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3

ENGAGING EMOTIONS AND MINDSETS: TWO POTENT FORCES

Emotions are the gateway to cognition and learning.

–Sousa and Tomlinson (2018)

Neuroplasticity is our human superpower.

–Desautels (2023)

The power of yet is not one to be underestimated. It will undoubtedly be the final puzzle piece in making education “the great equalizer” it is meant to be. Its success with historically marginalized students has vast implications.

–Teacher, High school

The advances in educational neuroscience discussed in Chapter 1 have initiated a reexamination of the role of emotions in the learning process. This chapter will discuss the critical role of emotions in cognition by addressing two aspects: (1) why teachers need to understand the central role of emotion in cognitive processes and (2) how growth mindset theory (Dweck, 2014) is rooted in neuroscience through the construct of brain plasticity.



WHAT MAKES EMOTIONS AND MINDSETS SUPERPOWERS? EXAMINING THE RESEARCH

Emotions significantly impact the learning process by enhancing or inhibiting the capacity to absorb and retain information. Motivation and cognition can be enhanced by positive emotions. However, when we are in an anxious or fearful state, learning is inhibited. Where once emotions were called “soft skills” and relegated to lesser importance in classrooms, we now see them being elevated to top-tier status. Let’s examine a few important findings that have made this so.



NEURO-LINK: Emotions have a significant influence on cognitive processes (Immordino-Yang & Damasio, 2007; Tyng et al., 2017; Whitman & Kelleher, 2016).

Foundational to the understanding of the impact of emotions on learning there exists a part of the brain to which almost no teacher has paid much attention, the amygdala. Your understanding of this odd-sounding part of the brain could be a potent superpower. Everyone has heard of the fight, flight, or freeze phenomenon. This inborn instinct originates inside a bean-shaped structure in the brain called the *amygdala*. One of the roles of the amygdala is to serve as a watchdog protecting us from harm as it monitors sensory intake and sends it onward to either the thinking part of the brain or to our reactive brain. If all is determined to be safe, the amygdala allows these incoming signals to continue their way to the hippocampus (memory center) and then to higher cortical centers for processing. However, if we are deemed to be in danger, the amygdala immediately readies us for fight, flight, or freeze and prohibits information from proceeding forward.

Neuroscientists have recently learned that stress is perceived by the amygdala in much the same way as a threat. Therefore, when a student is in an anxious state, such as having to work on a math problem in front of the entire class, there is a very real chance that his or her amygdala will prohibit information from advancing to higher brain centers. Given this central role of emotion in cognitive processes (Immordino-Yang & Damasio, 2007), we need to ensure that a positive, safe, and supportive learning environment is available for every student.



NEURO-LINK: Boredom acts like a stressor on the brain (Tomlinson & Sousa, 2020; Willis, 2021).

Neuroscientists have confirmed that the amygdala reacts to boredom in much the same way as it does when we are anxious or fearful. Let me say that again. *When we are bored, the brain is stressed.* Therefore, while we intend to create these safe environments for our learners, we should also be cognizant of the need to maintain some level of challenge or interest so that the amygdala in each student's brain will allow new information to be forwarded to higher cortical processing centers. Researchers call this phenomenon *positive stress*, and it is considered to be highly essential for learning. "Finally, psychology and neuroscience both indicate that linking learning with students' interests is not a luxury, but a necessity" (Tomlinson & Sousa, 2020, p. 20).



NEURO-LINK: Emotions may be connected to the learning segment for life (Heath & Heath, 2018; Varlas, 2018).

Emerging evidence also suggests that whenever strong feelings are present during a learning experience, those emotions may be connected to the learning in the student's brain forever. Quoting Immordino-Yang, Varlas highlights this point: "It's literally neurobiologically impossible to remember or think deeply about anything that you haven't felt emotion about" (Varlas, 2018, para. 4). Heath and Heath (2018) support this notion as well through their discussion about peak moments and claim that schooling today is largely absent of these emotional highs. "In order to motivate students, emotions need to be involved, and a peak moment is a great way to integrate deep emotions, preparation, the right amount of pressure, and academics" (p. 10).

