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THE ROLE OF TEACHERS IN DEVELOPING CRITICAL THINKING SKILLS: A SYSTEMATIC REVIEW (2020-2025)

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Abstract

Critical thinking is a fundamental skill that enables students to analyze, evaluate, and reflect on information to make reasoned decisions and solve complex problems. Teachers play a pivotal role in nurturing these skills through their instructional strategies, professional beliefs, and classroom practices. The study systematically reviews studies conducted from 2020 to 2025 to examine how teachers contribute to the development of critical thinking across educational settings. Using secondary data from empirical studies, review articles, and meta-analyses, the study identifies key teaching strategies, professional development practices, and institutional factors that influence students' cognitive growth. Findings indicate that active learning approaches, including problem-based learning, Socratic questioning, collaborative learning, and reflective activities, significantly enhance critical thinking. Teacher beliefs, continuous professional development, and supportive institutional policies further strengthen these outcomes. Challenges such as rigid curricula, assessment pressures, and limited resources can impede effective implementation. The study highlights the need for an integrated approach combining capable teachers, innovative pedagogy, and conducive educational frameworks to cultivate critical thinking as a lifelong skill.

Keywords: Critical Thinking, Teacher Pedagogy, Teaching Strategies, Higher-Order Learning

Introduction

Critical thinking has emerged as a central goal of contemporary education, as it enables learners to analyze information, evaluate arguments, solve problems, and make informed decisions. In an era characterized by rapid technological change, misinformation, and complex social challenges, critical thinking is considered essential for academic success, employability, and responsible citizenship (Farooqi, Hasrat, & Kanwal, 2024). As a result, educational systems across the world increasingly emphasize higher-order thinking skills rather than rote memorization. Critical thinking is commonly defined as a purposeful and self-regulated cognitive process involving interpretation, analysis, evaluation, inference, and reflection (Facione, 2020). These skills allow learners to question assumptions, assess evidence, and reach logical conclusions. While curriculum frameworks frequently highlight the importance of critical thinking, its effective development largely depends on classroom practices. In this regard, teachers play a pivotal role because they design instructional activities, select pedagogical strategies, and shape learning environments that either encourage or inhibit critical thinking (Farooqi et al., 2024).

Recent empirical and review studies highlight that teachers are key facilitators of critical thinking through learner-centred pedagogical approaches. Farooqi et al. (2024) found that instructional strategies such as problem-based learning, inquiry-based instruction, collaborative learning, and Socratic questioning significantly improve students' analytical and evaluative skills. These approaches require students to engage actively with content, justify their responses, and reflect on their reasoning processes. Such findings are consistent with constructivist learning theories, which view teachers as facilitators who scaffold students' thinking rather than transmitters of fixed knowledge. Teachers also contribute to the development of critical thinking by fostering metacognitive awareness among students. Metacognition involves students' ability to monitor and regulate their own thinking. Azizah, Sulistyawati, and Wahyuni (2025) demonstrated that teachers who use questioning, reasoning, evaluating, and reflective activities during reading instruction help students interpret texts more critically. Their study indicates that subject-specific teaching

strategies, when intentionally designed, can effectively promote critical thinking within routine classroom activities. Another significant factor influencing the development of critical thinking is teachers' beliefs and attitudes. Research conducted by Ketabi, Zabihi, and Ghadiri (2024) shows that teachers who value critical thinking as an essential educational outcome are more likely to integrate higher-order thinking tasks into their teaching. In contrast, teachers who perceive critical thinking as time-consuming or incompatible with examination-oriented curricula often rely on traditional lecture methods. These findings suggest that teachers' pedagogical beliefs, shaped by training and institutional culture, strongly affect classroom practices. Professional development further strengthens teachers' capacity to promote critical thinking. Longitudinal and multi-case studies indicate that sustained professional learning enables teachers to align instructional practices with critical thinking goals and overcome constraints related to curriculum pressure and assessment demands (Ketabi et al., 2024). Teachers who receive continuous training are better equipped to design reflective activities, manage classroom discussions, and assess higher-order learning outcomes. In higher education contexts, the role of teachers in developing critical thinking has become increasingly complex due to digitalization and information overload. Studies by Tiruneh, Weldeslassie, and De Cock (2025) emphasize that teachers must guide students in evaluating the credibility of information, synthesizing multiple sources, and engaging critically with digital content. As online learning environments and artificial intelligence tools expand, the teacher's role in cultivating critical evaluation skills becomes even more critical.

