Critical Thinking Practices in the 21st Century: An Avenue for Pre-Service Teacher Education Programme

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Abstract:

Critical thinking, which is one of the crucial life skills, is the pathway to developing a critical mind. Critical thinking not only helps students to adjust to complex situations and find the best possible way to cope with the problem, but it also develops a truth-seeking attitude among students to identify what is right and wrong information, what to believe and what is not and also helps them make the right decisions and judgments based on relevant evidence. Critical Thinking should be given importance at any stage of education, such as school education, higher education, and, most importantly, teacher education. Teacher education plays a pivotal role in forming and developing teachers who are the main stakeholders of society. In teacher education, both pre-service and in-service education are an integral process and inseparable. In-service teachers are the ones who are already in the system, while pre-service teachers are the ones who are getting the professional training to be prepared for the next generation. Therefore, integrating critical thinking skills in pre-service teacher education is a prerequisite. Hence, the present paper mentions the importance of fostering critical thinking skills among pre-service teachers as they are the ones who inculcate these skills among students. This paper also highlights different ways and strategies to promote critical thinking skills among pre-service teachers.

Keywords: Critical Thinking, Pre-service Teachers, Pedagogies, Classroom Practices, and Strategies.

Introduction:

The National Education Policy 2020 envisions broad development in intellectual, socio-emotional, moral, and psychomotor aspects to ensure the holistic development of students in today's learning era. It aims to make the education system an enabling learning environment, where students can enjoy learning, utilise their full potential, and develop skills for real-life circumstances. In this context, a strong education system is essential, as it can help society achieve its goals and bring about changes by enabling individuals to compete and adapt to the nation's continuous transformations

(Fikriyati et al., 2022). Through education, students can meet the needs and requirements of a dynamic society. It can empower students, foster holistic development, and make them capable of dealing with different situations by equipping them with 21st-century life skills. Moreover, on the one hand, the world is progressing rapidly in terms of technology and other aspects of life; on the other hand, society is also witnessing fragmented misinformation, complexity in social grounds, moral and ethical issues, and digital manipulation. Therefore, only foundational, textual, and intellectual knowledge is not sufficient, but the inculcation of life skills into the education system is a prerequisite these days (Saleh, 2019). Certainly, when it comes to the overall development of students, it starts by nurturing their thinking process, which gradually leads students to cultivate critical thinking skills. Critical thinking, as one of the most required 21st-century life skills, is essential in this ever-changing world (Al-Kindi & Al-Mekhlafi, 2017; Veliz, 2021; Dalim et al., 2022; Ghalmat et al., 2022; Essahlih et al., 2023; Ma et al., 2023). It is the primary goal of today's education system to nurture students by cultivating critical thinking (Yazdankhan, 2019; Zainudin et al., 2019; Bachtiar et al., 2023) so that they can solve their problems and cope with the evolving society (Janssen et al., 2019). In India, a recent educational policy document, *The National Education Policy (NEP) 2020,* has stressed developing higher-order thinking skills and minutely critical thinking skills among students. This emphasis on critical thinking is not only limited to the Indian context, but it has become a worldwide consideration. UNESCO highlights critical thinking as a 21st-century competency to achieve sustainable development goals (Andreucci-Annunziata et al., 2023). Furthermore, the importance and promotion of critical thinking skills have been a priority of many nations' educational policies (Dessingué & Wagner, 2025). By enhancing these skills, students not only perform better in academics, but they can also tackle pragmatic obstacles in life. Empowering students with a critical and practical mind will bring about a successful and internationally competitive nation. Thus, critical thinking practices in the education system are not only pedagogical reforms in the classroom, but it's a national as well as global enterprise to build a competent society. In this context, a teacher education program is one where pre-service teacher is equipped with knowledge and skills to deliver quality learning experiences to the students in the classroom (Carter et al., 2023). Teachers are expected to provide an explicit teaching environment, which further helps students in the acquisition of critical thinking skills (Janssen et al., 2019; Li, 2023). They must strengthen students to think critically (Khalil & Hellalet, 2024). Therefore, teachers are supposed to have critical thinking abilities first before imparting these to their students in the classroom (Suratmi & Sopandi, 2022; Kuloğlu & Karabekmez, 2022). If teachers are furnished with critical thinking competencies, they will be in a stronger position to make their students critical thinkers, who can have the ability to analyse any

