Review of Technical and Vocational Institution Educators' Critical Thinking Competencies and the Moderating Effect of Leadership Support

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Abstract

This review article highlights the increasing focus on developing critical thinking skills in technical and vocational education, underscoring the crucial role of educators' competencies and leadership support in this process. Drawing on research from nursing and higher education, the review presents a wide array of strategies for enhancing critical thinking, such as project-based learning and technology-enhanced tools, that can address existing gaps in vocational curricula. Supporting leadership is essential for successfully implementing these strategies, with effective leadership being linked to improved teaching confidence, innovative curriculum design, and better student engagement. Including insights from nursing and higher education enriches the understanding of critical thinking's universal significance and offers a diverse set of adaptable strategies for vocational education. The review concludes by emphasizing the importance of critical thinking competencies for educators and the significant impact of leadership support. It calls for continued research into effective development strategies and their long-term effects on student success. This multidisciplinary approach highlights the need to adapt educational practices to meet the modern workforce's demands, positioning critical thinking as a pivotal element in preparing students for future challenges and opportunities.

Keywords: Vocational Education Strategies; Leadership Support in Education; Interdisciplinary Teaching Approaches; Educator Competencies and Engagement.

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1. Introduction

In the changing field of education, focusing on critical thinking skills has become a top priority at all educational levels. This can be clearly seen in the latest literature starting from 2020, which offers a diverse range of perspectives on critical thinking, covering its fundamental aspects, methods for improvement, and the crucial importance of leadership in promoting these abilities. A compilation of twenty recent studies presents new insights on these topics, highlighting the various methods for fostering critical thinking in educational settings. Reference [1] emphasizes the importance of incorporating critical thinking into STEM education, highlighting the need for specific teaching techniques to develop these vital skills. In the same way, Reference [2] provides a thorough examination of the teaching of critical thinking, pointing out a significant absence of creative instructional approaches that successfully enhance students' critical analytical skills. Additionally, Reference [3] emphasize the importance of critical thinking in improving speaking abilities and suggest specific activities for teachers to use in class to promote thoughtful discussions.

Reference [4] examines primary education, investigating different strategies and approaches to fostering critical thinking at a young age. The teaching staff plays a crucial role in guiding the intellectual growth of young learners. Reference [5] point out that the online realm provides distinct chances for fostering critical thinking skills, particularly through interactive case studies in virtual learning settings.

Additional study conducted by [6] highlights the significance of integrating critical thinking throughout the wider educational journey, promoting the development of thoughtful learning goals alongside the strategic application of technology. Reference [7] offer information on the strategies that university students consider the most successful for cultivating critical thinking, such as debates and project-based learning, highlighting a focus on student-centered learning design.

The acquisition of critical thinking abilities extends beyond language-related fields, as investigated by [8]in their study of nurturing these skills in students studying non-language disciplines. Furthermore, Reference [9] examine how students' preferred learning styles in online educational settings are related to their critical thinking skills, indicating that customized learning methods can improve cognitive growth.

In summary, the range of research mentioned emphasizes the importance of promoting critical thinking skills in the education system. From the required explicit teaching strategies in STEM disciplines to the creative possibilities of online learning platforms, these insights provide a guide for educators and institutions focused on cultivating the critical thinkers of the future. Leadership backing is crucial in this effort, highlighting the importance of an academic environment that not just appreciates but actively encourages critical thinking. In the changing educational environment, the emphasis on critical thinking skills is still a key aspect in getting students ready to handle the challenges of tomorrow.

2. Methodology

In this study, the structured approach described previously is applied meticulously to manage and analyze a large volume of literature. From an initial pool of 510 papers, a refined selection of 143 literatures is reviewed,

indicating a rigorous and discerning filtering process.

2.1 Search Keywords and Strings

The search strategy is a crucial element in the systematic review process. For the topic at hand, search keywords and strings include combinations of terms related to "leadership support," "critical thinking," "competencies," and "teachers" or "educators." Specific strings involve boolean operators are:

("leadership support" OR "leadership influence") AND ("critical thinking" OR "critical reasoning") AND ("teachers' competencies" OR "educational competencies") AND ("vocational education" OR "technical education").

This strategy applied across multiple electronic databases, such as Google Scholar, Springer, and Scopus, to ensure a comprehensive search. Grey literature, including conference proceedings, dissertations, and reports, are also considered to capture the full scope of relevant research.

