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BARRIERS TO CRITICAL THINKING ACROSS DOMAINS

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ABSTRACT

The transfer of critical thinking across domains presents both a significant challenge and meaningful opportunity for college education as well as programs of continuing education and efforts to encourage lifelong learning. After examining different approaches to teaching critical thinking, this paper examines some of the barriers to transfer across domains using an interactionist perspective. This perspective underscores the fact that developing and using critical thinking is a lifelong endeavor due to the tunnel-vision tendencies that naturally follow from situated learning in a particular domain. Two case studies are presented to illustrate the potential blinding effects of situated learning resulting from years of on-the-job training in critical thinking. The domain of possible transfer is a medical diagnosis of a terminal condition. Questions are raised about how critically-thinking patients might approach an assertion of this magnitude. Implication for adult education and self-directed learning are discussed.

INTRODUCTION

Increasing the ability of learners to transfer critical thinking across domains has important implications for all forms of education and self-directed learning. This is particularly true in light of research that shows that we have a natural tendency toward tunnel-vision as we learn different thinking skills, thus limiting our awareness of alternative applications. This tends to be true in a wide range of learning experiences unless counteracted by appropriate lifelong learning strategies. This paper examines one dimension of this problem that many people are likely to encounter in their lifetime; i.e. a challenging medical diagnosis that can have variable outcomes depending on: (1) the thinking skills that have been learned; and (2) whether or not they are appropriately transferred across domains when faced with such a crisis.

PAST RESEARCH

Educators, administrators, legislators, and employers all view critical thinking as a desirable outcome in adult self-directed learning and higher education. Many work organizations encourage workers to assume responsibility for planning, carrying out, and evaluating their own learning experiences, but the emphasis tends to be on learning specific content and skills

related to work. Other scholars advocate critical reflection as the key dimension of self-directed learning (Ellinger, 2004). A recent study found that nearly three-fourths of employers wanted to see more emphasis on critical and analytical reasoning in the university curriculum. Many educators agree, and a number of college campuses are now using standardized tests to measure effectiveness of learning in this area (Stassen, Herrington, & Henderson, 2011). Attempts to standardize critical thinking require a synthesis across diverse perspectives in education. The philosophical tradition typically focuses on the characteristics of the ideal thinker–one who has a desire to be well informed, is inquisitive in nature, and uses rules consistent with formal logic (Facione, 1990). The psychological tradition places greater emphasis on what critical thinkers typically do in assessing a situation (Lewis & Smith, 1993). The education literature tends to look at information processing skills such as analysis and synthesis (Kennedy, et al., 1991).

Despite these differences there are areas of agreement about the abilities and dispositions of critical thinkers. A good critical thinker analyzes arguments, scrutinizes claims, seeks evidence, makes inferences, and synthesizes all of this prior to making a judgment and taking some action if required. In addition, the critical thinking process is reinforced by a disposition to use critical thinking in a variety of different situations. This disposition includes a tendency to reserve judgment, ask questions, and consider alternative possibilities (Facione, 2011; Facione, 2000; Lai, 2011). Stassen and associates (Stassen, et al., 2011, p. 132) have performed a content analysis of standardized tests measuring critical thinking. Their findings reaffirm these points of agreement. They found three dominant themes intersecting the tests that are typically used; namely, making judgments, examining arguments, and assessing evidence.

The research literature on teaching critical thinking reveals some disagreement about how to proceed. Some believe it should be taught in a stand-alone course on critical thinking, while others believe it should be contextualized across many courses but with an emphasis on skills rather than subject matter (Lloyd & Bahr, 2010; Perin, 2011). Some believe it should focus on the cognitive skills that cut across domains, while others believe it should be integrated or situated in the domain of life experiences that students are likely to encounter in their future work (Cobb & Bowers, 1999; Halpern, 1998; Perin, 2011). Still others maintain that it should be generalized as something that is basic to becoming an educated person, while a growing number of professional educators believe it should be problem-based so that students see the relevance of what they are learning for their particular career (Knowlton, 2003). At present, situated and problem-based learning strategies appear to be gaining adherents in professional training programs such as law, business, nursing, and medicine (Knowlton, 2003; Bryan, Krueter, & Brownson, 2009; Loyens, Magda, & Rikers, 2008; Williams, 2001).

The key concern of the single course, cognitive skills, and generalized learning proponents is that the content of what is learned tends to obscure the thinking processes by which content should be evaluated. This is because most programs of study are content intensive. In any profession there are many things one needs to know to get hired. Therefore, many argue that

we must teach critical thinking for transfer across domains. They argue that educators and educational materials must help learners recognize that thinking skills have many novel applications beyond what is learned while preparing for a particular profession (Halpern, 1998).