To prove the strength of this principle to teachers-in-training, I have often asked them to raise their hand if they currently have either a positive or negative emotion attached to some random past learning. I, then, call out examples (e.g., learning geometry, learning a foreign language, learning to type). As soon as I mention each one of these examples, students' hands immediately are raised to signal that they do have a strong emotional feeling, either positive or negative, connected with that learning experience. This activity demonstrates that we carry these emotional "backpacks" into the future. Therefore, it remains strategic for teachers to encode the most positive emotional experiences into each learning experience as possible.



NEURO-LINK: Brain plasticity is key to the concept of growth mindset, the understanding that intelligence can be developed and is a significant motivator for student learning (Boaler, 2013; National Academies of Sciences, Engineering, and Medicine, 2018; Sarrasin et al., 2018).

From Chapter 1 we know that the brain is constantly changing. The creation, strengthening, and pruning of neural connections are key to the learning process (National Academies of Sciences, Engineering, and Medicine, 2018). This phenomenon, known as brain plasticity, is foundational to the understanding that intelligence can be developed. Boaler (2013) contends that neuroscience has provided irrefutable evidence that the brain continuously grows and changes and that this evidence has major implications for the theory of growth mindset and why it should be taught in school to all students. This same conclusion was reached by a team of neuroscientists in a recent meta-analysis

(Sarrasin et al., 2018). “Results show that inducing a growth mindset by teaching neuroplasticity has an overall positive effect on motivation, achievement, and brain activity” (p. 31).



NEURO-LINK: Fostering growth mindsets in students has been proven to increase student motivation, ownership of learning, and academic achievement (Kim & Park, 2021; Paunesku et al., 2015; Rattan et al., 2015; Schmidt et al., 2016; Yeager & Dweck, 2020).

Carol Dweck, a noted American psychologist and professor of psychology at Stanford University, has contributed enormously to contemporary educational practice by championing the brain’s potential for growth. She is a pioneer of “the power of yet” and in spreading the word that abilities can be developed. According to Dweck (2014), a growth mindset is where learners believe that making an effort can continue improving and building their skills even if they may initially experience challenges with the subject matter. Built upon the brain’s ability to continue to grow connections (brain plasticity), a growth mindset seeks to help teachers and students create a belief system that they can learn with two simple words, *not yet*, or as she calls it, *a yet mentality* (Dweck, 2014). Furthermore, Whitman and Kelleher (2016) make this astounding claim: “Mindset is often classified as one of the most critical ‘noncognitive’ skills that students must cultivate to meet their potential as learners and as individuals” (p. 42). Moreover, they add this important clarification: “Having a growth mindset also requires the development of clearly defined strategies for improvement and the enlistment of support, advice, and guidance from others” (p. 43).



NEURO-LINK: Researchers have found a relationship between intrinsic motivation, which can be enhanced by having a growth mindset, and the release of dopamine in the brain (Ng, 2018).

There is more to having a growth mindset than meets the eye. Neuroscientific evidence supports the idea that individuals with a growth mindset exhibit not only resilience in facing challenges but also increased brain plasticity. Furthermore, the correlation between intrinsic motivation and the activation of reward pathways in the brain leads to increased attention, engagement, and persistence.

I would like to close this section with a quote from one of my graduate students, “*Our current education system may not be perfect, but I am hopeful that it is just not perfect YET.*”



USING THIS SUPERPOWER IN YOUR CLASSROOM

Creating a safe classroom experience can be a teacher's superpower as it is so fundamentally connected to students' emotional well-being as we have learned from research studies in educational neuroscience cited earlier in this chapter. Let us now examine several ways teachers may intentionally work to create emotional safety for their students.

