, Carol, a middle school teacher, reports that what she learned in the graduate program “has given me the confidence to challenge myself as well as my students as learners and made me a good role model for them. [It] gave me confidence to speak up about what is right for each student. [I] feel more professional than before. I truly hope I never

feel like I am finished learning—this is a gift I want to give my students as well—there’s always more they can learn” (Germuth, 2012, p. 22). Carol truly embodies a growth mindset to keep learning as she passes this most important of gifts on to her students.

Our experience has been that when educators incorporate these various methods into their classrooms—such as learning joyfully in groups, participating in “brain breaks” and focused attention practices, and adapting and applying creative methods as appropriate for their students and content—they blossom. We have often commented at the end of a multiday event about how the colors educators wear have changed over the days, going from blacks, dark blues, and browns on the first day of the workshop to yellows, reds, and purples by the last day. It is as if the attendees have been set free to learn, develop, and grow in a safe, lively, and engaging place. In essence, we think that many begin to believe in themselves as learners in new and powerful ways!

In our workshops and online studies, educators have opportunities to grapple with new concepts and grow new knowledge and skills as we work to assist with the development of a mindset that is powered to learn. We find in this process that we, too, learn from the educators we teach. We try to help others avoid falling into the trap of trying to be perfect, which is not only impossible but debilitating to the ability to sustain a growth mindset when learning or teaching. As educators, we must embolden ourselves to break away from the images we are bombarded with in modern culture to be perfect in every way.

We also encourage educators to be open to thinking about what may yet be unknown to them from among the ideas, knowledge, and methods we teach and to embrace those strategies that can help them and their students grow. If you’re staying comfortable and not pushing yourself to the edges of discomfort occasionally, you may find that you are not growing.

I (Donna), for example, came face-to-face with my own discomfort as I began practicing yoga with a goal of becoming more

flexible and stronger and to establish good habits for maximum well-being in later life. Osteoporosis appears to run in the women of my family. Through exercise and nutritional habits, I have reversed the loss of bone mass in my hips, but my most recent scan indicated decreasing bone mass in my spine. I decided to engage in more stringent exercise. In addition to increasing my resistance training at the gym and adding more steps on my walks, for the first time in my life, I made a commitment to practice yoga.

Starting this regimen while I was writing this book gave me a great opportunity to reflect on my mindset. I admit that when I started yoga in late October, I did not feel positive about my chances for enjoying and sticking with it. It was unfamiliar to me, and I felt stiff, weak, and not very fluid in my movements. Part of the problem was that I was trying to be perfect (the no-no we spoke of earlier, right?). Although my instructors advised me to be less judgmental about my progress as a beginner, I was concerned about making mistakes, even though I knew that mistakes have been found to grow brain connections (as we will discuss in Chapter 2).

I continued practicing yoga even if only for brief periods almost every day and taking group lessons when possible. As I write this in early March, I can say that by putting myself out there and continuing with yoga, I now feel more flexible and a bit stronger, and I have learned to do a good number of fundamental moves. In essence, I have applied my training, practice, and constructive feedback from my instructors to hone my technique and make incremental gains over time. Through my efforts, I have learned an important skill set that will have ongoing benefits as I continue to mature. Although it will take some time to see positive changes in my bone scans, I hope that the methods I am deploying to build my bones naturally will have positive results in coming years. I'm developing a belief that I can learn and grow my physical skills more than I've believed I could in the past.

