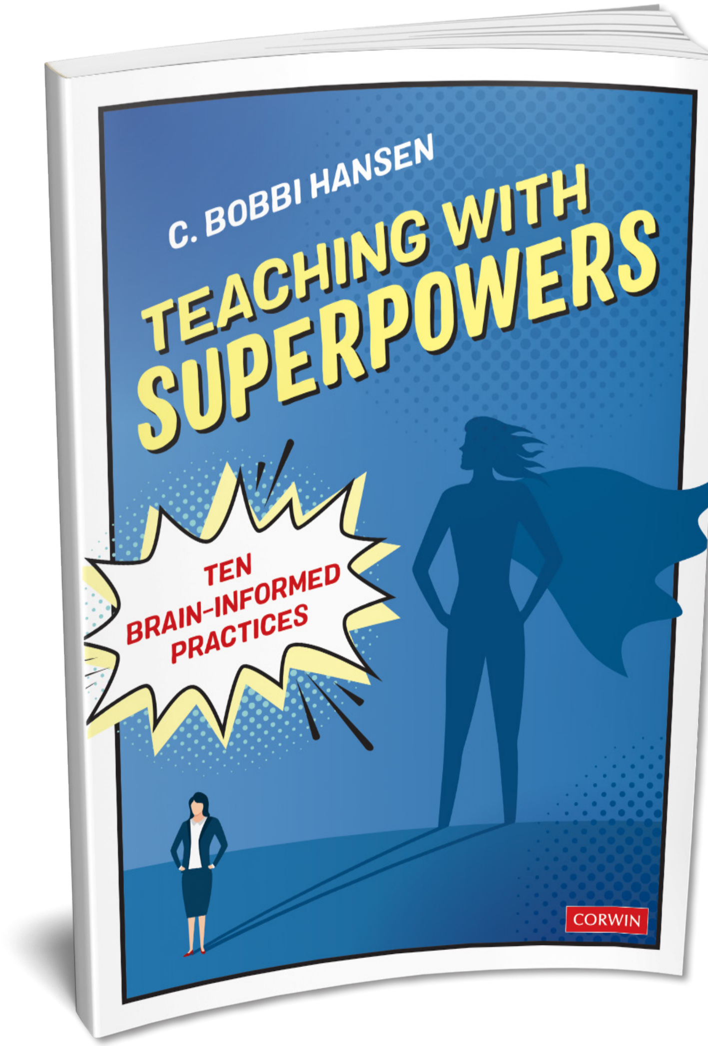

Thank you

FOR YOUR INTEREST IN CORWIN

Please enjoy this complimentary excerpt from Teaching With Superpowers.

LEARN MORE about this title!

ACTIVATING SUPERPOWER 1

WHAT MAKES KNOWING ABOUT THE BRAIN A SUPERPOWER?

The role of neuroscience in education not only transforms the practices that take place in the classroom, but it is also empowering for the teacher—equipping them with the tools they need to feel successful in their work.

–Teacher, Sixth grade

I love what we have been learning about the brain. It is changing my day-to-day teaching. Now, I feel that it also makes sense for my students to understand as well so that they will understand the amazing power of their brain.

–Teacher, Third grade

After completing this course, I believe that every educator should be required to have the foundations of the workings of the brain so that we can serve our students at an optimal level.

–Teacher, High school

I chose to open the first chapter with quotes from teachers who, after taking my graduate course on educational neuroscience, experienced a transformative "aha" moment. They came to understand why knowing how the brain works is critical for teachers. After all, we engage with students' brains every single day. They also concluded that this information may be equally valuable for students as they begin to grasp the incredible learning power of their own brains.

Chapter 1 invites you to activate one of your most effective superpowers—teaching in ways that optimize how your students' brains take in, process, and store information. Let us begin with a brief discussion of educational neuroscience.

WHAT IS EDUCATIONAL NEUROSCIENCE?

