

Book Review

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The Spark of Learning: Energizing the College Classroom with the Science of Emotion

by Sarah Rose Cavanagh. 2016. West Virginia University Press.
Morgantown, West Virginia, USA. 241 pp.
ISBN-13: 978-1-943665-33-4 (softbound, in English)

The other day, I went to a museum filled with a zillion pieces of artwork. As a life-long learner, for years, I had wanted to visit this institution because I desired to learn about the artistic subject matter being showcased. Besides routing traffic in and out via the gift shop, soon my experience turned into a disorganized smattering of beautiful objects described to the public by docents generally wielding too much jargon to be understood by motivated and intelligent people. Since 1978, I have been involved with some aspect of teaching and learning almost daily. My hope is that the students are motivated to learn and well-prepared, but this hope is seldom fulfilled. As a result, it has been my goal to do my very best to instill in students the desire to learn, to offer knowledge, including critical thinking and manual skills, particularly those that may be useful in their futures, as well as values by which they can guide their lives honorably.

When I became aware of *The Spark of Learning: Energizing the College Classroom with the Science of Emotion* by Sarah Rose Cavanagh, I wanted to learn how the author enhances the teaching and learning experience, including learning goals and other practices using emotions. At the core of learning there are emotions, Cavanagh argues. As a teacher and scientist, this assertion resonates with me as I enjoy appealing to the innermost realities of the human condition in all aspects of my professional and personal life.

Cavanagh divides the book into two major parts: the theory and the practice. The book is enjoyable to read being both humorous and practical in its approach. In the Acknowledgments, Cavanagh tells the story of the “Smart Water” offered to her at the Nu Café that reminded me of the “Holy Water” a colleague at Harvard University once kindly gave me, for “real jobs”. The Introduction presents what to me is the clear philosophical apocryphal divide: teaching is either 1) good and “staid” or 2) not good and entertaining. I would argue that Cavanagh tries to convince readers that teaching can be both meaningful and entertaining. Why not have it all! Why is it that everything must be processed through the economics

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meat grinding, sausage making machine of “trade-offs”? Like a friend of mine and I like to say, “90-95% is good enough including 100% on the non-negotiables”.

The Spark of Learning lays down the scientific evidence to support the wise use of emotions in the classroom, just as some of my most memorable professors at the University of Puerto Rico, Río Piedras Campus did (https://www.researchgate.net/publication/237752394_Roy_Orlo_Woodbury_1913-2002_An_Extraordinary_Field_Biologist) or at the University of California in Berkeley practiced (Kaplan, <https://www.sfgate.com/bayarea/article/Donald-Kaplan-top-UC-Berkeley-plant-3234223.php>). In contrast, I have known of colleagues who are so dull that students describe them as having no personality and consequently wanting to poke out their eyes.

On the first chapter of Part I, *Foundations of Affective Science*, entitled *The Science (and Neuroscience) of Your Emotions*, emotions are defined as expressions that combine our feelings, physiological reactions of our bodies, and our external expressions of our feelings and state of being. Why not tap into those emotions to maximize learning? Later on, we are presented with another dichotomy in the study of emotions: a simpler approach, represented by functional MRI (fMRI), which Cavanagh calls, “blobology” (Figure 1, below), or a richer, more complex understanding of emotions that she embraces.

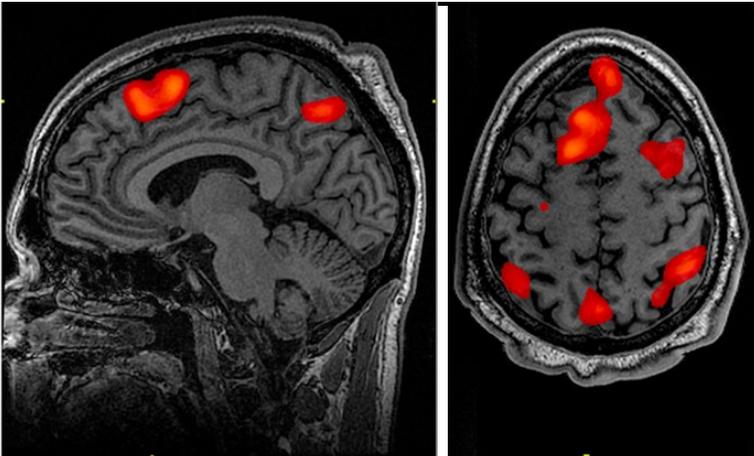


Figure 1. An image of a human’s brain produced by fMRI (functional magnetic resonance imaging). Note the blobs (reddish orange areas) that are “on” and presumed to be associated to working memory in the particular tested case, https://commons.wikimedia.org/wiki/File:FMRI_scan_during_working_memory_tasks.jpg . <http://www.frontiersin.org/Neurotrauma/10.3389/fneur.2013.00016/full>
Author: John Graner, Neuroimaging Department, National Intrepid Center of Excellence, Walter Reed National Military Medical Center, 8901 Wisconsin Avenue, Bethesda, Maryland 20889, USA.