situation, generate reasoning, and problem-solving, make proper inferences, and decisions, as well as make appropriate judgments based on real evidence (Prayogi et al., 2018). Therefore, it is a prime duty for teachers to foster these skills among their students (Zainudin et al., 2019). This brings attention to the crucial place of teacher education programs in cultivating critical thinking skills among students, which, in turn, lays the foundation for a progressive and developed society. However, the literature study reveals that teacher education programs still have a lack of attention for critical thinking development among trainees. Fikriyati et al. (2022) found a low level of critical thinking skills among pre-service teachers. Lorencová et al. (2019) and Khalid et al. (2021) stated in their papers that pre-service teachers possess inadequate knowledge about critical thinking and face infrastructural shortages. Hence, teacher trainees should be provided with a conducive environment and properly trained with the necessary skills, as they are the ones who will transfer knowledge and skills to the next generation (Lorencová et al., 2019; Valtonen et al., 2021). Therefore, the need to prepare future teachers to enhance their students' critical thinking skills is the core area to look out for (Carter et al., 2023).

Critical Thinking as A Core Life Skill:

Critical thinking has been defined by different philosophers and authors over time. There is no consensus meaning of critical thinking (Tan, 2020). According to Facione (1990) "*We understand critical thinking to be purposeful, self-regulatory judgement which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgement is based.*" Ennis (2016) defined critical thinking as reasonable and reflective thinking emphasises what to do and believe. These definitions stand for the clear meaning of critical thinking. Critical thinking is a complex cognitive process that involves different skills. It is the ability to analyse any information, interpret it, evaluate and judge what is right and wrong based on proper evidence. Moreover, it is the competency to make reasoned decisions. As a 21st-century life skill, the need for critical thinking skills is essential as

1) It helps not only in academic excellence but helps in maintaining societal balance,

2) It helps to figure out daily life complexities and adjust to new environments,

3) It promotes the independent thinking of the learners,

4) It helps students to make better choices in their careers as well as in life,

5) It helps students to think out of the box,

6) It helps to understand the diverse points of view that develop the affective domain,

7) It enhances the metacognitive skills of students,

8) It helps students to differentiate between right and wrong, which leads to moral development,

9) It helps students to become logically minded, and not the least

10) It overall promotes the holistic development of students.

Different Perspectives of Critical Thinking:

In literature, critical thinking has been seen not just from educational aspects, but also it has been defined from philosophical and psychological aspects (Sternberg, 1986; Lia, 2011, as cited in O'Reilly et al., 2022; Ferdoush & Jahan, 2024).

Philosophical Perspective of Critical Thinking:

From a philosophical aspect, critical thinking focuses on the quality of thinking (Lewis & Smith, 1993, as cited in Huang & Sang, 2023). It deals with the logical and rational instances to make proper decisions and judgments. It involves questioning and argumentation behaviour to believe any information as valid, which is traced in the philosophy of Socrates.

Psychological Perspective of Critical Thinking:

From a psychological perspective, critical thinking defines the various cognitive skills a critical thinker possesses (van der Zanden et al., 2020). According to Facione, 1990, critical thinking skills include analysis, interpretation, evaluation, inference, explanation, and self-regulation (Facione,1990). Critical thinking is not a single skill, but rather a cluster of different sub-skills.

Educational Perspective of Critical Thinking:

Understanding critical thinking in the educational landscape can be linked to the beliefs of John Dewey, who stands for critical thinking to solve real-life problems (Abrami et al., 2015). In this approach, critical thinking is considered the highest level of cognitive skills of Bloom's taxonomy (van der Zanden et al., 2020).