Classroom Meetings

Classroom meetings are a growing trend in schools today. Alternately called *classroom meetings* and *morning meetings*, this classroom structure has students' social and emotional growth as its main goal. Class meetings allow teachers and students to come together as a group to build community, solve problems, and create positive classrooms (Vance, 2013). One comment attesting to the power of morning meetings to create emotionally safe classrooms was asserted by Maurice Sykes, former deputy superintendent for the District of Columbia school system. "Morning Meeting is a silent bulldozer in the field of school reform" (Sykes, cited in Kriete, 2011, para. 14).

Meetings can be either structured or nonstructured. *Structured* classroom meetings usually have students sit in a circle to create a more inclusive configuration. The facilitator, usually the teacher, moves the group through four separate phases: (1) *greeting*, where each child greets another classmate, generally one that is sitting next to them; (2) *sharing* something personal (e.g., how they are feeling, something they did); (3) *group activity* to build community (e.g., "I Spy" in which the teacher calls out clues to something in the room and students try to guess [thus building attention and language skills], teacher asks students to name something that begins with a specific letter, teacher asks students to share things that come in pairs, etc.); and (4) *topic of the day*, which can be either academic or directed toward social-emotional development (e.g., ways to make everyone feel welcome in our class, name an animal that lives near the water, etc.) (Kriete & Davis, 2014). *Unstructured classroom meetings* can be held at any time. Many teachers choose the end of the week for a meeting, such as a wrap-up of what has been learned.

According to Hansen (2019), classroom meetings can also have many academic and emotional benefits for secondary students as they are even more socially aware than their elementary counterparts. Some question prompts for secondary teachers are provided here.

Icebreakers

- If you had one superpower, what would it be?
- Who are your top three people you respect and why?
- If you could go anywhere in the world, where would you go?

Prompts Related to School/Class

- What could our school do to improve your educational or social experience?
- What is something you think teens understand, but adults do not?
- Can kindness be cool? Why or why not?
- How can our classroom feel more inclusive to each student?
- Name one thing that you would like to change (a) at our school and (b) in our classroom.

Classroom Meetings: One-Stop Shop

I decided to include the following resource here, as opposed to the resources section, as it has everything that teachers need to implement classroom meetings.



<https://bit.ly/3MJdbDw>

Growth Mindset Dos and Don'ts

Fostering students' growth mindset is something that takes patience. Teaching students how to say "not yet" is one step in that direction. Along with having high expectations for all students, growth mindset can be a true superpower. Let's examine some Dos and Don'ts.

Dos

- Hold classroom meetings to create safe spaces for students to be seen as individuals with skills and abilities.
- Create a risk-taking classroom culture with mistakes being normalized.
- Strengthen perseverance by scaffolding ways for students to approach difficult tasks.
- Instead of always correcting student errors, sometimes highlight them and allow students reflection time (perhaps with a partner) to correct the error.

Don'ts

- Just telling students to try harder without scaffolding different strategies will not produce good results. Try this suggestion from Diamond (2014) instead: "By providing scaffolds to help children exercise executive functions, children get practice, which helps their executive functions improve, and children have the pride of having succeeded (of being a good listener, for example) and increased confidence" (p. 12).

Direct Teaching and Practice of Executive Functioning Skills

Many students become anxious, not because they can't learn but because they lack organizational know-how. These skills, grouped around reflection and metacognition, are powerful tools that promote deep learning and self-awareness. When students engage in reflection, they actively think about their learning processes, evaluate their progress, and identify areas for growth. Metacognition involves being aware of one's own thinking and learning strategies. By incorporating reflective practices, such as journaling, self-assessment, and goal-setting, educators can encourage students to take ownership of their learning journey. Through reflection, students understand concepts, make connections, and transfer knowledge to real-world situations. Additionally, metacognition enhances problem-solving skills and equips students with strategies to regulate their learning. By fostering a culture of reflection and metacognition, educators empower students to become self-directed learners who can continually improve their learning outcomes.