2.2 Filtering Process

The initial yield of 510 papers suggests a broad and inclusive initial search. The screening process involves several stages:

1. **Initial Screening:** Titles and abstracts of the 510 papers are reviewed against the inclusion and exclusion criteria defined in the review protocol. Criteria include factors like publication date (to ensure recency of data), relevance to the research question, and study design (e.g., prioritizing empirical studies over opinion pieces).
2. **Full-text Review:** Papers passing the initial screening are subjected to a full-text review, where 143 literatures are determined to meet all the criteria for inclusion. Reasons for excluding studies during this stage are meticulously documented and might include lack of relevance, insufficient data on leadership support, or methodological flaws.

3. Data Extraction and Synthesis

Data extracted from the 143 studies include specifics about the educational context, descriptions of leadership support interventions or observations, measures of critical thinking competencies, and outcomes. Given the diversity of educational settings and methodologies, the synthesis lean towards a narrative approach, highlighting themes and patterns across the studies while noting variations.

4. Quality Assessment

Each study's methodological quality is rigorously assessed, which informs the confidence in the review's findings. Tools like the Critical Appraisal Skills Programme (CASP) checklists or the Cochrane Risk of Bias tool could be utilized, depending on the nature of the studies included.

5. Reporting and Discussion

The findings are reported in accordance with the PRISMA guidelines, ensuring clarity and completeness. The discussion section interprets the implications of the findings, noting that leadership support appears to have a positive moderating effect on teachers' development of critical thinking competencies. Limitations of the reviewed studies, potential biases in the review process, and suggestions for future research are thoroughly addressed.

This systematic review exemplifies a methodical approach to synthesizing research on a complex and significant educational topic. The reduction from 510 to 143 papers illustrates the necessity of stringent criteria to focus on the most relevant, high-quality studies. The search strategy's design ensures broad yet precise capture of relevant literature, laying a strong foundation for meaningful insights into the impact of leadership support on educators' critical thinking competencies. Figure 1 shows the systematic literature review flow for this study.
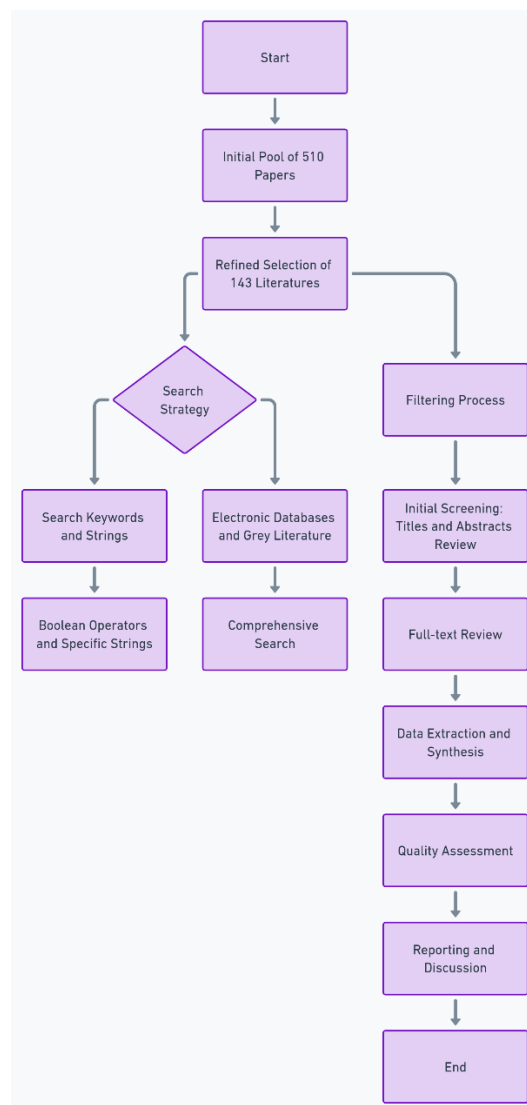

Figure 1

3. Literature Review

3.1 Development of the Critical Thinking among Teachers

Enhancing teachers' critical thinking involves multiple factors like teaching methods, professional growth, and implementing critical thinking in classrooms. This essay summarizes recent literature to describe the current research on enhancing critical thinking skills in educators.

