



Overcoming Barriers To Teaching Critical Thinking

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Abstract

Critical thinking (CT) has long been a goal of modern education, and its importance has been reiterated in a wide range of documents. Despite the consensus of scholars and educators on the significance of nurturing students to become critical thinkers, teaching for CT has not been a simple task because there are competing definitions and practices and many barriers to its implementation [1], [2], [3]. In this article, some definitions and components of CT are reviewed. Then, barriers to the implementation of CT are discussed. The difficulties involved in CT education are multifold including vague conceptualization of CT, lack of organized sequence in teaching CT, threatening nature of CT practice, lack of proper assessment [1], [4], [5], [6], and lack of teacher training. Finally, several approaches are suggested to overcome these barriers such as specific teacher training courses, infusion approach, continued practice, using critical challenges, considering different levels of CT, and encouraging a positive attitude toward CT. When teachers and students are aligned in pursuit of critical thinking, cognitive magic is possible and this would have a facilitative role in the learning environment.

1. Introduction

Critical thinking has a long history. Although since Antiquity it underpins many philosophical investigations, an articulated conceptualization of critical thinking emerges only at the end of the nineteenth century when Charles Saunders Pierce developed his early theory of 'pragmatism' and late theory of 'pragmaticism': in his efforts to describe *the scientific method* he identified Logic as the central component of critical thinking [7]. By doing so, Pierce stressed the bonds between theory and practice through reflection and action upon the world to change it, and by such stressed clear frontiers between his view of critical thinking and other forms of thinking. Since then, many thinkers have reflected on the nature of critical thinking but the 'logical' residues proposed by Pierce are still object to fierce deliberation.

2. Definitions of critical thinking

Although most educators probably agree that critical thinking is an important cognitive skill that schools aim to develop in students, there appears to be a lack of agreement regarding a clear and operational definition of critical thinking [8], [9], [10], [11]. At a broader level, critical thinking has been considered alongside creative thinking as related subordinate constructs within the broader level category of productive thinking, which is interpreted as comparable to the upper levels of Bloom's taxonomy, namely analysis, synthesis and evaluation [12].

Based on a review of 25 prior definitions, a summary definition of critical thinking abilities has been provided [8],

"...a process of evaluating evidence for certain claims, determining whether presented conclusions logically follow from the evidence, and considering alternative explanations. Critical thinkers exhibit open-mindedness; tolerance of ambiguity; and a skeptical, questioning attitude." (p. 256).

Although there are several definitions of critical thinking, the common purpose uniting them is the need to prepare citizens to understand and evaluate complex arguments about current issues. Robert Ennis



(1987) was one of the first researchers to define critical thinking as “reasonable, reflective thinking that is focused on deciding what to believe or do” (p.10) [13].

In 1990, a group of 30 experts convened in a Delphi study and determined that critical thinking is a process divided into skills and dispositions (American Psychological Association, 1990). This is the most common definition of critical thinking to date, and was used in the creation and assessment of the undergraduate course. The six skills defined by the Delphi study include:

- Interpretation: The ability to understand information.
- Analysis: The ability to identify the main arguments.
- Evaluation: The ability to judge whether this argument is credible and valid based on the logic and evidence given.
- Inference: The ability to decide what to believe based on solid logic, and to understand the consequences of this decision.
- Explanation: The ability to communicate the process of reasoning to others.
- Self-Regulation: The ability to monitor one’s own thinking and correct flaws in logic.
- Seven dispositional elements were also identified by this panel of experts, and include:
 - Inquisitiveness: Concern to become and remain well-informed.
 - Truth-seeking: Willingness to face one’s own biases and reconsider views.
 - Critical thinking self-confidence: Trust in one’s ability to reason.
 - Open-mindedness: Flexibility in considering alternative viewpoints.
 - Systematicity: Systematic thinking that follows a linear process.
 - Analyticity: The willingness to pick apart your own and others’ logic.
 - Cognitive Maturity: Being persistent in seeking the truth.

The Delphi study identified measurable skills and dispositions, which aided in designing assessment instruments. However, the Delphi study explicitly excludes the role of ethics, or “right vs. wrong” decision making. This characterization has been criticized as an urge for a moral element to be added to critical thinking [14], [15].

3. Elements of critical thinking

Several popular definitions of critical thinking contain the following five common elements [12]: identifying central issues and assumptions, making correct inferences from data, deducing conclusions from data provided, interpreting whether conclusions are warranted, and evaluating evidence or authority. While this touches only briefly on the concept of critical thinking, it seems that many of these elements could be likened to higher order levels of thinking, which attempt to explain “how” or “why”, as compared to lower order knowledge levels, which focus simply on “what” [12].

4. Barriers to teaching critical thinking

4.1. Lack of proper assessment

The difficulties involved in critical thinking education are multifold. One of the obstacles is lacking proper assessment that effectively and objectively measures students’ strength and weaknesses in critical thinking [4], [5], [6].