Regardless of the approach taken, there looms a larger challenge to critical thinking, even if well learned and used in college. This is the challenge of domain specificity once it is put into practice after leaving college. The interactionist perspective in sociology underscores the reality that daily experiences after college continually situate learning as knowledge is applied in work settings. These situated experiences have profound effects on when and how thinking skills are used, regardless of how learned and practiced in college. Consequently, using critical thinking across domains is an elusive lifelong challenge.

AN INTERACTIONIST PERSPECTIVE ON TRANSFER BARRIERS

The interactionist perspective in sociology underscores two important elements of human behavior. First, humans are by nature interpretive beings; that is, people seek to find meaning in everything they do. As a result, actions are guided by the meanings that are constructed in various situations. Second, social interactions mutually influence how people think as well as how each of the interacting parties interprets various situations. Essentially this means that mind and self are cultivated through social interaction (Blumer 1969; Chriss, 2005; Ritzer, 2011). Subsequent discoveries in interactionist research point out that all humans have a tendency toward tunnel vision in the interpretations they make, particularly in social situations that are encountered on a repetitive daily basis. Ethnomethodologists who specialize in the study of everyday behavior call this "taking an attitude" (Handel, 1982:54-57). In taking an attitude people learn to pay attention to the things that are consistent with their repetitive experiences and interpretations of everyday events and ignore things that might lead to alternative interpretations and applications. Since humans act on their interpretations, this interpretation-action process gives the world a sense of order and predictability. At the same time, it tends to create natural barriers to using critical thinking across domains.

The interpretations that people adopt can also have a profound influence on others through social interaction (Weitz, 2013). Persons known for courage and a fighting spirit sometimes give up when faced with challenges in one domain that are not unlike those they helped others combat in another domain. Often this is the result of situated learning wherein thinking skills are consistently practiced in a single domain. The situated learning unintentionally erects tunnel-vision barriers to the transfer of thinking to other domains. This can have a chilling effect on family and friends, particularly when this contradicts established patterns of interaction.

KEY ELEMENTS OF CRITICAL THINKING

One form of critical thinking is called critical judging. Many educators have this type of thinking in mind when they use the term critical thinking, but I have argued elsewhere that this is just one of six forms of critical thinking (Geertsen, 2003). In using this form of critical thinking, one learns to: (1) examine some claim or assertion; (2) listen to or collect evidence in support this

claim; (3) determine the strength of the arguments derived from the evidence; (4) assess the underlying assumptions and possible biases supporting the claim; and (5) arrive at a judgment and course of action where appropriate. The legal profession is well versed in this type of thinking, particularly judges who must oversee courtrooms as arenas for weighing evidence and making critical judgments.

This is the type of thinking one patient spent a lifetime learning to implement in his distinguished career as a judge in California. Nevertheless, his repeated daily experiences in the courtroom situated his thinking skills and created a tunnel-vision approach to critical judging. He failed to see the relevance of his thinking as a judge for his newly acquired role as a patient. In other words, his natural tendency toward tunnel-vision interfered with his ability to transfer his thinking skills to another domain; that is, to explore the possibility that what applies to a known situation (a court of law) might also apply to a less familiar situation (a terminal illness). A construction boss was an expert in using critical thinking to evaluate subcontractor bids, assess flaws in architectural plans, and determine probable costs of construction. He too failed to see the relevance of his thinking skills when confronted with a terminal diagnosis from his doctor. Two case studies illustrate this problem.

CASES OF FAILED TRANSFER ACROSS DOMAINS

The Judge

The scene is the office of a medical counselor at the UCLA School of Medicine. The person in question was often asked by medical faculty to meet with patients whose fatalism in response to disease was harming their medical treatment.

"A physician was calling about his patient, a judge, who was in the terminal stage of cancer He said the judge's mood was understandably bleak. All of his personal and professional life he had been known for courage, determination, and a positive outlook on life. His illness, however, had given him the psychology of fatalism. He told his wife and children that there was no hope and that he expected to die very soon."

"When I entered the room I said I understood that all of his life he had been a fighter for things he considered just and right. He nodded and again narrowed his eyes as though to find out what I was getting at. I said that one of the things I had learned at the medical school was that the attitude of the patient had a profound effect on members of the family. Their health could be jeopardized by negative attitudes of the patient. I said I hoped he would forgive me if I said that his family was anguished by the judge's apparent defeatism. Such defeatism might seem natural to anyone else, but [not] in the judge. The judge closed his eyes momentarily. Then he looked at me and uttered two words: 'I gotcha.'"