Educational neuroscience is a burgeoning field connecting science, psychology, and education. Bruer (2016) defines it this way, "Educational neuroscience is a relatively new and highly interdisciplinary field of study. Its objective is to improve educational practice by applying findings from brain research" (p. 1). Moreover, interest in the brain is not just a new phenomenon. As far back as antiquity, scientists and philosophers inquired about the workings of the human brain. As Neil deGrasse Tyson, the renowned cosmologist, eloquently remarked, "Everything we do, every thought we've ever had, is produced by the human brain. But exactly how it operates remains one of the biggest unsolved mysteries, and it seems the more we probe its secrets, the more surprises we find" (n.d.).

Still, it has only been until recently that the brain has given up some of its deepest secrets. In the 1990s, scientists uncovered more knowledge about the brain than in all the previous centuries combined. This leap in understanding was made possible by ever-growing advances in medical technologies that include magnetic resonance imaging (MRI), computerized axial tomography (CAT scans), and positron emission tomography (PET scans) (Hansen et al., 2015). As a result of these advances, the United States declared the 1990s the "decade of the brain" (Friler & Stabio, 2018).

The following contributions were derived from these three decades of research:

- the creation of educational neuroscience as an interdisciplinary field of studies,
- the determination of how neuroscience may be of benefit to educators at all levels, and
- the translation of sophisticated neuroscience terminology for educators who may not be familiar with the field-specific terminology.

Now, 30 years later, more of these mysteries have slowly been revealed to neuroscientists and have informed medicine, mental health, and, more recently, education. Although the practical uses of neuroscience have taken longer to influence educational practices, the field of educational neuroscience was launched. Furthermore, the classroom practices that have emerged from this new field have become known variously as brain-based learning (Caine & Caine, 1997); mind, brain, education (MBE) (Tokuhama-Espinosa, 2010); brain-targeted teaching (Hardiman et al., 2012); and brain-informed teaching (Whitman & Kellaher, 2016). In this book, the term *brain-centered instruction* will be used to describe teaching practices centered on the science of learning (SoL) emerging from the educational neurosciences. In the remaining chapters, I intend to make the case that using these brain-centered instructional practices is akin to having teaching superpowers and may even assist you in *leaping over tall standards in a single bound.*

However, before we move into the heart of the book's thesis, I must also add one important caveat. Educational neuroscience is not meant to be prescriptive regarding specific instructional strategies. Rather, this information may be useful as a basis for informed decision-making to augment your own understanding of effective instruction.

Education Has Been Slow to Embrace Neuroscience

Even after the 1990s breakthrough discoveries from the "decade of the brain," the field of education has not placed educational neuroscience at the forefront of teacher professional development. True, there has been a major movement in the past decade toward understanding the science of learning (SoL). The Deans for Impact (2015) publication defines SoL this way: "*The Science of Learning* summarizes existing cognitive-science research on how students learn and connects it to practical implications for teaching" (p. 2).

The science of learning has roots in three substantial research bases:

1. The seminal publication *How People Learn: Brain, Mind, Experience, and School* (Bransford et al., 1999) significantly impacted the field of education by examining countless research studies and identifying three principles key to learning:
   i. engagement of learners' prior understandings and experiences,
   ii. building students' conceptual frameworks, and
   iii. assisting learners to monitor their own thinking-metacognition.
2. The passage of the No Child Left Behind (NCLB) Act in 2001 spawned countless research investigations in the United States with a goal to identify educational practices *proven effective through rigorous scientific research*, a provision of the legislation. Based on the meta-analyses of hundreds of former studies, the Mid-Continent Research for Education and Learning (McREL) isolated nine categories of instructional strategies that are most likely to improve student achievement. These findings were published in the groundbreaking book *Classroom Instruction That Works* (Marzano et al., 2001) and contained the following evidence-based teaching practices:
   - *Identifying similarities and differences:* how items, events, processes, or concepts are similar and different based on characteristics
   - *Summarizing and note-taking:* identifying what is most important about the learning and restating that knowledge in their own words

- *Reinforcing effort and providing recognition:* taking note of the effort the student has made and acknowledging that accomplishment for a student
- *Homework and practice:* providing students with opportunities to deepen understanding of content and skills through continued practice
- *Nonlinguistic representations:* visual, tactile, and kinesthetic modes of learning
- *Cooperative learning:* the ability to learn and work in groups
- *Setting objectives and providing feedback:* creating learning targets and giving feedback that is timely and specific
- *Generating and testing hypotheses:* creating and testing possible claims and providing evidence for those claims
- *Cues, questions, and advance organizers:* providing students with a structured framework to process new content

3. In the book *Visible Learning* (2008), Hattie, the director of the Melbourne Education Research Institute at the University of Melbourne, Australia, investigated an astonishing number of different studies—146,142 to be exact—searching for attributes positively associated with student learning. He termed these *high-impact teaching practices.* Many districts are currently basing their professional development on these identified instructional practices.

