

Critical Thinking and Learners' Conception of Knowledge- A Meeting Point

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Abstract

Critical thinking as a topic lurks fascinatingly behind and about higher education and professional development. The scope of research done on critical thinking revolves mainly around how to promote and sharpen student's critical thinking skills as they are considered to be at the heart of successful academic assertiveness. However, there is another component, namely developmental epistemology, which is central to developing and fostering critical thinking skills and which should be taken into account in pedagogical implications and applications. Epistemological development has been the subject of a number of studies over the last half century that indicate that there is a developmental sequence in learner's epistemological beliefs and that this influences the manner in which the learners function; significantly affecting their capacity for critical thinking. In particular, this paper looks briefly at the relationship between critical thinking and epistemological development as a process as well as beliefs of the individual learner, both standing for learner's conceptions of knowledge which impact to a great extent the acquisition of critical thinking skills and the process of critical thinking as a whole.

Keywords: Critical Thinking, epistemology, beliefs, knowledge

Introduction

Critical thinking is a complex and vast field of study as it lies at the intersection of several disciplines among which we primarily consider philosophy, psychology, logic and cognition. Therefore, it is of paramount importance to explore as well as expose it from different perspectives, as a general concept and as a fundamental educational outcome given that it prowls basically about higher education and professional development. It is an issue about which much has been written and which has been much debated as it lurks fascinatingly behind higher education. However, the scope of the present paper would slightly swerve from the effort of encapsulating the whole concept. It is rather an attempt to bring to light one of the various sides of critical thinking related essentially to the learner as a critical thinker, the way knowledge is conceived of in relation to the developmental nature of epistemological beliefs and the way they impact critical thinking abilities. The growing body of research evidence indicates that students' epistemological beliefs about learning have influence on their various learning processes and problem solving behaviors. Research findings also suggest that the learner's "naïve" beliefs about the nature of knowledge might obstruct the ability to use critical aspects of learning whereas sophisticated beliefs tend to enhance high order thinking skills leaving room for higher level learning and critical thinking to occur (Schommer, 1994). If we could capture the essence of the connection between developmental epistemologies and critical thinking we can find ways to make learners think critically. Accordingly, the latter factors have to be taken into account while designing course material intended to enhance critical thinking skills and dispositions.

Critical Thinking and Epistemological Beliefs

At a given stage of higher education, learners are expected to be critical thinkers who solve problems creatively, and responsible citizens who make ethical choices and know how to apply and integrate knowledge from different contexts and perspectives. Students are also expected to be able to present their thoughts cogently both in oral and written communication and at the same time analyze and evaluate important trends in a given discipline and understand the interconnectedness of knowledge. Understanding the way learners view knowledge (epistemology) and the way they construct it has implications for critical thinking abilities and ways of enhancing it. We have first to understand the learners' beliefs about what constitutes knowledge and the process of knowing if we want to find answers to the question of how some individuals at the same level, the same age could face the same situation and perceive it differently, all claiming knowledge of the genuineness of a given conclusion drawn from that perception. This conundrum is perceived as being the impetus for studying epistemological belief.

When dealing with the term *beliefs*, a wide spectrum of definitions is denoted. However, the one definition concerned with critical thinking and its developmental nature is that designated personal epistemologies. They represent the set of personal beliefs relevant to knowledge and knowing. They are also defined as socially shared intuitions about the nature of knowledge and the nature of learning and involve knowledge about the limits of knowing, the certainty of knowing, and criteria of knowing (Jehng, Johnson, and Anderson, 1993, p. 24). The abovementioned personal epistemologies or epistemological beliefs have a developmental nature in the sense that they progress over time. This sequential nature goes hand in glove with the progressive nature of critical thinking skills and dispositions and explains to some extent why university students lack the critical thinking skills intrinsic to such a level.

Epistemological development has been the subject of many research over the last decades. These studies point out that there is a developmental sequence in the epistemological beliefs of the learner which influences the way he/she functions. Consequently, the learner's capacity to think critically is significantly affected.