Although growing recognition of the importance of critical thinking, several challenges persist. Systematic reviews reveal that limited teacher training, rigid curricula, and assessment systems focused on rote learning continue to restrict the effective integration of critical thinking in classrooms (Sari, Mulyadi, & Hidayat, 2025). These challenges highlight the need for institutional support and policy alignment to enable teachers to consistently promote higher-order thinking. In this context, the present study systematically reviews literature published between 2020 and 2025 to examine the role of teachers in developing students' critical thinking skills. By synthesizing recent research, the study aims to provide a comprehensive understanding of teaching strategies, teacher beliefs, and professional practices that support critical thinking across educational settings.

Review of Literature

The role of teachers in fostering critical thinking skills has gained significant attention in recent educational research. Critical thinking is widely recognized as a core competency for students, enabling them to analyze information, evaluate arguments, make informed decisions, and solve complex problems (Facione, 2020). In the contemporary era, where technology and information overload are prevalent, developing these skills is crucial for students' academic success and lifelong learning. Recent studies indicate that teachers' instructional practices, beliefs, and professional development strongly influence the cultivation of critical thinking (Farooqi, Hasrat, & Kanwal, 2024; Tiruneh, Weldeslassie, & De Cock, 2025). A central theme in recent research is the effectiveness of active learning strategies in promoting critical thinking. Farooqi et al. (2024) emphasized that problem-based learning, Socratic questioning, inquiry-based instruction, and collaborative learning significantly enhance students' analytical and evaluative abilities. Similarly, Azizah, Sulistyawati, and Wahyuni (2025) demonstrated that reflective reading activities, questioning, and reasoning exercises improved students' interpretative skills in secondary classrooms. Research by Singh and Sharma (2021) also highlighted that collaborative and discussion-based approaches foster peer-to-peer learning, allowing students to articulate, defend, and reconsider ideas critically.

Teacher beliefs and attitudes toward critical thinking are equally important. Ketabi, Zabihi, and Ghadiri (2024) found that teachers who recognize the importance of critical thinking are more likely to integrate higher-order thinking activities into their teaching, whereas those constrained by examination-oriented curricula often resort to rote teaching. In the context of primary education, Das and Roy (2021) noted a gap between teachers' understanding of critical thinking and their classroom practices, reflecting challenges in translating theory into practical pedagogy. Similarly, Jadhav and Kumar (2022) highlighted that teachers' self-efficacy and motivation significantly impact their adoption of critical thinking strategies. Professional development is consistently cited as a key factor in equipping teachers to foster critical thinking. Continuous and reflective training programs enhance teachers' instructional design capabilities, allowing them to implement strategies that engage students in analysis, evaluation, and problem-solving (Ketabi et al., 2024; Sharma & Verma, 2021). In higher education, Tiruneh et al. (2025) observed that faculty development programs help teachers guide students in critically evaluating information, synthesizing multiple sources, and engaging with technology-mediated content. Ahmed and Khan (2022) similarly stressed the importance of professional learning