- Teach metacognitive executive function skills—planning, working memory/ updating, problem-solving, self-monitoring, mental flexibility, generativity/ fluency, and inhibition.
 - » Ask students "*How do you study for a test?*" and then break them into small groups to share their answers.
 - » Teach study techniques to students, emphasizing recall and not just rereading notes.
 - » Teach note-taking skills.
 - Have pairs of students practice with a paragraph trying to identify the key points.
 - Provide a fill-in template for students to take notes, and give a lecture so students may practice.
 - Invite students to create a day-by-day plan for a longer project.

- Create a problem-solving anchor chart with students, and practice using it in class with mock problems.
- Have students identify their personal “hard spots” in completing school work or homework.



SUPERPOWERED RESOURCES



Websites

- Mindset Works

<https://www.mindsetworks.com/free-resources/>

Mindset Works is the global leader in growth mindset development, leveraging the pioneering research of Carol Dweck and Lisa Blackwell. The company’s mission is to enable a world where everyone realizes continual learning and growth.

- Family Newsletter for Mindset

<https://bit.ly/3FVyQF0>



Videos

- Carol Dweck: Teaching a Growth Mindset



<https://www.youtube.com/watch?v=isHM1rEd3GE>

- The Power of Relationships in School



<https://bit.ly/47ab1Ff>

In this talk, Carol Dweck describes two ways to think about a problem that’s slightly too hard for you to solve. Are you not smart enough to solve it? Or have you just not solved it yet?

- How Puppets Can Help Kids Express Emotions



<https://bit.ly/3FYZgWI>



Books/Articles

- 11 Picture Books to Help Young Students Manage Their Worries
- 3 Collaborative Strategies to Build Up Students' Note-Taking Skills



<https://bit.ly/46dsCLe>



<https://bit.ly/47yS9j0>

- 5 Research-Backed Studying Techniques
- A De-escalation Exercise for Upset Students



<https://bit.ly/3sxyfpQ>



<https://bit.ly/3ulu1IC>

- How to Counter Learned Helplessness
- How Teachers Can Empower Students Who Are Experiencing Trauma



<https://bit.ly/3QGRw0h>



<https://bit.ly/3QYdkoj>

- Dweck, C. (2008). *Mindsets and math/science achievement*. Carnegie Corporation of New York, Institute for Advanced Study, Commission on Mathematics and Science Education.
- Immordino-Yang, M. H., Darling-Hammond, L., & Krone, C. R. (2019). Nurturing nature: How brain development is inherently social and emotional, and what this means for education. *Educational Psychologist*, 54(3), 185–204. <https://doi.org/10.1080/00461520.2019.1633924>
- Li, L., Isherwood Gow, A. D., & Zhou, J. (2020). The role of positive emotions in education: A neuroscience perspective. *Mind, Brain, and Education*, 14(3), 220–233.

REFERENCES

- Boaler, J. (2013). Ability and mathematics: The mindset revolution that is reshaping education. *Forum: For Promoting 3-19 Comprehensive Education*, 55(1), 143–152.
- Desautels, L. (2023). *The power of reframing to “rewire” students’ brains*. Edutopia. <https://www.edutopia.org/article/reframing-rewire-student-brains>
- Diamond, A. (2014). Want to optimize executive functions and academic outcomes? Simple, just nourish the human spirit. *Minnesota Symposia on Child Psychology*, 37, 205–232.
- Dweck, C. (2014). *The power of believing that you can improve* [Video]. TED Conferences. https://www.ted.com/talks/carol_dweck_the_power_of_believing_that_you_can_improve?language=en
- Hansen, C. B. (2019). *The heart and science of teaching: Transformative applications that integrate academic and social-emotional learning*. Teachers College Press.
- Heath, C., & Heath, D. (2018, January 10). The secret to student engagement. *Education Week*. <https://www.edweek.org/leadership/opinion-the-secret-to-student-engagement/2018/01?cmp=e-ml-eb-wel1.12&M=58405914&U=2735312>
- 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.
- Immordino-Yang, M. H., Darling-Hammond, L., & Krone, C. R. (2018). *The Brain Basis for Integrated Social, Emotional, and Academic Development: How Emotions and Social Relationships Drive Learning*. Aspen Institute.
- Kim, M. S., & Park, S. (2021). Growth of fixed mindset from elementary to middle school: Its relationship with trajectories of academic behavior engagement and academic achievement. *Psychology in the Schools*, 58(11), 2175–2188. <https://doi.org/10.1002/pits.22583>

