A New Era of Critical Thinking in Professional Programs

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Abstract:

Like most professions in the 21st century, human service fields are rapidly evolving. Increasing diversity of populations and needs, along with advancements in technology, are altering the daily work of professionals in these fields. The one constant for success, however, is the ability to make sound judgments that best meet the needs of individuals. Judgment requires critical thinking skills, including evaluation of data, recognition of various viewpoints, and mindful formulation of solutions. Traditional higher education practices have not overtly addressed these skills. This article will give examples of instances in which critical thinking is directly taught in counseling, medicine, and education preparation programs. The authors argue that these critical thinking skills are non-negotiable requirements for human service professions to meet the needs of today's society.

Key Words:

Critical thinking, professional education, pedagogy, assessment

Introduction

Over the past few decades, a once dominant manufacturing economy has shifted to a knowledge-based economy where critical thinking is instrumental to providing positive outcomes (Abrami, Bernard, Borokhovski, Wade, Surkes, Tamim, & Zhang, 2008; Kiener, Ahuna, & Tinnesz, 2014; Meepian & Wannapiroon, 2013). This shift has had implications to education. In the past 20 years, advancements in technology have made accessing information significantly easier. While in the past it was important to memorize facts to master and understand content, it is now possible to have instant access to these facts, making the memorization process possibly irrelevant. One positive byproduct of this change is more opportunity for educators to develop assignments and lessons requiring higher-level thinking. The increased emphasis on critical thinking has allowed for innovations in education, including flipped classrooms, problem-based learning, experiential learning, and more. However, far too many educators resist change and do not encourage higher level thinking.

These societal and educational changes are particularly relevant for new professionals entering the workforce. Fields such as medicine, education, and human services require a high level of analysis, synthesis, and evaluation skills. Because the demands of these fields are highly interpersonal, each interaction is unique. If professionals in these areas are educated to be good critical thinkers, the outcomes of their services will be better, leading to improvements in society as a whole and for individuals' quality of life. This can only happen, however, if professional programs in these disciplines evolve accordingly by not only teaching content but also teaching processes of how to think (Cabrera & Colosi, 2009).

Critical Thinking

To be an effective professional one must be able to apply and evaluate critical thinking skills in an ever-changing workplace to ensure the best possible outcomes. Because it is impossible to predict what advancements lie ahead, establishing a mindset of inquiry and effective problem solving may be the most important goal of these professional preparation programs. As a result, one of the most important skills in the new economy is "learning to learn" (Cabrera & Colosi, 2009; Ritchhart, Turner, & Hadar, 2009).

At the same time for many professionals such as counselors, teachers, and health care workers, there is an increasing demand to be accountable to various stakeholders (Kiener & Koch, 2009; Johnson, Brown, Harniss, & Schomer, 2010) by using evidence-based research to guide and evaluate professional practice. In recent years the construct of knowledge translation (KT) has gained support in health care and counseling professions as a means to implement and expand evidence-based practice (Johnson et al., 2010). KT "is a process through which research evidence is synthesized for, and communicated to, researchers, clinicians, consumers, and policy makers so these constituent groups can make informed decisions" (Johnson et al., 2010 p. 239). At a fundamental level, KT requires professionals to actively use critical thinking skills while also having the ability to communicate and collaborate with multiple stakeholders. From this perspective, knowledge is no longer disseminated by an expert passively to

novices, but rather co-created by all involved with an emphasis on applying knowledge in new situations. If professions have already shifted how they are creating and using knowledge it is essential for higher education to examine if educational practices are keeping pace with the changing work force.

The purpose of this article is to illustrate three courses emphasizing professional education by specifically describing learning outcomes, pedagogical techniques, and assessment strategies used to explicitly increase critical thinking. In addition, the authors believe this article can be a reflective tool for instructional professional development. One course taught medical students how to approach content through higher level questioning, while a teacher education program focused on Bloom's taxonomy and understanding point of view to improve teaching, and a capstone course in rehabilitation and human services utilized thinking routines and evolving case studies to enhance learning. All courses described were taught by the authors who were trained in critical thinking.

