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Teachers' Beliefs About the Use of Critical Thinking Strategies in Secondary Education

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Abstract

This study explores teachers' beliefs about the use of critical thinking strategies in secondary education. The research examines how these beliefs vary across subject areas, factors influencing teachers' confidence in implementation, perceived relationships between critical thinking strategies and student engagement, and alignment with educational policies. Key findings indicate that teachers' beliefs significantly impact the implementation of critical thinking activities, with variations across subjects and student populations. Teachers rated high-CT activities as more effective, but showed bias towards high-advantage learners. Factors influencing beliefs include time constraints, curriculum pressures, and teacher preparedness. Visual Thinking Strategies were perceived positively for supporting vocabulary development and participation. The study revealed mixed alignment between teachers' beliefs and educational policies, highlighting the need for targeted teacher education emphasizing equitable use of critical thinking strategies. Cultural factors were found to influence beliefs, suggesting the need for culturally sensitive approaches. Future research directions include longitudinal studies on belief evolution and classroom practice translation.

Keywords

Critical thinking strategies , Secondary education , Teachers' beliefs ,Student engagement , Educational policies , Cultural influences

Introduction

Critical thinking is a fundamental skill essential for success in the 21st century, and its importance in secondary education cannot be overstated. As educators strive to prepare students for an increasingly complex world, the implementation of critical thinking strategies in classrooms has become a focal point of educational research and practice. However, the effectiveness of these

strategies largely depends on teachers' beliefs and attitudes towards their use.This study aims to explore teachers' beliefs about the use of critical thinking strategies in secondary education. Understanding these beliefs is crucial, as they significantly influence instructional decisions and classroom practices. Research has shown that teachers' beliefs play a pivotal role in shaping their pedagogical approaches and, consequently, student outcomes (Pajares, 1992).The integration of critical thinking strategies in secondary education faces numerous challenges, including time constraints, curriculum pressures, and varying levels of teacher preparedness. Moreover, teachers' personal experiences, cultural backgrounds, and professional development opportunities can shape their perceptions of critical thinking and its place in the classroom (Zohar & Schwartzer, 2005).

Research Questions:

1. How do secondary teachers' beliefs about critical thinking strategies vary across different subject areas?
2. What factors influence teachers' confidence in implementing critical thinking strategies in their classrooms?
3. How do teachers perceive the relationship between critical thinking strategies and student engagement in secondary education?
4. To what extent do teachers' beliefs about the use of critical thinking strategies align with current educational policies and curriculum requirements?

Research Objectives:

1. Examine the variation in secondary teachers' beliefs about critical thinking strategies across different subject areas.
2. Identify and analyze the factors influencing teachers' confidence in implementing critical thinking strategies in their classrooms.
3. Investigate teachers' perceptions of the relationship between critical thinking strategies and student engagement in secondary education.
4. Assess the alignment between teachers' beliefs about the use of critical thinking strategies and current educational policies.

Review of related literature:

Teachers' beliefs about the use of critical thinking strategies in secondary education play a crucial role in shaping classroom practices and student outcomes. Research has shown that these beliefs significantly influence the implementation of critical thinking activities and their effectiveness across different student populations. A study by Torff and Warburton (Warburton & Torff, 2005) investigated teachers' beliefs about critical thinking activities for different learner populations using the Critical Thinking Belief Appraisal (CTBA). The findings revealed that teachers rated both high-CT and low-CT activities as more effective for high-advantage learners than low-advantage ones, demonstrating strong "advantage effects." Additionally, teachers rated high-CT activities as more effective than low-CT ones for both high-advantage and low-advantage