Reference [10] suggest a professional development program for educators at universities with the goal of teaching them how to promote critical thinking skills. This effort is essential because it focuses on the deficiency in teacher training programs related to fostering critical thinking skills [11]. Similarly, Reference [12] show how critical thinking skills in future teachers improve during practicum placements, highlighting the importance of structured experiences in boosting pedagogical critical thinking abilities [13].

Reference [14] carried out a systematic examination of critical thinking methods in teacher training programs, emphasizing the range of teaching strategies and the different elements impacting their effectiveness Reference Reference [15.16] study delves into the critical thinking abilities of student teachers, indicating that targeted interventions could greatly enhance their critical thinking capabilities [17].

Reference [18] offer an in-depth analysis of research findings on how instruction influences critical thinking abilities, highlighting successful techniques for teaching critical thinking in various educational settings and subjects Reference [19,20] explores obstacles to teaching critical thinking skills in larger classrooms and highlights the significance of creative teaching approaches and the integration of information and communication technology (ICT) as solutions [21].

Developing critical thinking skills is essential for teachers to provide effective instruction to students. Reference Reference [22] assessed the application of a new history curriculum, creating user profiles for teachers across various curriculum dimensions to understand their actual teaching practices. Phillips and his colleagues. (2020) examined how cultural backgrounds influence critical thinking in students, proposing that different cultural contexts may lead to varied developmental paths. Reference [23] identified challenges that teachers face in online teaching due to insufficient training and development opportunities. Reference [24] investigated the role of teacher education in nurturing translingual dispositions among native English-speaking teachers who only speak one language. Reference [25] pointed out the scarcity of research on teachers' information-seeking behaviors, underscoring the need for more studies to enhance these practices. Reference [26] highlighted the significance of research competencies for university teachers in fostering development across personal, spiritual, affective, ecological, environmental, and community spheres. Reference [27] examined the differences in differentiation practices between private and public high schools in Lesotho, uncovering the obstacles to implementing inclusive education. Reference [28] evaluated the critical thinking abilities of gifted students before and after a critical thinking course, aiming to discover effective assessment methods. Reference [29] explored the potential of artificial intelligence in education to advance teachers' cognitive and pedagogical skills.

Reference [30] focus on the integration of critical thinking into classroom practice from the teacher's perspective,

showing how teachers attempt to develop their students' critical thinking skills by integrating them into subject matter rather than teaching them separately. Reference [31] examine language teachers' perceptions and experiences regarding critical thinking, identifying challenges faced by teachers in integrating critical thinking into language teaching.

Reference [32] analyze the methodologies university teachers use to develop critical thinking and the ones they consider most effective, suggesting that teachers' views on critical thinking are diverse and multifaceted [33] . Reference [34] discusses different methods and techniques through which critical thinking can be developed in elementary schools, highlighting the pivotal role of teaching staff in directing the development of students' thinking.

3.2 Moderating Effect of Leadership Support on the teachers' critical thinking

The promotion of critical thinking competencies among teachers is a crucial aspect of intellectual growth and inquiry in educational institutions. Effective leadership support plays an integral role in enhancing and moderating these competencies by creating an environment that encourages reflective practice and professional development. Recent research has highlighted the moderating effect of leadership support on teachers' critical thinking, and this essay explores the literature on this topic.

Reference [35] emphasize the importance of professional development programs that enable educators to cultivate their critical thinking skills and incorporate them into their teaching methodologies. These programs are necessary to address the gap in teacher education regarding critical thinking promotion. Reference [36] document the evolution of critical thinking skills among pre-service teachers through experiential learning settings, emphasizing the importance of structured experiences in improving pedagogical critical thinking abilities.

Reference [37] conduct a systematic review of critical thinking practices in teacher education programs, identifying a broad range of instructional approaches and the factors that influence their effectiveness. This comprehensive analysis sheds light on the complexities involved in fostering critical thinking among educators. Similarly, Brindha (2019) explores the critical thinking levels among student teachers and advocates for targeted interventions to significantly enhance their critical thinking abilities.

Empirical evidence on the impact of instruction on the development of critical thinking skills and dispositions is summarized by [38]. Their review reveals effective strategies for teaching critical thinking across educational levels and disciplines, demonstrating the broad applicability of these approaches. Furthermore, Reference [39] discusses challenges and solutions for imparting critical thinking skills in large classroom settings, highlighting the role of innovative teaching methods and the integration of information and communication technology (ICT) in this endeavor. Reference [40] examine the integration of critical thinking into classroom practice from the teachers' perspective, showing how educators work to develop their students' critical thinking skills through subject matter integration rather than teaching them in isolation. Yuan and Stapleton (2020) investigate language teachers' perceptions and experiences regarding critical thinking, shedding light on the obstacles teachers face in incorporating critical thinking into language instruction.

