WAYNE STATE School of Medicine | Department of Biochemistry, Microbiology and Immunology

BMI Teaching Trends Newsletter – July 2021

Teaching Matters
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Teaching Critical Thinking (part 1)

This month's newsletter begins with a compelling statement from the March, 2020 Inside Higher Ed article *It's Time to Get Serious About Teaching Critical Thinking*: "For close to 50 years, educators and politicians from classrooms to the Oval Office have stressed the importance of graduating students who are skilled critical thinkers. Despite this progress, 75% of employers claim the students they hire after 12, 16 or more years of formal education lack the ability to think critically and solve problems." Do we share this opinion of our incoming graduate students or is this an over-simplified opinion regarding youth from the millennial (born between 1981-1996) and Generation Z (born between 1997-2012) age groups? Another set of sobering statistics is revealed in *Academically Adrift, Limited Learning on College Campuses* which claims that graduates with bachelor's degrees in a variety of fields are failing to develop the higher-order cognitive skills which are widely assumed to be mastered by college graduates. Greater than 90% of employers rate written communication, critical thinking, and problem solving as "very important" for job success. However, a survey of employers commissioned by the Association of American Colleges and Universities ranked only 26% of college graduates as being very well prepared in writing, and 22% as being very well prepared to think critically. Authors of this report use CLA (Collaborating, Learning, and Adapting) performance as a rating scale for students in their first two years of an undergraduate program. Their study found that 45% of students failed to demonstrate any statistically significant improvement in CLA performance by the end of their sophomore year of college. That finding led to the characterization of these students as "academically adrift" meaning that they may graduate but fail to develop higher order cognitive skills which is considered a distinguishing characteristic of a higher education. On a broader scale, a significant decline in cognitive engagement with societal events and a limited capacity to form critical opinions of the information that is provided by popular media is at the root of the threats to U.S. democracy.

Critical Thinking as defined by the 1987 National Council for Excellence in Critical Thinking is an "intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action. In its exemplary form, it is based on universal intellectual values that transcend subject matter divisions: clarity, accuracy, precision, consistency, relevance, sound evidence, good reasons, depth, breadth, and fairness. People who think critically consistently attempt to live rationally,

reasonably, empathically. They are keenly aware of the inherently flawed nature of human thinking when left unchecked. They strive to diminish the power of their egocentric and sociocentric tendencies. They use the intellectual tools that critical thinking offers – concepts and principles that enable them to analyze, assess, and improve thinking."

Mobile devices that put the power of the internet in our hands have transformed higher education. Knowledge that was once delivered in a didactic setting and assigned readings followed by reinforcement through memory practice is now a phone swipe away. Have the critical appraisal skills that are required to assimilate and analyze the plethora of digital information been lost along with the cerebral muscle development that takes place during the exercise of memorizing core knowledge? Although college faculty prioritize the development of their students' critical-thinking abilities they can struggle making critical-thinking instruction explicit within their curricula. The challenge is that the elements of critical thinking need to be taught *explicitly* which requires a different sort of classroom experience. A professor's thoughtful explanation of complex subjects may be perceived as teaching the process of critical thinking. However, in reality, this is a passive delivery method akin to a lecture and is essentially lacking the active engagement that students need to develop systematic reasoning skills. Neither knowledge nor the capability of analyzing and applying it can be passively transferred from a faculty member to a student via mental osmosis.

Jonathan Haber, the author of Critical Thinking Essentials, argues that the practice of critical thinking is based on a structured process that you would have learned in a computer coding or philosophy course and is referred to as logic. Logic can be applied to a number of processes for systematic and deductive reasoning. A challenge is that the data we receive is not delivered via computer code but through everyday written and spoken language. Development of critical reasoning skills involves breaking down written and spoken communication into basic units of reasoning which is a process that takes a great deal of practice. The ability to apply a structured process of logic to information and ultimately mastering the skill of critical thinking requires a degree of deliberate practice that can be compared to the diligence required of accomplished musicians or athletes. Deliberate practice is not mindless repetition of an activity. It requires highly focused attention and is conducted with the specific goal of outcome improvement. Research describing this practice asserts that 10,000 hours of deliberate practice are required to effectively master a skill. Higher education faculty cannot reach that goal but they can be mindful of opportunities to introduce the skill of critical thinking along with inculcating the value of lifelong learning with the expectation that their students continue practice throughout their academic and professional careers. The August Teaching Trends newsletter will continue a discussion of this topic by exploring how lessons from cognitive science can be applied to teaching critical thinking.