The concept of critical thinking can be defined as:

(T)hat mode of thinking — about any subject, content, or problem — in which the thinker improves the quality of his or her thinking by skillfully analyzing, assessing, and reconstructing it. Critical thinking is self-directed, self-disciplined, self-monitored, and self-corrective thinking. It presupposes assent to rigorous standards of excellence and mindful command of their use (retrieved from: http://criticalthinking.org 2013)

This complex ability requires other habits of mind. Intellectual humility, for example, demands the recognition that no one is all knowing and everyone can learn something. Likewise, research on learning theory shows the importance of a dynamic disposition, which includes traits such as curiosity, persistence, and enthusiasm (Iran-Nejad & Chissom, 1992). These intellectual characteristics require a person to be metacognitive and monitor their own thinking process.

An examination of teaching critical thinking in higher education yields a number of diverse approaches. Abrami et al. (2008) conducted a meta-analysis investigating courses designed to teach critical thinking and dispositions. For this study, critical thinking was defined as "the ability to engage in purposeful, self-regulatory judgment" (Abrami et al., p. 1102) and dispositional thinking referred to a person's ability to approach situations with curiosity while also being open and fair minded. The authors investigated 117 studies with over 20,000 students and found courses that explicitly taught critical thinking skills had greater impact than courses with only an implicit expectation of critical thinking. When thinking skills were explicitly taught alongside higher level discipline content, critical thinking skills had the largest increase; whereas courses that taught higher level discipline content but did not overtly emphasize critical thinking demonstrated the smallest increase (Abrami et al., 2008). Moreover, courses where instructors received professional development regarding teaching and learning of critical thinking had greater impact on student critical thinking than courses where instructors had no prior training (Abrami et al., 2008).

It is clear that preparing professionals for this kind of higher-level thinking is significantly different than preparing students to memorize. Equally important in the

process is professional development for instructors to critically examine their teaching with the goal of improved student learning.

A Rehabilitation and Human Service Capstone

The following describes a capstone course in an undergraduate rehabilitation and human service program. Capstone courses provide an opportunity for a comprehensive educational experience where students provide evidence of their learning. Rehabilitation service providers have a skill set to work with individuals with disabilities on career goals and help individuals to live as independently as possible in the least restrictive environment (Maki & Tarvydas, 2012). An essential skill for rehabilitation service providers is evaluating consumer strengths and abilities to collaborate with consumers on developing mutually agreed upon goals. At one Midwestern university, students enroll in the capstone course their last semester in the program with the prerequisite that they are at least 75% done with coursework.

According to the course description the class is "designed to infuse relevant rehabilitation skills through case studies to demonstrate effective rehabilitation practice. Students will analyze current research to synthesize rehabilitation treatment plans… and hone skills acquired throughout the program leading to a practical and usable professional worldview. The professional goal of the course is to shift their thinking from students to emerging professionals (Kiener et al., 2014). Course themes of critical thinking and rehabilitation treatment planning are used to achieve the student learning outcomes.

Three learning assessments are used to further develop and hone student critical thinking and three additional assignments are used to assess student discipline knowledge. Readings, thinking routines, and case studies are the assignments used to assess critical thinking. Throughout the first half of the semester, students read Langer's (1997) *The Power of Mindful Learning* and Lemov, Woolway, and Yezzi's (2012) *Practice Perfect 42 Rules for Getting Better at Getting Better*. Both books ask the reader to rethink how they learn and process information. Langer (1997) advocated that one should approach each task with curiosity, to continually search for novelty, and to avoid a quest for certainty. Lemov et al. (2012) advanced the premise that structured and deliberate practice is the key to increased performance. Although both books focus on learning it is feasible to believe after an initial examination the authors are providing alternative theories to improve learning. These seemingly contradictory points provide ample opportunity for students to develop and demonstrate critical thinking by comparing, contrasting, analyzing, synthesizing, and evaluating data to make an informed decision about which theory they support. In addition to reading and discussing the books, another to facilitate critical thinking is to require students to think like the author(s) by debating concepts and answering questions as if they are the authors.

Thinking routines (Ritchhart & Perkins, 2008) are classroom learning tools designed to help students practice and sharpen their thinking. Thinking routines ask students to think more deeply about a topic by probing students to identify questions and areas needing further exploration. The principles reinforcing thinking routines include: thinking requires skills and dispositions, learning is an outcome of thinking, and increasing

thinking is an overt and social process (Ritchhart & Perkins, 2008). Thinking routines reinforce Langer's (1997) and Lemov's et al. (2012) theories by providing a framework to practice learning and demonstrate thinking dispositions. Primarily thinking routines are utilized in two ways: at the beginning of each class as an anticipatory set to prime student thinking and as a way to present "debatable" discipline knowledge. For example ethical dilemmas provide students with ample opportunity to ponder, question, and explore multiple forms of data to come to a conclusion. In addition to instructor-created thinking routines, students are required to create and present one thinking routine to their classmates. It is expected that this assignment will sharpen metacognitive thinking.