According to Gazzaniga, Ivry, & Mangun, 2002; Handley, Capon, Beveridge, Dennis, & Evans 2004, the learning process and outcomes build and alter the learner's memories. These memories then shape the beliefs held either implicitly or explicitly by the learner. Accordingly, beliefs serve as filters through which received information is processed, stored and used to either modify and strengthen currently held beliefs, or are rejected being considered as incongruous to the already existing knowledge and beliefs (Schreiber & Shinn, 2003). Notwithstanding the nature of the subject, a learner's prior beliefs determine the ability of that learner to acquire new knowledge. Hence, understanding the process through which beliefs are altered is intrinsic for understanding how learning occurs (Kuhn, 2000, 2001). Having a handle on ways in which to adjust beliefs is vital for developing painstakingly careful and accurate theory of learning. To clarify more the sequential nature of personal epistemologies, we devote the following section to some of the most prominent studies on epistemological development.

Developmental Epistemology: Description of Some of the Main Studies

William Perry's scheme of intellectual and ethical development (1970) is one of the best known studies done about epistemic development and a major reference in this area of research. He proffers that college students "journey" through nine progressive positions from least to most sophisticate in terms of their attitudes towards knowledge. He divided the nine positions into four major dimensions. The first stage is Dualism or Received Knowledge and spoon feeding. At this stage learners in higher education interpret the world in an absolutist way of thinking and knowledge is perceived as largely indisputable as it is provided by the teachers: the experts. It is a matter of absorption of knowledge in a dualistic way that is to say either right or wrong, them and us, black or white. Dualism includes two dimensions. The first is basic dualism position where there is a right or a wrong answer to questions or problems and the teacher is an authority figure who holds the knowledge and knows the right and the wrong answer and the students learn the right answer. The second position is full dualism where disagreement of views and facts takes place and learners start to realize that the expert's views and answers are obscure; hence, they learn the right solution or answer and discard the others. The second stage is Multiplicity or Subjective Knowledge. At this stage there are several conflicting answers, and multiplicity of opinions is accepted and recognized as legitimate. Therefore, students start to have some self confidence and trust their "inner voices" and not the external Authority. Earlier in this stage comes a position where students start to trust self and progress to a stage where they learn how to find right answers and solutions. Later on students discard the teacher's answers as being right and start understanding that everyone has a right to their own opinion and that they are expected to have more personal and independent thinking. The third stage is relativism or Procedural Knowledge where knowledge is seen as being relative to a frame of reference and it is derived from coherent sources, evidence, logic, systems, and patterns allowing for comparison. Students learn to evaluate answers and solutions and then start to make decisions. The last stage is Commitment or Constructed Knowledge where the learners progress to a state in which they integrate knowledge learned from others with personal experience and reflection. They express their stance towards any given issue. They also discover responsibility of choice, commitment towards it, believe in their own values, and at the same time are open to consider other views and

reconsider their own. Correspondingly, the role of the teacher at this stage is seen as that of a facilitator within the process of knowledge development. Perry's study was conducted on male students. Belenky, Clinchy, Goldberger and Tarule (1986), however, advocate that females might enroll in a different process of developing their conceptions of knowledge. According to them, the way women think about education and learning shapes their self perception. Belenky et al identified five epistemological perspectives. These are related to a larger breadth of epistemological development. The first of these stages is the silent stage in which one blindly follows authority, sticks to stereotypes and finds it difficult to define oneself and have a voice of one's own. Received knowledge, a stage where one listens to voices of others subjectively, then comes a stage where one listens to oneself in a way that serves their senses of obligation to follow others' view. Knowledge is conceived of in a subjective manner. Procedural knowledge, an epistemological phase where the process of connecting knowledge starts to take place as the notion of truth, becomes personal, particular and grounded in first hand experience. Women tend to seek truth through listening, empathizing, and taking impersonal stances towards information. Subsequently, they progress to a stage which Belenky called separate knowing in which feelings are completely excluded while making meaning and this process relies strictly on reason. The final stage is constructed knowledge a more sophisticated position where knowledge is perceived as being constructed and related to a context. There is more integration to own opinion and a strong emergence of sense of self. Similarly, Baxter Magolda (1992) was originally interested in gender issues. She argues the possibility of making a distinction between the types of thinking of men and women. Her study included a mixed population of college students. She highlights four main perspectives of knowledge and reasoning, similar to the previously discussed studies, in which she displays a similar sequential growth. Baxter Magolda's study is well placed to illustrate the developmental nature of conception of knowledge relevant to higher education. Magolda's first stage is absolutist knowledge corresponding to Perry's dualist stage in which knowledge is seen as "absolute" and the process of learning mainly about absorbing the knowledge of the expert: the teacher. Another stage is transitional knowing, in which learners start to doubt the certainty of knowledge and progress to a position where they avow that there exists certainty and partial uncertainty which is subjective. The third phase is independent knowing where learners start to be aware of the fact that knowledge is uncertain and that there is acceptance of different opinions and beliefs. In a more developed stage _ that of contextual knowing_ knowledge is perceived as constructed and comprehended within the framework of effective evidence and context fitting.