- Kriete, R. (2011, July 20). *The power of morning meeting*. Responsive Classroom. <https://www.responsiveclassroom.org/the-power-of-morning-meeting>
- Kriete, R., & Davis, C. (2014). *The morning meeting book* (3rd ed.). Center for Responsive Schools.
- National Academies of Sciences, Engineering, and Medicine. (2018). *How people learn II: Learners, contexts, and cultures*. <https://nap.nationalacademies.org/catalog/24783/how-people-learn-ii-learners-contexts-and-cultures>
- Ng, B. (2018). The neuroscience of growth mindset and intrinsic motivation. *Brain Sciences*, 8(2), 20–30. <https://doi.org/10.3390/brainsci8020020>
- Paunesku, D., Walton, G. M., Romero, C., Smith, E. N., Yeager, D. S., & Dweck, C. S. (2015). Mindset interventions are a scalable treatment for academic underachievement. *Psychological Science*, 26(6), 784–793. <https://doi.org/10.1177/0956797615571017>
- Rattan, A., Savani, K., Chugh, D., & Dweck, C. S. (2015). Leveraging mindsets to promote academic achievement. *Perspectives on Psychological Science*, 10(6), 721–726. <https://doi.org/10.1177/1745691615599383>
- Sarrasin, J. B., Nenciovici, L., Foisy, L. M. B., Allaire-Duquette, G., Riopel, M., Masson, S. (2018). Effects of teaching the concept of neuroplasticity to induce a growth mindset on motivation, achievement, and brain activity: A meta-analysis. *Trends in Neuroscience and Education*, 12, 22–31. <https://doi.org/10.1016/j.tine.2018.07.003>
- Schmidt, J. A., Shumow, L., & Kackar-Cam, H. Z. (2016). Does mindset intervention predict students' daily experience in classrooms? A comparison of seventh and ninth graders' trajectories. *Journal of Youth and Adolescence*, 46(3), 582–602. <https://doi.org/10.1007/s10964-016-0489-z>
- Sousa, D., & Tomlinson, C. (2018). *Differentiation and the brain: How neuroscience supports the learner-friendly classroom* (2nd ed.). ASCD.
- Tomlinson, C., & Sousa, D. (2020, May). The sciences of learning. *Educational Leadership*, 77(8), 14–20.
- Tyng, C. M., Amin, H. U., Saad, M. N. M., & Malik, A. S. (2017). The influences of emotion on learning and memory. *Frontiers in Psychology*, 8, 1454.
- Vance, E. (2013). Preschool through grade 1: Class meeting variations and adaptations. *Young Children*, 5(42), 42–45.
- Varlas, L. (2018). Emotions are the rudder that steers thinking. *ASCD: Education Update*, 60(6). <https://www.ascd.org/el/articles/emotions-are-the-rudder-that-steers-thinking>
- Whitman, G., & Kelleher, I. (2016). *Neuroteach: Brain science and the future of education*. Rowman & Littlefield.
- Willis, J. (2021, February). The neuroscience of joyful learning. *ISA Journal*, (24). https://issuu.com/bainespsa/docs/a76891_isa_journal_issue_24_issuu/s/11678932
- Yeager, D. S., & Dweck, C. S. (2020). What can be learned from growth mindset controversies? *American Psychologist*, 75(9), 1269–1284. <https://doi.org/10.1037/amp0000794>