Finally, case studies are used as the primary assessment to evaluate critical thinking and discipline knowledge. Throughout the semester increasingly complex case studies are presented to students to develop short and long term rehabilitation treatment plans. Initial case studies have a single focus area whereas more complex case studies have multiple areas to consider and potential ethical dilemmas to process (Day, 2011). Students work in groups to develop initial treatment plans and present their ideas to the class for further questioning. Following the initial case presentation the instructor provides additional information regarding the case study and the students have to determine how, if at all, the additional information impacts their treatment plans and modify their plans appropriately. This process is an attempt to better simulate working with clients and their ever-changing worlds. Working with clients is not a static process and requires practitioners to continually analyze, synthesize, and evaluate information to make informed decisions.

Embracing the meta-analysis results on enhancing critical thinking by Abrami et al., (2008), the development of the capstone course overtly taught critical thinking and disposition skills in conjunction with higher level discipline knowledge. The readings introduced critical thinking and dispositional skills. Thinking routines provided students the opportunity to practice and refine their thinking and the case studies required students to demonstrate the integration of higher level discipline knowledge with critical thinking. Additionally, the three assignments required the students to demonstrate their learning visibly by reading comprehension, writing, and oral presentations.

A Post-Baccalaureate Medical School Preparation Course

New York State offers a program for underrepresented, economically, and educationally disadvantaged students who are conditionally accepted into medical school. Students come together at a large state university and must take a year of pre-med courses which is preceded by a six week summer preparatory program. One class included in the summer program is called "Methods of Inquiry" and is entirely dedicated to student acquisition of concrete techniques to advance content mastery and critical thinking. Topics in the course include learning theory, which overtly identifies dispositions required for success (e.g., persistence, curiosity, and enthusiasm), study strategies (e.g., note-taking, concept mapping, exam preparation), and higher level thinking skills (e.g., differentiating between the mental skills of memorization versus evaluation). The pedagogical goal of the course is not only to provide strategies for success in medical school, but also to instill a mindset of critical thinking needed for the profession.

Critical thinking cannot occur in a vacuum. While there are transferable insights, specific application is dependent upon subject matter. As a result, the majority of the assessments in the Methods of Inquiry course are the application of strategies to students' other courses. For example, students learn four "levels of questions" to differentiate thinking processes. The four levels include the recall of data, the understanding of concepts, the exploration of hypotheses, and the formulation of judgment. Students must design these levels of questions in their course materials (notes, texts, etc.) with an emphasis on the higher levels. As future doctors, recall of data will be less important than formulation of judgment. Through overt practice with higher level questions, students can improve the mindfulness with which they answer them.

Additionally, the Methods of Inquiry course focuses on the critical thinking skill of comprehension monitoring, or the ability to pay attention to one's own understanding. Each assignment in the course has specific criteria for successful completion. Through supervised peer monitoring during class time, students provide feedback to each other on how well assignments meet those given criteria. Instructors circulate during this process to facilitate. The goal of peer monitoring is for students to develop the ability to distinguish what they confidently know from what they do not understand. This practice leads to student autonomy in the ability to self-monitor comprehension.

This class exemplifies the findings in the meta-analysis of Abrami et al. (2008). First, the course is taught by instructors trained in critical thinking. Second, course content explicitly works on the development of critical thinking skills. Third, Methods of Inquiry teaches these skills to students in concert with disciplinary content by having students use each technique in their current coursework (e.g., anatomy, biochemistry, etc.). This process allows students to identify distinctions in application across subject matter. These are the three optimal conditions identified by Abrami et al. (2008) and they combine to make the course effective for future doctors.

Teacher Preparation Courses

Preparing future teachers to meet the needs of an increasingly diverse student body requires instruction in critical thinking. Any classroom today may include students with special needs, students for whom English is the second language, students from diverse racial and socioeconomic backgrounds, and students with varying ability levels. As a result, a successful teacher must have the higher order thinking skills necessary to appropriately adapt his/her instruction.

