

Developing Critical Thinking

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This paper was completed and submitted in partial fulfillment of the Master Teacher Program, a 2-year faculty professional development program conducted by the Center for Teaching Excellence, United States Military Academy, West Point, NY, 2009.

Abstract: An essential outcome of the cognitive development process is the ability to integrate all source understanding, knowledge and available data and apply such resources to novel problems, unique dilemmas, or other situations where the outcome cannot be arrived out through referential or known algorithmic means. Learning to think critically involves understanding the problem (or being agitated enough [cognitive dissonance] to believe that one's world view is in error which in itself is the problem), having enough acumen to apply to the problem and being able to evaluate the validity of the solution. How we are able to synthesize a solution to a unique problem demands, at the onset, an understanding of the problem. This literature presents some opposing views on how we understand the problem, what one needs to do in order to grow to not only develop critical thinking skills or social consciousness, and examines the metrics we use to determine if a course of action facilitates the students development of this critical cognitive facet.

As Willingham (2008) summarizes the difficulties involved in teaching critical thinking, I am led down a path that resounds with common sense, namely if we can agree that critical thinking arises from the need to solve a complex problem by observing and forcing perspectives of the problem from many angles then it should follow that being presented enough unique problems, forcing repetition of unique problem solving then I can become a critical thinker. It turns out not to be so easy as the broad stroke answer; the ability to critically think in fact is context dependent, are we talking, an art or music problem, a math problem or maybe even a historical problem. Critical thinking, after we can get past the question itself, which is not always a given, is not only context dependent, primed as it were for the answer to present itself within the context of the discipline but is also taught (or trained) and evaluated from the lens of the discipline and attempts to provide "general" critical thinking skills is cognitively difficult or impossible.

A telling insight comes from studies of children (Turnbull, Carpendale, & Racine, 2008) and of those working with deaf adult individuals (Ortiz & Roch 2008). In the work of Turnbull, et al (2008) young children 3- to 5- years old are paired with their mothers and presented scenarios that are designed to assess their critical thinking development. What they found was in part due to how the mother presented the question, with both emotional and physical emphasis meaning could be derived not from the word of situational content but the interaction of the

communicator. Ortiz and Roche (2008) elaborate upon this insight by presenting insights learned from the observations of information transference among those individuals that could speak and those individuals that could sign to each other. From their work where deaf individuals are presented information via sign language and auditory capable presented information orally that although the deaf information content retention was higher, the deaf population also “filled-in” more gaps in information/knowledge and made more errors. Both of these cases support a notion that when trying to understand a problem, and information is not available, an individual will tend to rely on past or contextual information, and failing that, simply fill in gaps with what the presenter or contextual environment will support. The ability to piece together information and rely on novel strategies to fill in the gaps for a cohesive picture is critical to the process.

Attempting to delineate known information with known linkages and identifying gaps in knowledge or inappropriate relationships has led to many analytical tools and strategies to prepare a mind to form good linkages with available information. Predominate among these are the use of cognitive maps. Bermejo, et al (2004) present a well structured mechanism to evaluate what one knows and what one thinks combined with how important the linkages are to the individual and objective topic. Taking what one knows and thinks about a certain topic will enable a discussion on what information the individual needs to absorb and what needs to be communicated for a broader discussion. The imparting of information on a broader wholesale scale has taken many forms to include Hossain and Brooks (2008) utilization of cognitive maps in educational software. The observations they present revolve around the idea that if the software can determine what linkages and gaps are present in the students’ knowledge set then continually challenging and bridging the knowledge will enable cognitive development as it applies to critical thinking. Criticism to educational software revolves around their ability to accurately map the student and provide context for them to solve unique problems... that it is cookie cutter. Benay (2008) agrees with some caution. In her article she explores the use of templates in courses for writing and admits that the templates in and of themselves provide some structure for the beginning writer. However, she stress that the structure is a lose scaffolding for presentation of a coherent thought, and that the thought itself is what matters, not correct form and she is unconvinced that the critical thought is being produced before the writing and the template becomes the thought. Much like building a house to fit the preassembled scaffolding conveniently in front of one’s face rather than determining the structure that needs to be built and finding a premade scaffold that will facilitate the building. Cracolice, et al (2008) continue in this vein. Their ideas that much of what we consider critical development is classical conditioning; that in essence we are taught to perform iterative and algorithmic processes that do little to help us understand concepts and the deeper understanding that concepts bring to the critical thinking table.

How do we learn concepts and grow critically is a subject of some debate but in all literature reviewed a common thread commonly revered to “cognitive dissonance” prevails. The

idea that in some manner, in some way, the individual has to feel pressure or be uncomfortable in order to grow and be willing to form new and novel bonds, indeed learn to assume a neutral stance and see things from all sides. A current trend in higher learning institutions is to evoke service-learning into their curriculums. The benefits are touted as multifaceted; to include stake holding in a relevant problem, real world experience in complex conditions, and service and community support, and individual growth that comes by being challenged by real world, non-abstract problems. For example, when the privileged work with the poor on a summer break, it is a win-win situation. The privileged individual may see the world in a new light, a more centered position while the poor community is enriched. Mayhew and Fernandez (2007) believe that much of the individual growth that contribute to the individual's ability to discern critically comes from such service learning provided there is integration and oversight that assures that the student engages in four basic practices within the course as reflection (of what they are doing and a part of), collaboration and discussion (with those mentoring and involved), and interactions between the course and the individual (making linkage between the course content and message and the individuals life story and context). Butin (2006) argues that there are limits on how much service-learning can accomplish. Among other critiques, Butin observes that service learning is "soft-science" centric, engaged at elite privilege universities where the percentage of those participating have the time and money to do so. How does the institution and collective, diverse society gain when there is a limited population engaged in a limited endeavor which may or may not increase the inherent problem solving of the individual. Taylor (2008) may argue that such programs provide critical gaps that transform an individual from a spectator to a self-authoring player; central to the developmental process and enabling critical decisions.

As a keel to these observations is one final cautionary tale of Renaud and Murray (2008) which convinced me that the measures used to evaluate growth and efficiency must include some sort of independent, outside metric. By analyzing specific growth within a field or discipline, invariably where critical thinking growth was expected as a course outcome, critical thinking was assessed as grown, at least within the discipline. However, when generalized critical thinking/problem solving tests were presented to a population before a "critical thinking/enabling" course, no significant improvement to critical thinking skills were found.

The ability to employ critical thinking is crucial. In a world that does not stop changing, those that cannot change their thinking or ably information to novel situations will be disadvantaged. Clearly, a silver bullet has yet been discovered that will mystically transform a non-capable person into a capable critical thinker. However, much of the process is known including tools to evaluate current abilities; what is not clearly known or agreed upon is to how to provide an individual with an individual road map whose destination self authored critical thinking and the judgments that follow.

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