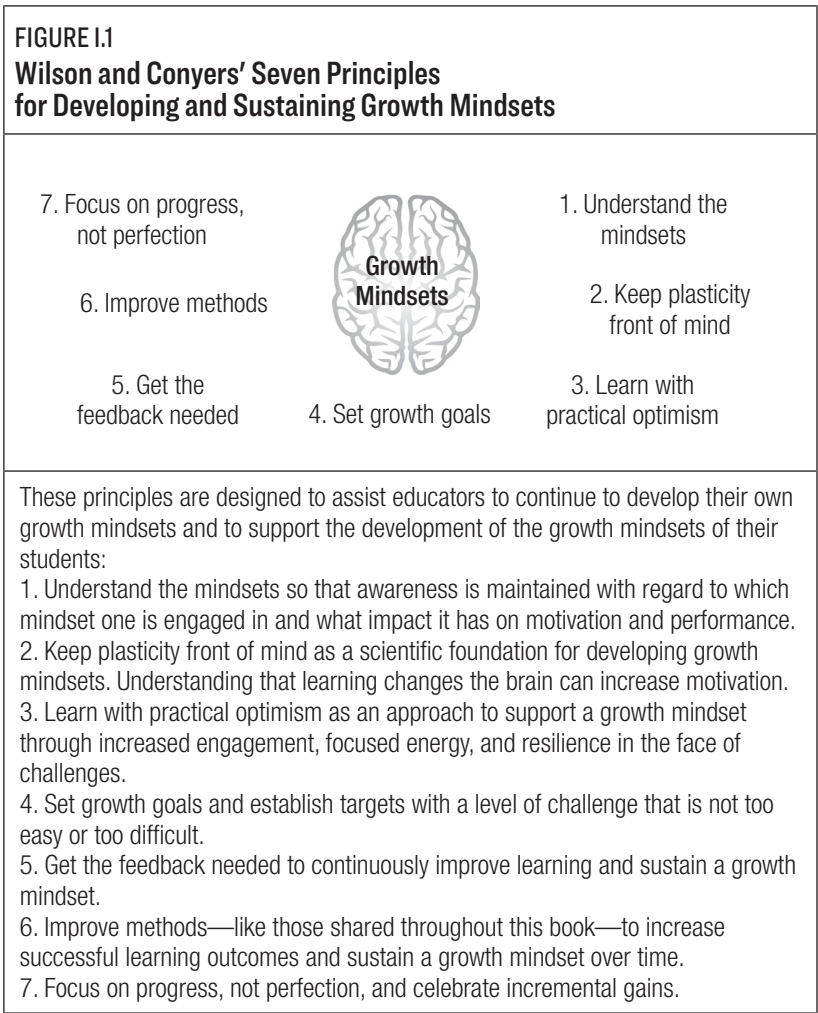
Support for a Lifelong Learning Journey

As educators, our objective is to teach children about the benefits of embracing new learning experiences. Whatever we have as cultural values for our youth, all parents want their children to be able to learn across the contexts that society and families hold dear. For example, within a 24-hour news cycle on television recently, we viewed anxious English teens weeping because they had failed to get into the top universities they had chosen, a 16-year-old boy “shadowing” his father so he could learn how to build cabinets like his dad, and a child sitting at a desk writing her first poem. These three instances represent different values, but in each example, learning is at the core.

Today, perhaps more than ever before, students need to prepare for lives and careers in which they will be constantly facing new learning challenges. One of the top trending skill sets for the future of students now in school is “active learning and learning strategies,” according to *The Future of Jobs Report* from the World Economic Forum (2018). Creativity, initiative, critical thinking, flexibility, and complex problem solving will be especially prized among tomorrow’s workers, who will need to adapt continually to demands for new skills, especially as job-hopping becomes more commonplace. Guy Berger, an economist with LinkedIn who studied the career paths of 3 million college graduates, points to a study that showed millennials who graduated from 2006 to 2010 were on track to surpass four job changes by the age of 32 (Long, 2016). Berger cites two potential reasons: (1) millennials feel more restless in their careers than previous generations, and (2) employers may regard workers as more disposable. “The best advice I can give anyone is to think about acquiring skills and knowledge that can easily be transferred from one place to another,” he says (para. 13).

With this advice in mind, it seems critically important that people discover their tremendous potential to learn throughout their lives and to believe in themselves, believe that they can

succeed in learning. This is why, in addition to an emphasis on the development of growth mindsets, we focus on principles (see Figure I.1) and practices that are aligned with the reality of what can help students grow and the knowledge and skills they need to thrive today and in the future, including social and emotional learning across intrapersonal, interpersonal, and cognitive domains.



Each chapter of this book offers support for the journey toward success in learning, with practical methods for teaching and learning aligned with a robust body of research.

Chapter 1: Growth and Fixed Mindsets in Education

Discover Dweck's theory on the power of mindsets—the positive effect a growth mindset has on learning and the impact of a fixed mindset that lessens people's chances to succeed. You will be able to learn about your own mindset by taking a quick assessment; be inspired by our graduate, Debra, as you see how the growth mindset is alive and well in her second-grade classroom; and see how Donna, in a special moment of awareness, began to travel the road from a fixed to a growth mindset for growing intelligence. We will discuss our ABC model to examine fixed and growth mindsets in light of the assumptions, behaviors, and consequences of each mindset.