Perhaps now is the time to add findings from educational neuroscience to the current research on the science of learning (SoL). The wider understanding of the phenomenon of neuroplasticity (i.e., the ability of the brain to continue to grow connections throughout life) has created an opening to fully embrace this newer science that may change the way educators teach and are trained. Neuroscience maintains that all people can learn to high levels due to *brain plasticity*, or the brain's ability to grow via dendritic branching.

WHAT MAKES KNOWING ABOUT THE BRAIN A SUPERPOWER? EXAMINING THE RESEARCH

Let us start with the basics. "Learning is innately linked to the biological and chemical forces that control the human brain" (Hileman, 2006, p. 18). Furthermore, every brain, and I do mean *every* brain, has an unfathomable number of brain cells, or neurons, that aid learning. The number has been calculated at approximately 100 billion (Azevedo et al., 2009). However, that is only the tip of the iceberg. Each neuron has the ability to connect with other brain cells (some say between 1,000 and 100,000), which makes the number of possible connections in the brain astronomical. As Wilson and Conyers (2020) remarked, "Potentially, a single cubic centimeter of cortex may have as many connections as there are stars in the Milky Way galaxy" (p. 33). The incomprehensibly large number of possible connections in every human brain gives new meaning to the oft-uttered phrase "All students can learn."

NEURO-LINK: Teacher expectations affect student learning (Brophy, 1983; Brophy & Good, 1974; Rosenthal & Jacobson, 1968).

Decades before the term *educational neuroscience* was even uttered, evidence for the power of teacher expectations was made abundantly clear. One study was quite well known. Indeed, it shook up the entire educational world. Published in 1968 by Rosenthal and Jacobson, the findings provide irrefutable evidence that teacher expectations could significantly affect student achievement. In this study, researchers told teachers that two students (in each of their classrooms) were primed to make rapid intellectual growth based on recent I.Q. testing of the entire class. This assertion was untrue, as the two named students in each class were chosen at random. However, by the end of the year, the students the teachers *expected* to perform well showed significantly higher gains in intellectual growth than their classmates. The only factor that could have accounted for this level of growth would have been the way the teachers *treated* these pre-identified (and randomly selected) students. In large and small ways, teachers communicated to them how smart they were! Over the years, many subsequent studies have widely supported the general findings of the original 1968 study and, together, have become known as the Pygmalion effect. (Note other examples of the Pygmalion effect on this website: https://bit.ly/3spydR0.) As I stated in the previous paragraph, your grasping of the sheer number of neurons in each of your student's brains can become a superpower—maybe even your most potent superpower—as it taps into this compelling accumulation of data on the power of teacher expectations and the principles of neuroplasticity.

NEURO-LINK: Teachers who incorporate more of these brain-centered teaching practices into their instructional repertoire create more impactful lessons (Dubinsky et al., 2013; Hardiman et al., 2012; Mayer, 2017; Tan & Amiel, 2022).

From understanding concepts of neuroplasticity (foundational to growth mindset theory) to creating spaced practice opportunities for students, to the tenets of attention and motivation, the numerous findings from neuroscience can help shape student learning. And there is more. According to Hardiman et al. (2012), "Educators now have relevant information about the neural and cognitive underpinnings of emotion, which affects learning in important ways via its influence on higher cognitive functions" (p. 136). Dubinsky et al. (2013) agree that "neuroscience concepts can be used to *directly* improve teachers' understanding of student learning and development" (p. 327).