Our material understanding of the world comes in through our senses followed by our interpretation of it. Receiving impulses and interpreting them happens in our nervous system (Figure 2). This is where progress beyond blobology is being made as “any separation of emotional and cognitive processes in the brain doesn’t hold up in reality” (p. 24). An anti-lecture movement (at my end, it began in the decade of the 2,000s and we are still living it) was related to rather flawed discoveries in neurosciences (p. 25), which she calls “neuromyths”. Anyone who has heard or attended lectures by Dr. Noam Chomsky would agree that his monotonous voice could put to sleep almost anyone. However, it seems to me that those listening, me included, are primed to pay attention; we are motivated.

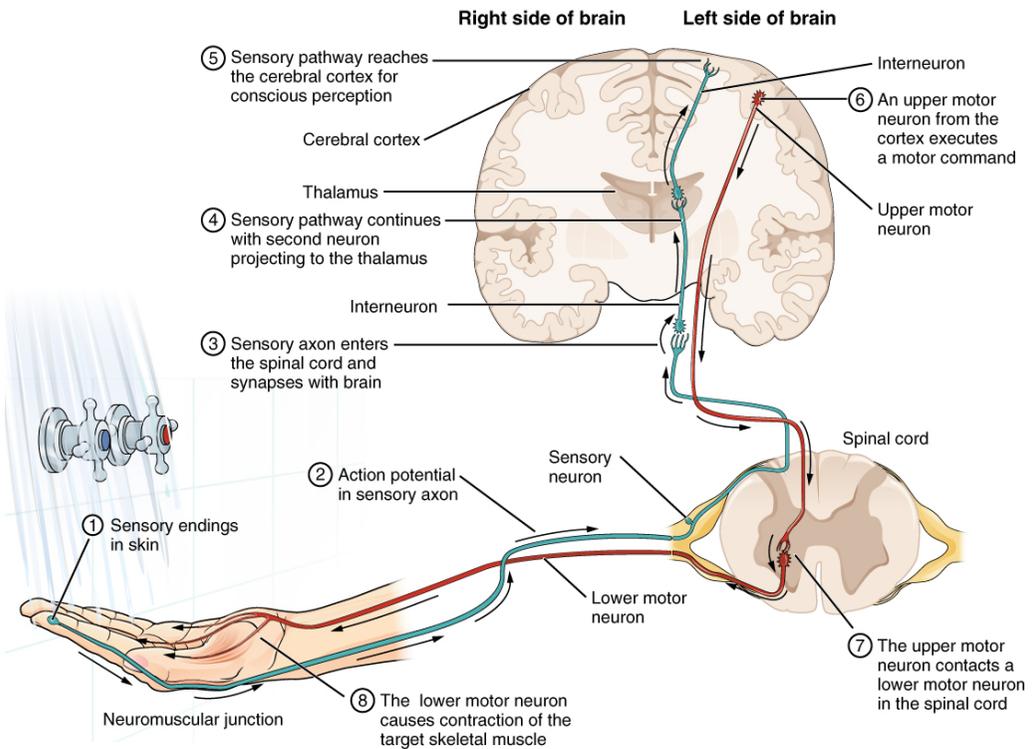


Figure 2. The flow of electrical signals (nerve impulse) on a human hand. Note that the sensation (sensory impulse, 1) travels to the sensory cortex and the action is triggered motor impulse by the motor impulse (6) from the motor cortex. Source: Version 8.25 from the Textbook OpenStax Anatomy and Physiology Published May 18, 2016. <https://cnx.org/contents/FPtK1zmh@8.25:fEI3C8Ot@10/Preface>

According to Cavanagh, there are lots of collaborations and advances between neurosciences and education to be made.

Emotions are connected, in part, to the limbic system (Figure 3). In Chapter 2, *The Wellspring, Emotions Enhance Learning*, the author argues that, because emotions may be processed in a “privileged manner” (p. 33), we should take advantage of emotions to foster learning. One way to use emotions is by extending the already small attention span we all tend to have by showing how the topic at hand is important. Also, if one connects teaching to memorable events, or makes learning as multisensorial as possible, learning tends to be longer lasting. Like any tool, emotions should be elicited carefully. For example, if students are in a darker mood, use activities that promote fulfillment. On the other hand, if the students are in a cheerful mood, providing an appropriate challenge may be a welcomed change. These emotions can spread to other students in the class. Instructors who are genuinely happy can contribute their inner joy to the overall learning experience.