After that encounter, the judge started feeding himself, working on card problems with his wife (he had been a tournament bridge player), getting out of bed to use the bathroom, walking the

hospital corridors, reading the newspaper, making witty comments to visitors, and regularly chatting with his sons and other patients.

Norman Cousins (1989: 22-25) goes on to say: "The judge survived for several more weeks. It was a magnificent example of how the human spirit could make a difference– not just in prolonging one's life but in bolstering the lives of others."

The Construction Boss

The second case was an active, energetic, and strong-willed construction boss. He had spent his working life making critical decisions when sorting out claims about subcontractor costs, construction risks, the practicality of proposed construction plans, possible alternative building strategies, and figuring out competitive construction bids without losing money or compromising quality. The men who worked for him admired his ability to identify problems in construction plans and architectural designs. They said he operated under the assumption that building plans were always flawed in some respect and could be done more efficiently by scrutinizing them carefully and coming up with improved modifications in his bids. Yet, when faced with a challengeable medical assertion, his situated, critical-thinking skills failed to get activated because they were outside of his everyday construction domain.

When I learned of his situation, I informed the construction boss and his wife of an alternative treatment in another state that had multi-year survivors with his same condition. His wife was excited and wanted to contact the clinic for more information, but he said he wasn't interested. He wasn't about to leave his wife and children with the limited time he had left and pursue something his doctor hadn't recommended. Instead of critically reflecting on the diagnosis, his family eventually learned that he had purchased a cemetery plot the same day he received his fateful diagnosis of "six month to live." He died on schedule six months later.

EXTRAPOLATION OR TRANSFER ACROSS DOMAINS

The author has argued elsewhere (Geertsen, 2003) that extrapolation is a form of high transfer that should be added to the abstract end of Bloom's (1956) and Beyer's (1987) linear continua of micro-thinking skills. Whereas application involves a lower-level transfer where one learns to use knowledge skills in familiar situations, extrapolation involves exploring ways that learned skills might apply to less familiar situations. This requires more abstract thinking because one has to think outside of the box (i.e. the box of tunnel vision) and discover possibilities without having them pointed out by someone else.

It is surprising that the judge failed to recognize that the doctor's diagnosis of a terminal illness was an assertion or claim that ought to be scrutinized rather than accepted at face value. As a result, when faced with the most important assertion in his life, he failed to use his well-developed critical judging skills. This is particularly troubling inasmuch as he had considerable experience in learning how to scrutinize thousands of assertions or claims in his professional career as a judge. The construction boss had learned to think critically in the business world,

but he too failed to transfer his skills by questioning the proposed medical intervention of his doctor that, according to his own doctor, had no chance of beating the odds.

How might a critically thinking judge or construction boss have dealt with this type of assertion? This necessitates making a transfer across domains as illustrated in the following five steps of critical judging previously listed. First, the critically thinking patient would want to know how certain the claim was. Doctors can never say with absolute certainty, and this is almost always discovered in response to the question: "How certain are you?" If the doctor says 80% certain, then there is a 20% chance (ray of hope) that the doctor is wrong.

Second, in assessing evidence, a critically judging patient would want to know if other doctors concur with the assertion. The best way to find this out is to get additional medical opinions. If other doctors confirm the assertion, the patient moves to the next step in critical judging. If not, the patient seeks more information on their points of disagreement.

Third, if other doctors agree, the patient would still want to assess the strength of their diagnosis or argument. The critically thinking patient would want to know the range of variation in how long patients have lived with this diagnosis. For example, this type of patient would ask: "What is the longest time you have seen someone live with this diagnosis?" Doctors often condense their forecasts to averages or typical outcomes, but a critically-thinking patient is anything but typical or average, at least in his or her mind. Finding a wide range of variation would allow the patient to identify with a best-case scenario. In reality, these are the patients who are most likely to defy the odds.

Next, an unequivocally-shared verdict by several doctors may hide some underlying biases of the medical community in treating this type of illness. Here the question becomes: "Have any of your former patients with my same diagnosis beat the odds?" The patient would then respond: "Let me talk to some of these survivors." If the doctors can't provide any survivors, the critically-judging patient world probably conclude that their usual treatments for this type of disease have limited effectiveness and might want to consider other options such as those found in clinical trials. Since most clinical trials require a doctor's referral, the patient should seek a doctor's help in locating a possible experimental treatment that researchers believe may be better than the standard care for this type of disease. As an alternative, the patient might search for possible survivors on his or her own and find out what they did to beat the odds.