To summarize, this study emphasizes the complexity of fostering critical thinking skills in educators and emphasizes the important role of leadership backing in helping with this development. Educational leaders can greatly impact teachers' critical thinking skills and improve the overall educational community by promoting continuous learning, reflective practice, and pedagogical innovation.

3.3 Learning Agility Dimension and Measurement

Learning agility is increasingly recognized as a crucial trait for adapting to rapid changes and challenges in both personal and professional contexts. This essay synthesizes insights from recent literature to explore the dimensions of learning agility, highlighting its significance for organizations and individuals alike.

Reference [41] define learning agility as comprising four critical dimensions, offering a foundational perspective on how learning agility can be aligned with recruiting, talent development, and organizational success. Their work lays the groundwork for understanding the multifaceted nature of learning agility and its role in fostering an adaptable and resilient workforce.

Reference [42] explores learning agility in the context of language learning, underscoring the concept's applicability across different learning areas. The study emphasizes that learning agility enables individuals to apply lessons learned in one context to entirely different situations, demonstrating its value in lifelong learning and adaptability.

Reference [43] reviews empirical research linking learning agility to leader success, reinforcing the construct's importance in high-potential talent identification and development. Through a meta-analysis of field studies, De Meuse establishes a robust relationship between learning agility and both leader performance and potential, underscoring its critical role in leadership effectiveness.

Reference [44] critically evaluate measures of learning agility, providing valuable insights into the assessment of this complex skill set. By reviewing various assessment methods and their psychometric properties, they contribute to a better understanding of how learning agility can be measured and developed within organizational settings.

Reference [45] investigates learning agility as a predictor of high performance and potential within the healthcare industry. The study highlights the importance of learning agility in dynamic and turbulent work environments, further emphasizing its significance in modern organizational contexts.

Reference [46] introduce the Leadership Learning Agility Scale (LLAS), which measures the willingness to learn from social experiences and the drive to apply those lessons in new leadership roles. The LLAS's development and validation enhance our tools for assessing and fostering learning agility among leaders.

These studies collectively emphasize the critical role of learning agility in adapting to and thriving in rapidly changing environments. They highlight various dimensions of learning agility, including sensitivity to change, applicability of experiential learning, responsiveness in relationships, and cognitive flexibility. The ongoing

exploration and development of learning agility are essential for preparing leaders and organizations for the future.

4. Findings

In recent years, the focus on developing critical thinking competencies among educators has been highlighted as a paramount concern across all levels of education. The importance of these skills is underscored by a variety of strategies aimed at their enhancement, including explicit teaching methods in STEM education, innovative pedagogies in higher education, and the integration of practical activities to encourage analytical discourse.

Alongside the emphasis on critical thinking skills, the literature reveals the significant role of leadership support as a moderating factor in this development. Through the provision of professional development programs, the creation of experiential learning environments, and the fostering of an atmosphere that encourages reflective practice and pedagogical innovation, leadership is shown to be instrumental in enhancing educators' critical thinking abilities.

The conclusion drawn from this literature is that developing critical thinking skills and learning agility among educators is vital for the effectiveness of teaching and learning. Leadership backing is identified as a vital factor in fostering an environment that promotes these advancements, underscoring the importance of ongoing professional development and the implementation of inventive teaching methods. These results promote a multifaceted approach to education that prioritizes critical thinking and learning agility while incorporating supportive leadership and pedagogical strategies.

The path to deepening our understanding and application of these concepts in education is marked by several recommendations for future research. Among these, the exploration of the longitudinal impact of critical thinking pedagogies, the effectiveness of various leadership support mechanisms, and the integration of technology in developing critical thinking skills stand out. Additionally, the assessment and measurement of learning agility, the effectiveness of interdisciplinary approaches to critical thinking, and the impact of different leadership styles on educators' development of these competencies are identified as areas needing further investigation. By addressing these recommendations, future studies aim to contribute to a more nuanced understanding of how to effectively foster critical thinking and learning agility in educational settings, thereby enhancing overall teaching and learning outcomes.

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