TEACHING CRITICAL THINKING SKILLS

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ABSTRACT

Critical Thinking (CT) has been increasingly recognized as a vital skill for students, serving as a key indicator of the quality of their learning. To cultivate effective critical thinkers, it is essential to integrate CT into the curriculum and teaching methods across all grade levels. This research presents a systematic review of existing literature on the instruction of CT skills, culminating in a conceptual framework that outlines four primary debates among researchers in the field. One significant debate centers on whether technology can enhance students' CT skills. The findings from current practices suggest that teaching methods often prioritize subject matter over the development of CT. This indicates a notable gap in the instruction of CT skills, particularly regarding innovative teaching strategies and the incorporation of new technologies. Furthermore, the research underscores the necessity for additional studies aimed at exploring novel approaches to teaching CT skills effectively. In summary, while there is a growing recognition of the importance of CT in education, there remains a critical need for more innovative and technology-driven methods to effectively teach these skills in the classroom.

Аннотация: Критическое мышление (КМ) всё больше признаётся как важнейший навык для студентов, являясь ключевым показателем качества их обучения. Для формирования эффективных критически мыслящих учеников необходимо интегрировать КМ в учебные программы и методы преподавания на всех уровнях образования. В данном исследовании представлен систематический обзор существующей литературы по обучению навыкам КМ, завершающийся концептуальной моделью, выделяющей четыре основные дискуссии среди исследователей в данной области. Один из значительных

споров касается того, может ли технология способствовать развитию навыков КМ у студентов. Результаты текущих практик показывают, что методы преподавания часто делают упор на содержание предмета в ущерб развитию критического мышления. Это указывает на существенный пробел в обучении навыкам КМ, особенно в отношении инновационных педагогических стратегий и использования новых технологий. Кроме того, исследование подчёркивает необходимость дальнейших научных изысканий, направленных на изучение новых подходов к эффективному обучению КМ. В заключение, хотя растёт осознание важности КМ в образовании, по-прежнему существует острая необходимость в более инновационных и технологически ориентированных методах его преподавания в учебных заведениях.

Annotatsiya: Tanqidiy fikrlash (TF) talabalarning o‘qish sifati uchun muhim ko‘nikma sifatida tobora e’tirof etilmoqda. Samarali tanqidiy fikrlovchilarni shakllantirish uchun TF ni o‘quv dasturiga va o‘qitish usullariga barcha sinf darajalarida integratsiya qilish zarur. Ushbu tadqiqot TF ko‘nikmalarini o‘qitish bo‘yicha mavjud adabiyotlarning tizimli tahlilini taqdim etib, sohadagi tadqiqotchilar o‘rtasidagi to‘rtta asosiy munozarani o‘z ichiga olgan konseptual doirani ishlab chiqadi. Muhim bahslardan biri texnologiya talabalarining TF ko‘nikmalarini oshirishga yordam bera oladimi, degan masalaga qaratilgan. Amaldagi tajribalar shuni ko‘rsatadiki, o‘qitish usullari ko‘pincha fan mazmuniga TF ni rivojlantirishdan ko‘ra ko‘proq e’tibor qaratadi. Bu esa, ayniqsa, innovatsion o‘qitish strategiyalari va yangi texnologiyalarni tatbiq etish nuqtai nazaridan, TF ko‘nikmalarini o‘qitishda sezilarli bo‘shliq mavjudligini ko‘rsatadi. Bundan tashqari, tadqiqot TF ko‘nikmalarini samarali o‘rgatishning yangi yondashuvlarini o‘rganishga qaratilgan qo‘shimcha tadqiqotlarga ehtiyoj borligini ta’kidlaydi. Xulosa qilib aytganda, ta’limda TF ning muhimligi tobora e’tirof etilayotgan bo‘lsa-da, ushbu ko‘nikmalarni

samarali o‘rgatish uchun yanada innovatsion va texnologiyaga asoslangan usullarga ehtiyoj mavjud.

KEYWORDS: Critical thinking skills, teaching critical thinking, assisting critical thinking, technology to promote critical thinking, motivation, development, technology

INTRODUCTION

While there is a consensus on the significance of Critical Thinking (CT) skills in education, there is less clarity regarding its definition (Alfadhli 2008)[1]. The initial in-depth discussions and analyses of CT were initiated by John Dewey (1916, cited in Kuhn 1999), who explored the role of CT skills within the educational context. Dewey viewed CT as a process that starts with identifying a problem and concludes with finding a solution and self-reflection. Bean (2011, p. 3) [2]further emphasizes this idea by suggesting that such a problem should "spark students' inherent curiosity and encourage both learning and critical thinking."