Importance of Critical Thinking in Teacher Education and Strategies:

Critical thinking is crucial for everyone, especially in teacher education, because it builds future teachers who will teach students. Skillfully, teachers can better handle diverse classroom situations to fulfil the diverse needs and requirements of students. Equipping critical thinking skills among the teachers can help to create a conducive and supportive environment in the classroom. Like any other skill, critical thinking also requires a huge amount of practice, so the teacher must be able to use various creative and effective teaching pedagogies of critical thinking (Novitaningrum et al., 2020). Various classroom approaches to promote critical thinking skills among students have been identified through research, such as conceptual, two-way communication, experiential, and technological approaches (Jegstad et al., 2025). Besides these, some more approaches of critical thinking are discussed in the literature (Ennis, 1989; Larsson, 2017, as cited in Bellaera et al., 2021).

These approaches are "general", "infusion", "immersion", and "mixed" approaches. A general approach is defined, where critical thinking is promoted as a separate activity; an infusion approach is defined, where critical thinking is fostered explicitly through a specific subject content; an immersion approach is where critical thinking is taught implicitly within a specific subject; and a mixed approach is the combination of the other three approaches where critical thinking is taught both as a separate subject and either infusion or immersion approach in context of a specific subject (Bellaera et al., 2021).

The following are some ways and strategies that can promote critical thinking skills among pre-service teachers:

1) Infusion in Curriculum: The curriculum is the blueprint of any academic program. It contains the pre-determined goals, learning outcomes, teaching and assessment methods, practical works, and overall experiences in an institution. That's why it is very important to provide scope for critical thinking activities in the curriculum first. By this, pre-service teachers can be trained to incorporate critical thinking skills in their lesson plans, practicums, internships, and in all areas of learning.

2) Questioning Strategy: The method of asking questions has been popularised from the time of Socrates, the Greek philosopher. This Socratic questioning method can help pre-service teachers ask and answer thoughtful questions, brainstorm, and analyse different viewpoints. This strategy works beyond rote memorisation, where pre-service teachers can explain and justify their answers with evidence.

3) Collaborative Method: It's a teaching strategy that students use to work or complete a task in a small group. It fosters acceptance of others' different views, ideas, and feelings, as pre-service teachers collab with their peers will develop an open-mindedness disposition. It can help to think about one's thoughts and beliefs. This method helps to improve active listening, evaluating others' ideas and making judgments.

4) Peer Assessment & Feedback: Peer assessment stands for the evaluation of each other's work and giving feedback to improve performance. By engaging in frequent peer assessment, pre-service teachers can critically assess others' work, and by giving feedback, they can identify scope for improvement.

5) Debate: Debate can involve pre-service teachers defending their opinions with logical points that develop their analyticity disposition.

6) Reflective Diary: A reflective diary is a personal journal in which pre-service teachers can write down their regular learning experiences and reflect on their learning. By practising this, they can able

to monitor their activities and understand their strength and weaknesses, which develops self-regulation.

7) Concept Mapping: Through the concept map technique, pre-service teachers can construct new ideas by connecting with previous information and can cultivate an extensive understanding of critical concepts.

8) ICT Integration: ICT tools help pre-service teachers to explore more information. This makes them able to distinguish between true and false information, which leads to their truth-seeking disposition. They can evaluate the accuracy and authenticity of online information and resources, and analyse and synthesise different data, developing their critical thinking.

9) AI integration: Artificial intelligence gives an innovative and advanced learning experience to the pre-service teachers. An AI tool like ChatGPT is helpful to provide instant feedback and is a digital source to produce different learning materials. Students can easily understand complex topics by utilising AI tools (Melisa et al., 2025).

10) Utilising Social Media Platforms: Social media platforms are a huge advantage for pre-service teachers, not only to gather information but also to show their own creativity through them. A social media platform like YouTube, pre-service teachers can show videos to the students, and they can also create their own videos to demonstrate a topic as well, during their internship program.

Conclusion:

In conclusion, this study emphasises the need to integrate critical thinking practices in teacher education programs. By fostering these skills, pre-service teachers can nurture their analytical and innovative skills. They will be more proficient in dealing with a diverse classroom. Integrating ICT facilities, advanced curriculum design, collaborative work, and reflective practices can build a dynamic and progressive educational system. Therefore, critical thinking is not just a skill for individuals, but it's a base for transforming teacher education, school education, the higher education system, as well as the whole nation.

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