

To Help Students Learn, Engage the Emotions

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Before she became a neuroscientist, [Mary Helen Immordino-Yang](#) was a seventh-grade science teacher at a school outside Boston. One year, during a period of significant racial and ethnic tension at the school, she struggled to engage her students in a unit on human evolution. After days of apathy and outright resistance to Ms. Immordino-Yang's teaching, a student finally asked the question that altered her teaching — and her career path — forever: “Why are early hominids always shown with dark skin?”

With that question, one that connected the abstract concepts of human evolution and the very concrete, personal experiences of racial tension in the school, her students' resistance gave way to interest. As she explained the connection between the effects of equatorial sunlight, melanin and skin color and went on to explain how evolutionary change and geography result in various human characteristics, interest blossomed into engagement, and something magical happened: Her students began to learn.

Dr. Immordino-Yang's eyes light up as she recounts this story in her office at the Brain and Creativity Institute at the University of Southern California. Now an associate professor of education, psychology and neuroscience, she understands the reason behind her students' shift from apathy to engagement and, finally, to deep, meaningful learning.

Her students learned because they became emotionally engaged in material that had personal relevance to them.

Emotion is essential to learning, Dr. Immordino-Yang said, and should not be underestimated or misunderstood as a trend, or as merely the “E” in [“SEL,” or social-emotional learning](#). Emotion is where learning begins, or, as is often the case, where it ends. Put simply, “It is literally neurobiologically impossible to think deeply about things that you don't care about,” she said.

This rule holds true even across subjects and disciplines, Dr. Immordino-Yang writes in her book, [“Emotions, Learning, and the Brain.”](#) “Even in academic subjects that are

traditionally considered unemotional, such as physics, engineering or math, deep understanding depends on making emotional connections between concepts.”

As a teacher, I know what an emotionally engaged student looks like on the outside, but Dr. Immordino-Yang showed me what that student looks like on the inside using a functional M.R.I., a scanner that reveals brain function in real time.

“When students are emotionally engaged,” she said, “we see activations all around the cortex, in regions involved in cognition, memory and meaning-making, and even all the way down into the brain stem.”

As she went on to explain why emotion is vital to high-quality learning, Ms. Immordino-Yang’s cheeks flushed pink, her eyes brightened, and her hands became animated and expressive. While she’d provided me with pages of quotes, studies and images meant to illustrate all she wanted to teach me during those two hours in her office, her enthusiasm for the topic served as the most powerful exhibit.

Great teachers understand that the best, most durable learning happens when content sparks interest, when it is relevant to a child’s life, and when the students form an emotional bond with either the subject at hand or the teacher in front of them. Meaningful learning happens when teachers are able to create an emotional connection to what might otherwise remain abstract concepts, ideas or skills.

Creating this emotional connection might sound like a daunting task, but research has shown that the investment reaps huge dividends in the form of [increased learning and better grades](#). When teachers take the time to learn about their students’ likes, dislikes and personal interests, whether it’s racial issues brewing at their school, their after-school job, or their dreams and goals, learning improves.

I experienced this a few years ago, with a parent who asked me how to get her daughter interested in school. The girl dreamed of becoming a dairy farmer like her father and grandfather, and felt that her classes were irrelevant.

And yet, given a few moments to think and some creativity, we both realized that dairy farming is a perfect laboratory for everything from biology to math, chemistry to geometry, history to government; all of these subjects are relevant and important in the life of a dairy farmer. When the catalog for I.V.F.-ready bull semen arrives in the mail, she’ll need to know about dominant and recessive genetic traits. She’ll need to understand soil chemistry, microbiology, botany, the geometry of herd rotation as it relates to land use, and the political and financial realities of keeping dairy farming viable as an industry.

The emotional connection that can result when teachers make learning personally relevant to students is what differentiates superficial, rote, topical assimilation of material from a superlative education marked by deep mastery and durable learning. While there are no silver bullets in education, emotional engagement and personal relevance is the tool that has the potential to improve the educational experience of every child, in every school in America.