Many scholars share Dewey’s perspective that Critical Thinking (CT) starts with students engaging with a problem. For instance, Kurfiss (1988, p. 2) [3]describes CT as "an investigation aimed at exploring a situation, phenomenon, question, or problem to develop a hypothesis or conclusion that synthesizes all available information and can be convincingly justified." Additionally, Pithers and Soden (2000, p. 238)[4] assert that "Critical thinking entails the ability to identify significant questions, pursue those questions through independent inquiry and examination of knowledge, recognize that knowledge can be debated, and present evidence to support one’s claims." This indicates that CT can be understood as a personal cognitive process that begins with the goal of solving a problem or answering a question by evaluating various options and selecting the most appropriate and logical one. From the perspective of cognitive psychology, Halpren (1997, p. 4)[5]

highlights that Critical Thinking (CT) involves "the use of cognitive skills or strategies that enhance the likelihood of achieving a favorable outcome. It refers to thinking that is intentional, reasoned, and directed toward a goal." Halpren further explains that "Critical thinking is purposeful, reasoned, and goal-oriented. It encompasses the type of thinking necessary for solving problems, drawing inferences, assessing probabilities, and making decisions. Critical thinkers apply these skills appropriately, often without external prompts, and typically with deliberate intent across various contexts." In other words, when individuals engage in critical thinking, they assess the results of their thought processes, evaluate the quality of their decisions, and determine how effectively they have resolved a problem.

Literature review.

Paul (1992, p. 1) [6]defines Critical Thinking (CT) as "the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information obtained from or generated by observation, experience, reflection, reasoning, or communication as a basis for belief and action." Paul and Elder (2006, p. 4) further elaborate on this definition by describing CT as "the art of analyzing and evaluating thinking with the aim of improving it." These definitions suggest that CT encompasses the ability to utilize cognitive skills such as analysis, application, and evaluation in the thinking process. From the review of CT definitions, it is crucial to recognize that no single definition of CT is universally applicable across all disciplines and educational levels. While researchers generally concur that CT is a high-level thinking skill, the specific skills to be developed are influenced by teachers' experiences and objectives, as well as students' needs (Condon & Kelly-Riley 2004)[7]. This study aims to provide a systematic review of the literature on teaching CT skills, focusing on published articles in academic journals and dissertations in this area. The remainder of the

article is structured as follows: first, it outlines the methodology used to identify and select studies for inclusion in this review. Next, it presents the conceptual framework of the study and discusses the literature in light of the four main debates among researchers in the field of teaching CT. Finally, it highlights the limitations of existing studies on teaching CT skills and offers suggestions for future research.

Research Methodology

A systematic review of the literature was carried out to analyze and discuss the topic from both theoretical and conceptual perspectives. This study adhered to the British Educational Research Association's guidelines for systematic reviews (Cohen, Manion, & Morrison, 2011). The process began with an initial search for relevant sources using Google Scholar and various electronic databases across multiple academic disciplines, including education and psychology, to identify articles related to critical thinking (CT). A range of search terms was employed, incorporating different variations and combinations of phrases such as 'critical thinking skills,' 'teaching critical thinking skills,' 'higher-order thinking skills,' 'innovative methods for teaching critical thinking,' and 'critical thinking across the curriculum.' Following this, the abstracts of the retrieved articles were reviewed to refine the selection based on five key themes: teaching CT skills, assessing CT skills, instructional strategies for CT, CT skills taxonomy, and the integration of technology in teaching CT skills.

Research analysis and results

The review revealed that most researchers concurred that critical thinking (CT) involves the application of cognitive skills or strategies and that students can develop proficiency in CT through instruction and guided practice (Fisher, 1998; Halpern, 1999; Pithers & Soden, 2000). Gelder (2005) suggested that CT skills can be taught

similarly to other cognitive abilities. He argued that becoming a critical thinker requires understanding CT theories and related concepts, practicing these skills in real-life contexts, and subsequently applying them to different situations. While researchers generally agreed on the teachability and learnability of CT skills (Facione, 1990; Halpern, 1999; Kuhn, 1999; Pithers & Soden, 2000; Fuiks & Clark, 2002), there were differing opinions regarding specific aspects of CT instruction and learning.