Principles of Brain-Centered Instruction

In 1990, at the beginning of the decade of the brain, Caine and Caine identified principles of how the brain works and refined these ideas in 1990 and 1994. Applied to education, they called these the "12 principles of brain-based learning." These tenets are still being referenced worldwide in books, articles, and educational programs today. I have chosen five of these with which to frame this book. In each succeeding chapter, practical classroom ideas will be presented to connect these principles with newer research in educational neuroscience to empower your classroom instruction.

Principle #1 The brain/mind is social.

Human beings are social animals. According to Gopnik et al. (1999), all humans have the "contact urge." Moreover, recent research has just confirmed that this social nature of human beings is grounded in biology through the scientific explorations of mirror neurons. *Mirror neurons* are networks of pairs of neurons that will fire when a person acts or when that person observes the same action performed by someone else, mimicking the actions of the one being observed (Lacoboni et al., 2005).

Principle #2 The search for meaning is innate.

Humans have a biological imperative to make sense of things. This tendency has been called the *explanatory drive* (Gopnik et al., 1999). Each person's brain must process enormous amounts of incoming sensory information in a single day. To deal with this task, the brain has set up filtering systems to weed out nonessential information. The most essential information (meaningful) gets the attention of the brain. And conversely, the brain resists isolated bits of information perceived as meaningless.

Principle #3 The search for meaning occurs through patterning.

One of the main tasks of the brain is to perceive patterns (Restak, 1995). Cognitive scientists have created many terms to describe patterning, such as categories, frames, and schemata. Patterning is accomplished when the brain categorizes information into a larger schema called programs. A corollary to this principle is that the brain resists isolated bits of information in favor of these more extensive patterned programs where everything is connected.

Principle #4 Emotions are critical to learning.

Neuroscientists are beginning to understand emotions' significant role in learning (Pert, 1997). Damasio (1999) confirmed that new dendritic connections are created when learning occurs. What was not previously known is that these connections also include the learner's emotions. Moreover, these emotions may be connected to the learning for life or until another emotionally powerful experience replaces the original learning.

Principle #5 Each brain is uniquely organized.

The dendritic branching of our brains is like no other human on the planet because no other person has had the exact experiences we have had. This fact creates a paradox as every human is similar to and different from all others.

Two decades after the Caines' founding brain principles, Crossland (2010) offered the following eight messages for teachers to consider. I have added corollaries to Crossland's original ideas.

- The brain is built to learn. *Each student has the cognitive hardware to learn.*
- All learning has an emotional component. *Emotions are not secondary to learning; they are an essential component.*
- The brain is not fixed and has the capacity to adapt. *Plasticity is a foundational force for each brain.*
- Maturation occurs at different rates for different individuals. *Differentiation is not a deficit. It is built into our brains from birth.*
- The transfer of information in the brain is both electrical and chemical. *The speed of thought in our brain is faster than that of light and still somewhat of a mystery.*
- Forgetting is a sign of a healthy brain. *Errors and mistakes have an essential role in learning.*
- Supportive teaching using scaffolding and feedback is essential. *New connections in the brain form more efficiently when the learner's mistakes can be corrected during the misunderstanding.*
- Collaborating is essential for learning. *Peer-to-peer collaboration creates additional channels for storing information.*

CLAIMING YOUR BRAIN-CENTERED SUPERPOWERS

Playful as the title of this book may be, the message for educators is genuine. In the pages of the coming chapters, you will be invited to consider implications for your classroom instruction stemming from evolving research in the educational neurosciences.

USING THIS SUPERPOWER IN YOUR CLASSROOM: TEACHING YOUR STUDENTS ABOUT THEIR BRAIN

I will now return to the claim made at the beginning of the chapter; that is, knowing about the brain is not enough. Your most effective superpower exists in teaching your students about the incredible learning power of their own brains. Quite simply, this information has the potential to amplify attention, motivation, engagement, emotional connections, and memory retention.