Finally, he or she would assess the options and make an informed judgment about which course of action is the most reasonable prior to proceeding with any treatment. This is probably what the family of the judge expected to see in response to his bleak diagnosis. He had been a fighter all of his life and had always reserved judgment until all avenues had been explored. The construction boss also disappointed family members by his passive acceptance of death. Both of them, when faced with the greatest assertions in their lives, failed to transfer their skills to the new situation because it wasn't delivered in a courtroom or in a business proposal. They

had become the victims of what ethnomethodologists call "taking an attitude" by activating their natural tendency toward tunnel vision. Educators call this phenomenon situated classroom learning. It is also an example of situated learning after leaving the classroom.

DISCUSSION

The passive reaction to a terminal diagnosis is not uncommon among patients from all walks of life. In both of these cases, contextual differences in domains of possible transfer probably contributed to the failure to transfer. One such difference might be the position of the person making the claim. Physicians have come to be highly-respected experts in the illness domain. They spend many years mastering their craft and, to many, symbolize the great achievements of modern science. When someone considered to be an expert in a domain makes an assertion, their stature and prestige may deactivate whatever it is that triggers a critical and questioning mind set. The context in which people use their critical thinking skills is undoubtedly another contributing factor. A judge in a courtroom setting routinely hears contested claims and assertions. In this type of domain, it would be natural to question what people claim, because with contested assertions, it is easy to assume that someone is always stretching the truth. A construction boss would also naturally question subcontractor bids. This would routinely trigger a critical attitude in those settings; whereas doctors might be viewed in an entirely different light because they are more typically viewed as trusted partners in combating disease.

The power of domain is illustrated by another case where critical thinking was activated in response to a death forecast. In this instance, the assertion was delivered to someone working in the same domain. A physician acquaintance of mine was told he had six months to live, but this assertion was within his domain of training. He knew there wasn't complete certainty in any medical diagnosis, so he refused to accept the assertion at face value. He questioned the diagnosis, got second opinions, asked about and researched the probability of success with the usual treatments for his disease, and refused usual treatment because it only offered a temporary delay in a fatal forecast. Instead, he found a third-stage clinical trial and traveled across the country for an alternative treatment. He is still alive today, some six years later.

Transfer across domains is an example of dynamic rather than static, knowledge-based learning. Su (2011: 58) maintains that lifelong learning is becoming increasingly important in our rapidly-changing postmodern world. "That one may acquire 'static' knowledge does not mean that one will be able to apply it and make it 'dynamic' and useful in changing times." An unexpected encounter in another domain such as serious illness would be an example of a change in which dynamic rather than static, domain-specific knowledge is appropriate.

CONCLUSIONS AND LIMITATIONS

There are clear limitations to the inferences that can be drawn from the foregoing case studies. They are presented as real-life illustrations rather than as compelling evidence of possible domain transfer problems; however they are not isolated cases. Nevertheless, we need more

quantitative research on the prevalence of these types of failure to transfer across domains. In the present study, the cases of the judge and the construction boss underscore the potential importance of this problem in a domain that many Americans are likely to face at some time in their lives. What seems to defy reason is the potential power of the barrier to domain transfer for someone like a judge. Here he had worked all of his life in a domain where critical thinking skills were used on a regular basis, and still he drew a complete a blank when faced with an assertion from another domain. This is particularly striking when the out-of-domain assertion he faced was the most important assertion in his life–and yet he faced it uncritically.

We need more domain-specific research on how to bridge the barriers erected by different types of domains. We also need much more research on the domains that seem to erect the greatest barriers to transfers across domains. Medicine may be one of those domains, in part, due to the high prestige of physicians and the strong faith in medical science that pervades modern society.

The judge and the construction boss represent failures in self-directed learning. The acquisition of thinking skills is a lifelong process that should not stop after achieving success in one's chosen profession. Based on the discoveries of ethnomethodology, transfer across domains goes against our natural tendency toward tunnel vision due to the situated nature of on-the-job training. Since it goes against the grain, it needs to be emphasized in all continuing education and self-learning endeavors. These learning experiences need to include challenges that encourage participants to think "outside the box" of situated learning. Examples of transfer across domains should be incorporated in all continuing education programs, particularly in professions that use critical judging skills on a regular basis. Questions about possible transfers across domains need to be raised periodically to potentially offset the constrictions of situated practice and learning.

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