Motivation

Critical thinking (CT) is closely linked to motivation, with many researchers recognizing that it encompasses both skills (or abilities) and dispositions. The disposition to think critically is defined as the "consistent internal motivation to engage problems and make decisions by using critical thinking" (Facione, 2000, p. 65)[8]. This perspective suggests that student motivation is a necessary prerequisite for the development of critical thinking skills and abilities. Halonen (1995) [9]further emphasizes that an individual's propensity or disposition to engage in higher-order thinking is related to their motivation. Halpern (1998) identifies effort and persistence as two key dispositions that support critical thinking, while Paul (1992, p. 13) highlights perseverance as one of the essential "traits of mind" that characterize a critical thinker. This indicates that, similar to metacognition, motivation serves as a supportive condition for critical thinking; unmotivated individuals are less likely to demonstrate critical thinking behaviors. Conversely, some researchers in the field of motivation argue that the relationship may be bidirectional. Specifically, research suggests that challenging tasks, particularly those that require higher-order thinking skills, can be more motivating for students than simpler tasks that rely on rote memorization or the application of predetermined algorithms (Turner, 1995)[10]. This implies that fostering an environment that encourages critical thinking may also

enhance student motivation, creating a positive feedback loop that benefits both areas.

Development of Critical Thinking

This section provides a comprehensive review of the empirical literature concerning the critical thinking capacities of the average person, followed by an exploration of critical thinking development in young children. Lastly, it examines a theoretical framework that seeks to understand how critical thinking may manifest and evolve over time.

Critical Thinking Capacities of the Average Person

The literature indicates that the critical thinking abilities of the average individual can vary significantly based on factors such as education, experience, and cognitive development. Studies have shown that while many people possess basic critical thinking skills, there is often a gap in higher-order thinking abilities, which are essential for complex problem-solving and decision-making. Various assessments and surveys have been conducted to gauge the critical thinking skills of different populations, revealing insights into common strengths and weaknesses.

Critical Thinking in Young Children

Research into critical thinking in young children highlights the early emergence of critical thinking skills and the potential for these skills to be nurtured through appropriate educational practices. Studies suggest that even at a young age, children can engage in reasoning, questioning, and problem-solving activities. The role of play, social interactions, and guided instruction is crucial in fostering these skills. Educators are encouraged to create environments that stimulate curiosity and critical inquiry among young learners.

Theoretical Approach to Understanding Critical Thinking Development

One theoretical framework for understanding the development of critical thinking over time is the developmental model, which posits that critical thinking evolves through distinct stages. This model suggests that as individuals progress through various cognitive and educational stages, their ability to think critically becomes more sophisticated. Factors such as age, cognitive maturity, and exposure to diverse perspectives contribute to this development. The framework emphasizes the importance of continuous learning and practice in enhancing critical thinking abilities throughout a person's life.

Using technology without any instruction

In this approach, technology serves merely as a tool for accomplishing specific tasks, without offering any instructional guidance on critical thinking (CT) concepts and skills (Astleitner 2002)[11]. For instance, a teacher might use PowerPoint to enhance a lecture, a student might utilize Word to complete assignments, or e-mail might be employed for communication between students and teachers. In this context, technology does not provide any teaching or information regarding CT skills or their application; it simply facilitates the educational process. Scarce (1997)[12] explored this method by assessing the effectiveness of e-mail for exchanging assignments and fostering communication among students to enhance their CT skills. His research was conducted over a 10-week sociology course, where students were tasked with reading and responding to a book chosen specifically for this assignment. He discovered that using e-mail as a communication medium, without any additional instructional support, did not lead to improvements in CT compared to traditional classroom methods. Similarly, Santos and de Oliveira reported non-significant findings when the Internet was used solely for content delivery.

Conclusion

The existing literature has established a clear understanding of critical thinking (CT) and emphasizes the significance of teaching CT skills. However, a review of the literature reveals four main points of contention among researchers in the field of CT education. First, there is disagreement regarding the appropriate context for teaching CT. Some researchers advocate for teaching CT as a distinct set of skills within dedicated courses, while others believe it should be integrated into general courses alongside other subjects. Each approach has its advantages and disadvantages, and the choice of where to teach CT should depend on the specific course and its objectives. Second, while there is consensus that CT is a cognitive process involving a specific set of skills, there is considerable debate over which skills are essential for developing critical thinking. Although researchers may differ on the exact skills that define a critical thinker, the literature generally acknowledges that CT encompasses a variety of mental processes and skills, including interpretation, analysis, evaluation, inference, explanation, and self-regulation. Third, it is crucial for educators to determine effective methods for teaching and assessing CT skills. A review of teaching strategies for CT reveals a range of methods and activities that can enhance students' critical thinking abilities. Additionally, there is often confusion between teaching strategies and assessment strategies, as many people mistakenly believe they are the same. However, it is important to recognize the distinctions between them. Effectively assessing students' CT skills poses a significant challenge in education, raising concerns about whether teachers can accurately evaluate a student's level of critical thinking during the assessment process. Ultimately, assessment remains a critical issue in developing instructional activities aimed at improving students' CT skills.

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