Let us begin with a "shout-out" to a VST, a very special teacher. As a board-certified neurologist and leading authority in educational neuroscience, Dr. Judy Willis chose to go back to school to earn her teaching license to discover first-hand how these principles of brain-centered teaching would/could be applied to everyday classroom instruction. A strong advocate for teaching students how their brain operates, she observed, "When I began incorporating basic instruction about the brain into my classes and teaching simple activities to improve brain processing, students not only became more engaged and confident, but they also began changing their study practices in ways that paid off in higher achievement" (Willis, 2009/2010, para. 3).

Other researchers have also advocated for students to learn about their brains (Gage, 2019). Moreover, in response to this call, countless secondary schools have added neuroscience courses to the curriculum. These courses are steps in the right direction. However, all students should learn about the wonders of their own brains, not just those in science classes.

Brain 101 for Students (and Their Teachers)

A beginning lesson on the brain may be the first step. These suggestions would be adjusted for students' ages and developmental levels.

- **Brain parts:** Have students make fists and put their fists together, knuckles to knuckles, forming a hands-on (forgive the pun) model of the two hemispheres of the brain. Explain that this is a model of their brain and within these two parts lies billions of neurons, or brain cells.

- **Number of neurons (brain cells) in every brain:**
  - » Either digitally (Google Slides) or on the board, create a multiple-choice quiz to ask: How many neurons do humans have in their brain?

    A. 1,000, B. 1 million, C. 1 billion, D. 100+ billion

    (Answer D. 100+ billion)
  - » To give students an idea of how large a number that is, have older students try to calculate how much time it would take to count to 1 billion, if they counted one number every second (no sleeping or eating). (Answer: 31 years, 251 days, 6 hours, 50 minutes, 46 seconds)
- **Neuroplasticity: How the Brain Can Grow New Dendrites**
  - » Teaching your students about neuroplasticity—the idea that each brain is, in a way, plastic and constantly grows new dendrites as learning happens—is one of the best and most hopeful gifts you can give them.
  - » Growth mindset theory is based entirely on the premise of neuroplasticity. Carol Dweck (2014) explains that a growth mindset is understanding that skills and abilities can grow and change over time due to the ability of dendrites to grow in the brain. Dweck also shares the power of the word *yet* and how that single word helps students understand there is potential for growth (and getting smarter). Teachers who add the powerful two words *not yet* gift their students with the belief that they will eventually be successful in their learning pursuit (Dweck, 2014).
  - » With this knowledge, they can begin to form a growth mindset, knowing that intelligence can be developed versus the idea that it is set in stone and static, which is called a "fixed mindset."
  - » Study after study points to growth mindset being key to students' believing that effort matters and that they CAN learn.
  - » The act of getting something wrong is a key part of learning, prompting rewiring of the brain as the student works to get it right (TED, 2016).
- **Making Friends With Your Amygdala**
  - » Let students know that emotions and learning go hand in hand.
  - » Have them close their eyes and think of a time when they felt unmotivated to learn. Ask, "What assignment were you doing?" "What were you thinking about?" "Were you stressed?" "Bored?"

- Display a picture of the amygdala, and explain that the emotional hub of our brain is our amygdala. When we are stressed or feeling bored, the amygdala moves us into one of these states—flight, fight, or freeze—and will not allow information to get to the thinking part of our brain. In a state of boredom, the "flight" means we start to daydream. However, being absorbed in an interesting challenge helps the amygdala stay engaged because we are less likely to be bored or uninterested.
- When we are interested and feel calm, our amygdala allows information to enter our thinking brain, helping us learn.
- Tell students that when they enter the classroom, they are in a safe space, and you will do your part to make learning interesting, giving them some choice, and keeping the environment calm and focused. They can use visualizations of a calm place and deep breathing to stay calm.

- **Superpowered Memory Techniques**
  - Show students a picture of the hippocampus, or memory center, in the brain.
  - Tell them that for something to be stored there, there must be strong neural (dendrite-to-dendrite) connections. Explain that myelin is created when they practice and try to recall, or remember, information. Neural pathways that are not used fade away.
  - Consult Chapter 5 for ideas of ways to help students' long-term retention of information.

SUPERPOWERED RESOURCES

Due to the current interest in the role of neuroscience in everyday classroom instruction, the internet is virtually overflowing with resources about the brain. The following materials have been assembled to support your ongoing professional learning in this field and to promote the argument that brain-centered instruction may empower student learning at all levels.