Chapter 2: Growing Neural Networks

Learn how groundbreaking studies show that the human brain changes during learning and is more malleable across the lifespan than scientists once thought. You will discover how current research about the brain's amazing plasticity forms a neuroscientific understanding of the growth mindset, and you will acquire inspiring knowledge about the structure and function of the brain—including four core factors that power brain growth—to share with your students. Furthermore, you can use this knowledge in lessons about the brain and some of the learning strategies it powers that we've been teaching educators for more than 20 years. You and your students will want to keep knowledge about your brilliant brains front of mind to help motivate growth mindsets.

Chapter 3:

Supporting Positive Engagement and Energized Learning

Discover one of the top requests from teachers to further their professional practice: for knowledge and methods for engaging the focused energy and positive emotions of their students to facilitate learning in the classroom. This chapter shares research from the field of positive psychology and discusses how it links to students' self-talk and concepts of themselves as learners. You will learn methods to guide students to become more practically optimistic and resilient in the face of challenges and cope with negative emotions. This chapter presents strategies to teach students to assess the power of their emotions and positive energy for sustaining learning over time. Incorporating physical activity into the school day to enhance student engagement is also discussed.

Chapter 4:

Motivating Growth Mindsets Through Goals and Feedback

Explore how motivation research over the past four decades has yielded some key methods for assisting students to develop growth mindsets. You will discover the importance of setting high expectations for all learners and for guiding students to embrace their potential for setting and successfully reaching challenging goals. Strategies for helping students choose topics of study, providing them with feedback that supports high motivation and builds growth mindsets, praising effort rather than ability, and using growth assessments are shared.

Chapter 5:

Teaching Strategies That Sustain Growth Mindsets

Learn methods to develop learning environments where all students feel they belong, can relate positively, and contribute in productive ways. We discuss the importance of effective instruction and offer examples of content providing students with opportunities to learn through the brain's multiple pathways and

through *deliberate practice*. Teaching techniques cover a range of subjects and broad concepts and provide novel approaches students can apply to enhance learning and sustain growth mindsets over time.

* * * * *

The seven principles detailed in Figure I.1, which will be explored in more detail throughout this book, translate essential findings from mind, brain, and education research into practical applications teachers can use every day in their classrooms to support students in developing growth mindsets. Let's begin this exploration by discovering how a growth mindset can help students make the most of their learning potential.

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About the Authors



Donna Wilson, PhD, psychologist and author, is an international speaker on developing growth mindsets, supporting social-emotional learning, and teaching practical strategies that are essential for surviving and thriving in the world today. Growing up in rural Oklahoma,

Donna was the first in her family to go to college; she went on to become the Chair of Education at the University of Detroit-Mercy and later cofounded and became president of BrainSMART®, Inc. and the nonprofit Center for Innovative Education and Prevention. With her passion for empowering all learners with the science and strategies for achieving academic and life success, Donna co-developed the world's first graduate degree programs in applied mind, brain, and education science (BrainSMART Programs) and doctoral minor in brain-based leadership. Over the past 20 years, she has shared her work with more than 60,000 participants in live events in Asia, the Middle East, Australia, Europe, Jamaica, and throughout the United States and Canada. She serves on the foundation of Carl Albert State College in Oklahoma and on the Advisory Board for Portfolio School in New York City. Donna is the author of 20 books, including *Teaching Students*

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Related ASCD Resources

At the time of publication, the following resources were available (ASCD stock numbers appear in parentheses):

Print Products

Teaching Students to Drive Their Brains: Metacognitive Strategies, Activities, and Lesson Ideas by Donna Wilson and Marcus Conyers (#117002)

Engage the Brain: How to Design for Learning That Taps into the Power of Emotion by Allison Posey (#119015)

Upgrade Your Teaching: Understanding by Design Meets Neuroscience by Jay McTighe and Judy Willis (119008)

Differentiation and the Brain: How Neuroscience Supports the Learner-Friendly Classroom, 2nd Edition, by David A. Sousa and Carol Ann Tomlinson (#318125)

Teaching with the Brain in Mind, 2nd Edition, by Eric Jensen (#104013)

Teaching with Poverty in Mind: What Being Poor Does to Kids' Brains and What Schools Can Do About It by Eric Jensen (#109074)

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