communities, where teachers collaboratively reflect on instructional practices to enhance students' critical thinking. Several studies emphasize the role of classroom environment and teaching practices. Research by Li and Chen (2023) indicated that classrooms promoting discussion, debate, and reflection encourage critical engagement, while traditional lecture-focused classrooms often suppress higher-order thinking. Farooqi et al. (2024) reinforced this by showing that teacher-facilitated questioning, case studies, and interactive problem-solving activities contribute significantly to developing analytical skills. Additionally, Das and Roy (2021) noted that teachers' ability to provide constructive feedback enhances students' evaluative skills, fostering deeper learning and reflection. Digital and technological interventions are increasingly relevant in fostering critical thinking. Tiruneh et al. (2025) highlighted that online collaborative tools, virtual simulations, and AI-based learning platforms offer opportunities for interactive and reflective learning, provided teachers guide students in evaluating the credibility and relevance of information. Sharma and Verma (2021) emphasized that technology alone does not guarantee critical thinking development; teachers' pedagogical guidance is essential to ensure cognitive engagement rather than passive consumption of digital content.

Challenges in implementing critical thinking instruction persist. Studies highlight systemic constraints such as rigid curricula, high-stakes examinations, and insufficient institutional support, which limit teachers' ability to employ innovative strategies (Sari, Mulyadi, & Hidayat, 2025; Singh & Sharma, 2021). Additionally, Ahmed and Khan (2022) reported that time constraints, large class sizes, and lack of resources often hinder the effective integration of critical thinking pedagogies. Empirical evidence also suggests the need for context-sensitive approaches. Das and Roy (2021) and Li and Chen (2023) argue that cultural, socio-economic, and institutional factors influence how teachers implement critical thinking strategies. Teachers in resource-constrained or exam-focused environments may face greater challenges compared to those in institutions that prioritize inquiry-based and learner-centred pedagogies. Furthermore, Ketabi et al. (2024) highlighted the importance of aligning teacher training programs with classroom realities to enhance practical implementation. Thus, the literature underscores the pivotal role of teachers in developing critical thinking skills, encompassing pedagogical strategies, professional beliefs, training, and classroom facilitation (Farooqi et al., 2024; Tiruneh et al., 2025; Azizah et al., 2025). Teachers act as facilitators who scaffold students' thinking, encourage reflection, and provide feedback to nurture higher-order cognitive skills. While multiple strategies and interventions are documented, challenges such as institutional constraints, lack of professional development, and technological integration need attention for consistent and effective critical thinking instruction.

Research Gap

Although recent studies provide insights into teacher roles, teaching strategies, and professional development, several gaps remain. First, few longitudinal studies track the sustained impact of professional development on students' critical thinking outcomes. Second, there is limited research on how teachers integrate AI and digital tools effectively without reducing cognitive engagement. Third, most studies are context-specific and small-scale, limiting generalizability across different cultural and educational settings. Addressing these gaps requires comprehensive, longitudinal, and multi-context research that examines teacher practices, institutional support, and technological integration to enhance critical thinking pedagogy (Das & Roy, 2021; Tiruneh et al., 2025; Sharma & Verma, 2021).

Research Methodology

The present study adopts a systematic review methodology to examine the role of teachers in developing critical thinking skills among students, drawing exclusively on secondary data published between 2020 and 2025. The review follows a structured and transparent process to identify, select, and analyze relevant scholarly literature. Peer-reviewed journal articles, review papers, and empirical studies were collected from recognized academic databases such as Scopus-indexed journals, Web of Science, ERIC, Google Scholar, and ScienceDirect. The inclusion criteria comprised studies published in English between 2020 and 2025 that focused on teachers' roles, instructional strategies, pedagogical practices, beliefs, or professional development related to critical thinking across school and higher education contexts. Exclusion criteria included unpublished manuscripts, opinion pieces, conference abstracts, and studies not directly related to teaching and critical thinking. Selected studies were screened through titles, abstracts, and full-text reviews to ensure relevance and quality. The data were analyzed using thematic content analysis, enabling the identification of recurring themes such as teaching strategies, teacher beliefs, professional learning, and classroom practices. This systematic approach ensures methodological rigor, minimizes bias, and provides a comprehensive synthesis of existing research on teachers' contributions to the development of critical thinking skills.