Websites

- Resources on Learning and the Brain

https://bit.ly/467AFt6

This collection on the main Edutopia website hosts articles, videos, and other links for exploring the connection between education and neuroscience.

- Brain-Based Learning

http://www.brainbasedlearning.net

Teachers will find many articles and classroom resources to teach with an understanding of how the brain works.

- Neuroscience for Kids

https://bit.ly/46dBWyA

A monthly newsletter offered by Eric Chudler, Ph.D., a neuroscientist and executive director of the Center for Neurotechnology in Seattle, Washington

Videos

- The Mysterious Workings of the Adolescent Brain

https://bit.ly/3SFadDX

- Growing Evidence of Brain Plasticity

https://bit.ly/46e2tfe

- How We Learn

https://bit.ly/479MCQp

- How to Learn Math for Teachers and Parents: Brain Plasticity

https://bit.ly/3MEFJOw

Books/Articles

Children's Literature

- Deak, J. (2010). *Your fantastic elastic brain: A growth mindset book for kids to stretch and shape their brains*. Little Pickle Press.
- Nguyen, B., & Pham, B. (2022). *Neurology for kids: A fun picture book about the nervous system for children.* Black Phoenix Press.
- Seluk, N. (2019). *The brain is kind of a big deal.* Orchard Books.
- Sooful, P. (2023). *My brain is magic: A sensory-seeking celebration.* Soaring Kite Books.

Adult Literature

- Heller, R. (2018). What we know (and think we know) about the learning brain: An interview with Tracey Tokuhama-Espinosa. *Phi Delta Kappan*, *100*(4), 24–30.
- Immordino-Yang, M. H., & Damasio, A. (2007). We feel, therefore we learn: The relevance of affective and social neuroscience to education. *Mind, Brain, and Education*, *1*(1), 3–10.
- Jensen, E., & Snider, C. (2013). *Turnaround tools for the teenage brain: Helping underperforming students become lifelong learners.* Jossey-Bass.
- Sousa, D., & Tomlinson, C. (2011). *Differentiation and the brain: How neuroscience supports the learner-friendly classroom.* Solution Tree.
- Sprenger, M. (2018). *How to teach so students remember* (2nd ed.). ASCD.
- Whitman, G., & Kellaher, I. (2016). *Neuro-teach: Brain science and the future of education.* Rowman & Littlefield.
- Wolfe, P. (2010). *Brain matters: Translating research into classroom practice* (2nd ed.). ASCD.

REFERENCES

Azevedo, F. A. C., Carvalho, L. R. B., Grinberg, L. T., Farfel, J. M., Ferretti, R. E. L., Leite, R. E. P., Jacob, F. W., Lent, R., & Herculano-Houzel, S. (2009). Equal numbers of neuronal and non-neuronal cells make the human brain an isometrically scaled-up primate brain. *Journal of Comparative Neurology*, *513*, 532–541.

Bransford, J. D., Brown, A. L., & Cocking, R. R. (Eds.). (1999). *How people learn: Brain, mind, experience, and school*. National Academies Press.

Brophy, J. (1983). Research on the self-fulfilling prophecy and teacher expectations, *Journal of Educational Psychology*, *75*(5), 631–661.

Brophy, J., & Good, T. (1974). *Teacher-student relationships: Causes and consequences*. Holt.

Bruer, J. T. (2016). Where is educational neuroscience? *Educational Neuroscience*, *1*, 1–12.

Caine, G., & Caine, R. N. (1997). *Education on the edge of possibility*. ASCD.

Caine, R. N., & Caine, G. (1990). Understanding a brain-based approach to learning and teaching. *Educational Leadership*, *48*(2), 66–70.

Caine, R. N., & Caine, G. (1994). *Making connections: Teaching and the human brain*. Addison-Wesley.

Crossland, J. (2010). Brain biology and learning. *School Science Review*, *91*(337), 99–107.

Damasio, A. (1999). *The feeling of what happens: Body and emotion in the making of consciousness.* Harcourt College.

Deans for Impact. (2015). *The science of learning*.