We have, therefore, three studies described in this section which provides evidence that epistemological development is occurring in stages that follow a given continuum.

The Intersection of two Dimensions: Critical Thinking and Epistemological Development

Significant changes on the quality of the thinking process and thoughts produced occur during the period of higher education. As mentioned in previous sections, a learner's prior beliefs determine the ability of that learner to acquire new knowledge. This is well illustrated in some researchers' attempts to investigate the relationship between epistemological development and learning as an initial step to uncover some of the odds enveloping critical thinking and epistemological development. In his study, Rayan (1994), and based on Perry's findings, suggests that one's epistemological beliefs shape the psychological context in which the learner builds up standards to assess and analyze the extent to which knowledge has been extracted from

a given text. He assumes that the degree of knowledge extracted from a text is closely dependent on this learner's stage of epistemological beliefs. The latter answers a range of questions concerned with the perception of knowledge in the classroom. Perry's publication, 'Different worlds in the same classroom' (1985) advocates that the same teaching materials and the same teaching methods could be perceived differently by individuals in the same classroom but who are at different stages of epistemological development. It has been demonstrated that analysis of an individual's personal epistemology and its developmental sequence predicts the ability of that individual to employ high order thinking in both personal and academic situations. In other words, the more mature or complex the beliefs are the more likely it is for higher order thinking to be employed or to occur. If we go back to the question of why most of our University students do not display the necessary critical thinking skills and dispositions, we would merely say that it is in part due to the fact that they are not yet able to conceive of knowledge in a way that allows them to fully engage in the critical thinking process. Still, I have concerns about the way learners deal with material of teaching which assumes they are at a more sophisticated stage of epistemological development than is their case. The teaching material might be a lecture which presents various theories or even a modeling of critical thinking. Learners who are still absolutists will be disturbed and their beliefs will be shackled by the wide span of alternatives presented. One way to manage this situation is for them to believe that they are being trained by the teacher to think by generating alternatives. However, the question to be asked at this point is: does the teacher know which is the right theory? Another way might be to learn the content of the material in an absolutist way, that is to say, memorizing for the sake of examination or dissertations, but then, would it be appropriate for the claims of enhancing critical thinking?

A better understanding of how one's personal epistemology matures can help educators develop more effective methods to facilitate learning and lead to a more full understanding of epistemologically states of minds.

Pedagogical Practices Supporting the Enhancement of Critical Thinking and Epistemological Development

The enhancement of epistemological development and critical thinking occupies a major place in pedagogical practices within curriculum design. Baxter Magolda investigated the further development of both concepts in some of the students' sample she assisted through university years. She was able to point out some of the factors contributing to further development. Magolda found that due to its nature, postgraduate education puts students in contextual conceptions of knowledge and so did professional life situations in the sense that it confronts them with real life situations which held them responsible for self decision making. Still, fostering critical thinking and enhancing epistemological development in a group of students requires careful management. They should also be provided with examples of critical thinking to be able to have a handle on the concept. Reflective approaches should be fostered in either oral or written communication to promote reflection. Teachers should select material that displays ambiguity and the possibility of multiple perspectives in order to stimulate the thinking of students like fiction and poetry (Kloss,1994) but still within the framework of epistemological stages.

Conclusion

According to the above mentioned studies, the conclusion to be drawn at this point is that there is a qualitative change that occurs in learners' conception of knowledge and this is essential for the process of learning at the higher education stage. Fully developed critical thinking involves analyzing arguments, making inferences using inductive or deductive reasoning, judging or evaluating, and making decisions or solving problems. It also involves the recognition that knowledge is constructed. Hence, fully developed critical thinking cannot logically be possible until the learner has reached the developmental stage where he/she recognizes that knowledge has a constructed nature and that he/she can take a relativist stance of it.

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