Discussion

The systematic review of studies from 2020 to 2025 underscores the pivotal role of teachers in developing students' critical thinking skills. Evidence suggests that teachers' instructional strategies, professional beliefs, and development opportunities significantly influence students' higher-order thinking abilities (Farooqi, Hasrat, & Kanwal, 2024; Tiruneh, Weldeslassie, & De Cock, 2025). Active learning approaches, such as problem-based learning, Socratic questioning, and collaborative tasks, consistently enhance analytical, evaluative, and reasoning skills, enabling students to engage meaningfully with complex content (Azizah, Sulistyawati, & Wahyuni, 2025; Singh & Sharma, 2021). Teacher beliefs and attitudes also play a critical role in the integration of critical thinking into classroom practices. Studies indicate that teachers who value critical thinking are more likely to adopt higher-order pedagogical strategies, while those constrained by examination pressures or rigid curricula often rely on traditional, lecture-focused methods (Ketabi, Zabihi, & Ghadiri, 2024; Das & Roy, 2021). This highlights the need for fostering adaptive teacher beliefs through training and reflective practice to ensure consistent implementation of critical thinking strategies (Jadhav & Kumar, 2022).

Professional development is essential for equipping teachers to overcome challenges associated with critical thinking instruction. Continuous training programs, professional learning communities, and faculty development initiatives enable teachers to implement inquiry-based, reflective, and technology-mediated pedagogies effectively (Ahmed & Khan, 2022; Sharma & Verma, 2021; Tiruneh et al., 2025). Evidence also emphasizes the importance of teacher facilitation in digital learning environments, guiding students to critically evaluate online content rather than passively consuming information (Tiruneh et al., 2025; Shahab & Barak, 2026). Despite the effectiveness of these approaches, systemic challenges persist, including large class sizes, limited institutional support, and curriculum constraints that prioritize rote learning over critical engagement (Sari, Mulyadi, & Hidayat, 2025; Li & Chen, 2023). Addressing these barriers requires aligning policies, assessment frameworks, and teacher training programs with critical thinking goals to maximize pedagogical effectiveness (Farooqi et al., 2024). In conclusion, the discussion highlights that teachers act as facilitators, mentors, and designers of learning experiences that promote critical thinking. Success depends not only on instructional strategies but also on teachers' beliefs, professional growth, and supportive institutional frameworks (Ketabi et al., 2024; Tiruneh et al., 2025; Azizah et al., 2025).

Recommendations

i. Focus teacher education programs on strategies that actively engage students, such as problem-solving tasks, collaborative learning, and reflective exercises.
ii. Provide continuous and reflective professional development to improve teaching methods and integrate technology effectively.
iii. Create supportive institutional policies and assessment systems that prioritize higher-order thinking over rote learning.
iv. Foster a classroom culture that encourages questioning, reasoning, and independent thinking.
v. Encourage teachers to design activities that develop students' analytical, evaluative, and reflective skills consistently.

Future Studies

i. Conduct longitudinal studies to examine the long-term impact of teacher training on students' critical thinking development.
ii. Explore how digital tools and artificial intelligence can be effectively integrated to promote active learning and reasoning in classrooms.
iii. Investigate the influence of cultural, social, and institutional contexts on teaching practices and critical thinking skill development.

Conclusion

Teachers play a central role in developing students' critical thinking skills by creating learning environments that encourage analysis, evaluation, and reflection. Effective teaching strategies, including problem-solving, collaborative learning, discussion, and reflective activities, help students engage with content meaningfully and

develop higher-order cognitive abilities. The development of critical thinking depends not only on teaching methods but also on the support provided through professional development and conducive institutional policies. Challenges such as rigid curricula, assessment pressures, and limited resources can impede progress, highlighting the need for systemic support. By fostering inquiry, encouraging questioning, and promoting independent thinking, teachers can equip students with the skills necessary for academic success, informed decision-making, and lifelong learning. Overall, an integrated approach that combines capable teachers, innovative pedagogy, and supportive educational frameworks is essential for nurturing critical thinking in students.

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