In one teacher education program at a small private college, several courses embed critical thinking concepts. Similar to many teacher education programs, these courses utilize Bloom's taxonomy for categorizing kinds of thinking (knowledge, comprehension, application, analysis, synthesis, evaluation) in two ways. First, the course instructors ask higher level thinking questions of the students, such as "What is the connection between students' successful experiences and classroom management?" and "Should low income schools receive more or less funding based on their standardized test scores?" These kinds of questions encourage direct application of critical thinking as students are confronted with real-life problems and how they can best be solved. Second, students must utilize the taxonomy in crafting lesson objectives and plans. The

goal is for these future teachers to focus on moving their students to higher level thinking. This move is required to keep pace with the evolving needs of society and the demands of the workforce in which these students will someday find themselves.

Additionally, all students in this program must take a course in diversity and education. In an effort to create teachers who are life-long critical thinkers, the course requires critical dialogue around issues of race, religion, gender, language, sexual orientation, social class and exceptionalities. Students learn about the importance of understanding one's unique point of view in making judgments. Self-reflection is practiced with the goal of recognizing how assumptions are formed and how they can impair good thinking. Intellectual humility, the conscious effort to be fair-minded, and intellectual courage, the deliberate attempt to see all sides of an issue, are two habits of mind to which students are introduced (Paul and Elder, 2001). Armed with this knowledge, students are presented with case studies that deal with issues such as inclusion, equity in education, bullying, single-sex education, and more. Although it is human nature to be egocentric and believe one's convictions are correct, these exercises are designed for students to carefully examine all sides of an issue and subsequently make an informed decision, what Abrami et al. (2008) define as "the ability to engage in purposeful, self-regulatory judgment" (p. 1102).

For purposes of assessment, students must write lesson plans for hypothetical classrooms. These lessons must incorporate various levels of Bloom's taxonomy and exemplify an understanding of the diversity among learners. This assignment is the best application of learned critical thinking skills and mindset to real-life situations. In the ever-changing climate of education, teachers must learn to adapt to new challenges in the most productive ways. This cannot happen without possessing critical thinking skills.

An important job of teachers is to design evaluation measures. When students in this education program learn about test development and assessment opportunities, they are asked to create questions that span the levels of Bloom's taxonomy. The focus is on challenging students to think beyond the lower taxonomy levels that encourage memorization and move toward the higher levels that ask for critical thinking. Because the employment opportunities for many of today's students will require much more than memorization, preparing them for this kind of work through school is imperative. As a result, teachers must be trained for this.

Conclusion

Professionals in the fields of health sciences, education, and human service, will spend much of their career making important judgments. The impact of these judgments on stakeholders (patients, students, and clients) can be profound. It should not be taken for granted that professional education preparation programs currently train their students to make sound judgments. Reaching judgment requires the acquisition and application of critical thinking skills. Some of these skills include: considering point of view, recognizing assumptions, evaluating data, extrapolating consequences, understanding concepts, and synthesizing new information. Evidence shows that these kinds of skills can be overtly taught and are transferrable across disciplines (Paul & Elder, 2001).

Furthermore, Abrami et al.'s (2008) meta-analysis showed that the explicit instruction of critical thinking skills combined with high level discipline knowledge and instructors trained in critical thinking yield the best results in student attainment of higher level thinking. Because human service professions do not have stagnant bodies of knowledge, it is more important that graduates of professional programs emerge with the ability to reach good judgments. Additionally, as classrooms become more diverse, medicine becomes more advanced, and counseling frameworks evolve, professionals must adapt to meet ever-changing needs. This article does not mandate one type of implementation for teaching critical thinking skills; rather, it argues for the development of an appropriate mindset and the practice of thinking skills that are imperative in the training of future professionals.

For all of these reasons, stakeholders invested in student learning must make appropriate changes in the classroom. Those changes can be many and varied. Instructors can be trained in critical thinking skills and their implementation through professional development workshops, conferences, and continuing education coursework. More specifically, faculty can seek learning opportunities from college or universities' centers for teaching and learning. Often these centers provide consultation and peer feedback regarding all aspects of the teaching and learning process. Texts by Doyle (2011), Huber and Hutchings (2005), and Werder and Ottis (2010) also provide valuable information on how to reflect on and improve student learning.

Simple recall of data is no longer enough to adequately prepare human service professionals. Correspondingly, assignments should require students to apply higher level thinking skills. Finally, pedagogical techniques can be examined to ensure maximum overlap with authentic professional skills and expectations. Only by keeping up with the needs of society will preparation programs for medicine, education, and counseling remain relevant. Since the only constant is change, human service professionals must develop the critical thinking skills required to continually adapt.

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