4.2. Vague conceptualization of CT

As mentioned earlier, there are competing definitions of critical thinking. However, there is no consensus among scholars about what critical thinking means, is it measurable, if yes, how and to what extent. These areas are still vague and teachers are still in need of clear and tangible definition of critical thinking.

4.3. Lack of organized sequence in teaching CT



One of the barriers that teachers confront in teaching critical thinking is that there does not exist an organized approach for teaching critical thinking. There is no magical formula for developing critical thinking [16]. The variety of techniques presented in the special issue of *Teaching of Psychology* on teaching critical thinking testifies to this point.

4.4. Threatening nature of CT practice

It has been argued that critical thinking threatens the calm of assumed amiability that governs much of our interactions with one another [17]. Very rare is the individual who is eager to have his or her reasoning placed under the bright light of critical questions.

4.5. Lack of teacher training

Unless teachers are familiar with different components of critical thinking and approaches to teach it, they will not be able to equip students with this precious ability. There is a lack of training on the part of the teachers as well.

5. Overcoming barriers

5.1. Assessing CT

Both the multiple-choice and open-ended tests of critical thinking have their respective limitations [1]. The current trend is to combine the two response formats into one test. Critical thinking tests utilizing a single multiple-choice response format measures only recognition or level of knowledge, and do not adequately capture the dispositional characteristics of test-takers [1]. Multiple choice response format does not reveal test-takers' underlying reasoning for choosing a particular answer, nor does it reflect test-takers' ability to think critically under unprompted situations. Whereas measurement that allows for responses in both multiple-choice and open-ended format makes it possible to assess individuals' spontaneous application of thinking skills on top of their ability to recognize a correct response. Assessment consists of multi-response format should be pursued for effective evaluation of students' critical thinking performance.

5.2. Specific teacher training courses

It is suggested that specific courses be designed for teachers to equip them with different techniques, books and materials on teaching critical thinking.

Langer (1997) is one of the researchers who is concerned with teachers presenting content 'mindfully'. Langer's view, like some of the others outlined, is that teachers should learn to teach from multiple perspectives and focus on linkages and similarities of content [18].

5.3. Infusion approach

One way to focus on critical thinking is to teach it as a separate course. The disadvantage of using an existing critical thinking program or creating a separate critical thinking course is that what is learned in the course might not transfer to the rest of the curriculum [2].

Another favored approach is infusion, in which critical thinking is incorporated into the existing subject matter in different ways [19]. One disadvantage of the infusion method is that the teaching of critical thinking may lack any sensible sequence or coherence-a little fallacy recognition is taught here, a little concept analysis there. The separate course approach requires teachers who are well versed in critical thinking; it does not necessarily require all teachers in a school be experts. The infusion approach requires all teachers to be well versed in and disposed toward critical thinking.

5.4. Continued practice

Practice makes perfect. Consistency is of significant importance in the development of critical thinking. It is recommended that teacher persist on asking students to think critically and to use different levels of critical thinking. Student when they get expertise in thinking critically will continue practicing it, too.

5.5. Using critical challenges



A recent approach to the teaching of critical thinking involves using critical challenges [19]. The concept rejects the skills, the problem solving, and the mental process views of critical thinking. Instead the focus is on helping students acquire the tools needed to resolve problematic situations about what to believe or what to do.

5.6. Encouraging a positive attitude toward CT

Critical thinking practice can have magical effects on the students as well as teachers. When teachers and students are aligned in pursuit of improved critical thinking, cognitive magic is possible [17]. Reasoning improves without the encumbrance of the automatic animosity that can ruin the atmosphere for prospective critical thinking. Each attribute of a critical thinking classroom discussed herein plays a facilitative role in the fragile potential for a broad community of critical thinkers.

However, their function is linked to the willingness of both teacher and student to engage in the hard work necessary to realize that exciting aspiration.

5.7. Considering different levels of CT

Six levels of critical thinking has been proposed: level 1: unilateral descriptions; level 2: simplistic alternatives/ argument; level 3: basic analysis; level 4: theoretical inference; level 5: empirical inference; level 6: merging values with analysis [20]. Teachers need to be aware that students cannot begin to think critically from the higher levels. However, they are in need to be guided through levels of critical thinking.

6. Conclusion

Teaching critical thinking is not an easy task. There are various problems in achieving this goal. Among the barriers are ambiguous definitions of CT, lack of organized sequence in teaching CT, threatening nature of CT practice, lack of proper assessment, and lack of teacher training. However, there are solutions to these problems. Some of them are providing teachers with specific training courses, infusion approach, continued practice, using critical challenges, considering different levels of CT, and encouraging a positive attitude toward CT. Critical thinking, if implemented in every occasion, would influence the life of people greatly.

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