Dubinsky, J. M., Roehrig, G., & Varma, S. (2013). Infusing neuroscience into teacher professional development. *Educational Researcher*, *42*(6), 317–329. https://doi.org/10.3102/0013189X13499403

Dweck, C. (2014). Teachers' mindsets: "Every student has something to teach me." *Educational Horizons*, *93*(2), 10–15.

Friler, J. B., & Stabio, M. E. (2018). Three pillars of educational neuroscience from three decades of literature. *Trends in Neuroscience and Education*, *13*, 17–25.

Gage, G. (2019). The case for neuroscience research in the classroom. *Neuron*, *102*(5), 914–917. https://doi.org/10.1016/j.neuron.2019.04.007

Gopnik, A., Meltzoff, A., & Kuhl, P. K. (1999). *The scientist in the crib: Minds, brains, and how children learn.* William Morrow.

Hansen, B., Buczynski, S., & Puckett, K. (2015). *Curriculum and teaching for the 21st century.* Bridgepoint Education.

Hardiman, M., Rinne, L., Gregory, E., & Yarmolinskaya, J. (2012). Neuroethics, neuroeducation, and classroom teaching: Where the brain sciences meet pedagogy. *Neuroethics*, *5*, 135–143. https://doi.org/10.1007/s12152-011-9116-6

Hattie, J. (2008). *Visible learning*. Routledge.

Hileman, S. (2006). Motivating students using brain-based teaching strategies. *The Agricultural Education Magazine*, *78*(4), 18–20.

Immordino-Yang, M. H., & Damasio, A. (2007). We feel, therefore we learn: The relevance of affective and social neuroscience to education. Mind, Brain, and Education, *1(1), 3–10.*

Lacoboni, M., Molnar-Szakacs, I., Gallese, V., Buccino, G., Mazziotta, J. C., & Rizzolatti, G. (2005). Grasping the intentions of others with one's own mirror neuron system. *PLoS Biology*, *3*(3), e79. https://doi.org/10.1371/journal.pbio.0030079

Marzano, R. J., Pickering, D. J., & Pollock, J. E. (2001). *Classroom instruction that works: Research-based strategies for increasing student achievement.* Association for Supervision and Curriculum Development.

Mayer, R. E. (2017). How can brain research inform academic learning and instruction? *Educational Psychology Review*, *29*(4), 835–846.

Pert, C. B. (1997). *Molecules of emotion*. Scribner.

Restak, R. (1995). *Brainscapes*. Hyperion.

Rosenthal, R., & Jacobson, L. (1968). *Pygmalion in the classroom: Teacher expectation and pupils' intellectual development*. Holt, Rinehart, & Winston.

Tan, Y. S. M., & Amiel, J. J. (2022). Teachers learning to apply neuroscience to classroom instruction: Case of professional development in British Columbia. *Professional Development in Education*, *48*(1), 70–87.

TED. (2016). *Jo Boaler: How you can be good at math, and other surprising facts about learning* [Video]. https://www.youtube.com/watch?v=3icoSeGqQtY

Tokuhama-Espinosa, T. (2010). *The new science of teaching and learning: Using the best of mind, brain, and education science in the classroom*. Teachers College Press.

Tyson, N. D. (n.d.). Quotation. *BrainyQuote*. https://www.brainyquote.com/quotes/neil_degrasse_tyson_531089#:~:text=Neil%20deGrasse%20Tyson%20Quotes&text=Everything%20we%20do%2C%20every%20thought%20we've%20ever%20had%2C,the%20more%20surprises%20we%20find

Whitman, G., & Kellaher, I. (2016). *Neuro-teach: Brain science and the future of education*. Roman & Littlefield.

Willis, J. (December 2009/January 2010). *How to teach students about the brain*. Association for Supervision and Curriculum Development. http://www.ascd.org/publications/educational-leadership/dec09/vol67/num04/How-to-Teach-Students-About-the-Brain.aspx

Wilson, D. L., & Conyers, M. A. (2020). *Developing growth mindsets: Principles and practices for maximizing students' potential*. Association for Supervision and Curriculum Development.