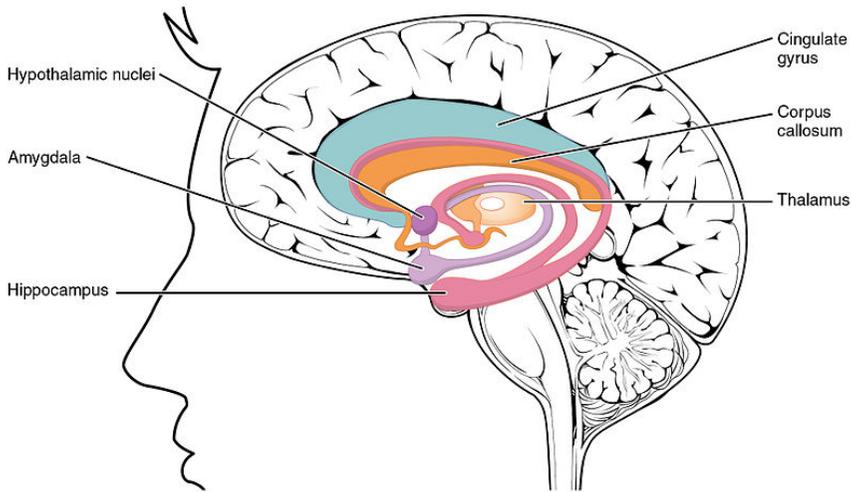


Figure 3. Simplified representation of the limbic system, a group of structures associated with emotions, motivation, and learning in humans. Author:OpenStax College. Anatomy & Physiology, Connections Web site. <http://cnx.org/content/col11496/1.6/>, Jun 19, 2013. Web site: https://commons.wikimedia.org/wiki/File:1511_The_Limbic_Lobe.jpg .

Part II, *Affective Science in Action*, is the bulk of this book and it contains numerous practical tools of the trade that will be useful for the beginning faculty member as well as for veterans. Below, I list some of the tools that captured my attention, with occasional parenthetical examples representing my own experiences.

Chapter 3 *Be the Spark. Crafting Your First (and Lasting) Impression*

- a. Come to class well prepared. Engage students in active learning and do so with authentic enthusiasm (from the Greek words, en + theos, with God inside). To be genuine, we must take good care of ourselves.
- b. Use humor to enhance the topical learning experience. Sometimes, I use humor to try relaxing everyone (e.g., show a short and funny video clip before an exam).
- c. Tell stories that are life-giving, teaching everyone something important about the course or about life related to the course (e.g., before human reproduction, we talk about the paramount importance of selecting a good-fitting partner).
- d. Be fair with everyone.

Chapter 4 *Burning to Master. Mobilizing Student Efforts*

- a. Make the material relevant, particularly for those who are not majoring in the area of the course being taught (e.g., what are the legal, and/or ethical implications of such and such topic?).
- b. Encourage curiosity and demonstrate that by showing your own curiosity (e.g., what is the color of *Serratia marcescens* colonies grown in different temperatures? Or where does the concept “carrying capacity” come from?).
- c. Give prompt and positive feedback (e.g., in laboratories emphasizing clean laboratory practices or the proper use of microscopes, demonstrate mastery of those yourself and be very precise on the feedback of those essential kinesthetic skills).
- d. Use surprises (e.g., coming into a biology classroom filled with beautiful music or entering class using an unexpected entrance).
- e. Assess understanding frequently and with minimal or no stakes (e.g., use clickers, invite answering questions).
- f. In sum, keep the motivation high and, as much as possible keep students in the zone of flow, with activities that are neither too easy nor too difficult.

Chapter 5 *Fueling the Fire. Prolonging Student Persistence*

- a. Control-value theory. Foster valuable work where students have more control and choice of their own learning (e.g., projects within the subject of the course, or use frequent invitations to explore and learn).
- b. Foster steady progress and frequent due dates.

Chapter 6 *Best-Laid Plans. When Emotions Challenge or Backfire*

- a. Minimize course anxiety in tests, syllabi, etc. by being clear about expectations.

All chapters are supplemented with a summary, further readings, and notes. A summarizing Conclusion, a lengthy and valuable References section, and an Index that works conclude this uplifting and practical book. Above all, be well prepared, fair, and inspirational. This is a book worth reading!