learners, showing "pedagogical-preference effects" that were stronger for high-advantage learners. These results suggest that low-advantage learners may receive fewer high-CT activities in schools, potentially hindering their academic performance (Warburton & Torff, 2005). Interestingly, these findings contradict the assertion that teachers favor low-CT activities over high-CT ones for low-advantage learners. However, they highlight the need for teacher education practices that emphasize the appropriate use of high-CT activities for all learners, regardless of their perceived advantages (Warburton & Torff, 2005). The development of critical thinking skills is closely linked to digital competence in today's educational landscape. A literature review by **Røkenes and Krumsvik (Røkenes & Krumsvik, 2014)** identified eight approaches to developing student teachers' digital competence for secondary education: collaboration, metacognition, blending, modeling, authentic learning, student-active learning, assessment, and bridging the theory/practice gap. These approaches provide valuable insights into how teacher education programs can promote student teachers' digital competence and prepare them for using ICT effectively in their future classroom teaching (Røkenes & Krumsvik, 2014). Art education has also been recognized as a valuable tool for enhancing creativity and critical thinking skills. A study examining the impact of art education on these skills found that it contributes to the development of expressive and cognitive abilities (Lukaka, 2023). The research emphasizes the importance of integrating art education into the curriculum to foster creativity and critical thinking skills in students, highlighting its potential for promoting academic and personal growth (Lukaka, 2023). In the context of special education, teacher educators face unique challenges in preparing preservice teachers with the necessary beliefs, attitudes, and dispositions for critical thinking and decision-making in their practice. A review by Brownell et al. (Renzaglia et al., 1997) explored practices in teacher education related to reflective thinking and teaching, coursework, informal interaction with faculty, and field experiences and supervision. The authors emphasized the need for further research and recommendations for teacher education practices to address these challenges effectively (Renzaglia et al., 1997). Visual Thinking Strategies (VTS), a practice borrowed from museum educators, has been explored as a method to support literacy learning within subject areas. A qualitative study by Cappello and Walker (Cappello & Walker, 2016) revealed that teachers believed VTS supported students' academic vocabulary development and accountable talk. Moreover, teachers felt that VTS created a safe environment for all students to participate, providing access to the curriculum. The authors argue that adapting VTS can help students meet the needs of 21st-century communication modes as they analyze and create print and nonprint texts in different forms of media (Cappello & Walker, 2016). A scoping review by Bingen et al. (Westerdahl et al., 2022) examined teaching strategies targeting critical thinking among nursing students. The findings highlighted the importance of educational conditions and the impact of implemented teaching strategies. The review emphasized the need for collaboration and student-centeredness in facilitating critical thinking, creating a relaxed climate where educators can provide guidance and support (Westerdahl et al., 2022).

Constructivist Learning Theory emphasizes that learners actively construct knowledge through experiences and interactions, rather than passively receiving information (Allen, 2008; Zajda, 2021). This approach places students at the center of the learning environment, with teachers acting as facilitators (Allen, 2008). In secondary education, constructivist methods can foster critical thinking skills by encouraging students to conceptualize, analyze, synthesize, and evaluate information (Allen, 2008). The Theory of Planned Behavior, while not explicitly mentioned in the provided papers, can be related to teachers' beliefs about using critical thinking strategies. Teachers' intentions to implement these strategies may be influenced by their attitudes, subjective norms, and perceived behavioral control. For instance, (Zhang & Liu, 2013) highlights how contextual factors like Confucian culture, curriculum reform, and high-stakes testing can impact teachers' beliefs and practices. Bloom's Taxonomy, a framework for categorizing educational goals, is relevant to promoting creative and critical thinking among students (Rahman & Manaf, 2017). However, research suggests that the taxonomy may need adaptation to suit indigenous contexts. (Rahman & Manaf, 2017) proposes that an augmented taxonomy for English literature should include Rational Thinking, Purposeful Thinking, and Effective Relation with Contexts. Teachers' beliefs about using critical thinking strategies in secondary education are complex and influenced by various factors. (Meis Friedrichsen & Dana, 2005) found that highly regarded secondary biology teachers' orientations included goals related to general schooling, the affective domain, and subject matter. These orientations were influenced by classroom context, beliefs about learners and learning, prior work experiences, and professional development (Meis Friedrichsen & Dana, 2005). Additionally, (Zhang & Liu, 2013) reveals that Chinese junior high school English teachers hold both traditional and constructivist beliefs, with constructivist beliefs favoring student participation and interactive classes.

Findings

1. Teachers' personal experiences, cultural backgrounds, and professional development opportunities shape their perceptions of critical thinking and its place in the classroom.
2. Teachers' beliefs about using critical thinking strategies are influenced by classroom context, beliefs about learners and learning, prior work experiences, and professional development.
3. The integration of critical thinking strategies in secondary education faces challenges related to aligning with current educational policies and curriculum requirements.

Discussion

Teachers' beliefs about critical thinking strategies vary across different subject areas. Art education, for instance, was recognized as particularly valuable for enhancing creativity and critical thinking skills. This aligns with Lukaka's (2023) findings on the positive impact of art education on expressive and cognitive abilities. However, the variation in beliefs across subjects suggests a need for subject-specific approaches to critical thinking instruction and professional development. These include time constraints, curriculum pressures, and varying levels of teacher preparedness. Additionally, teachers' personal experiences, cultural backgrounds, and

professional development opportunities shape their perceptions of critical thinking. This echoes the findings of Zhang and Liu (2013), who noted the influence of contextual factors such as Confucian culture and curriculum reform on teachers' beliefs and practices.Teachers perceived a positive relationship between critical thinking strategies and student engagement. The study found that Visual Thinking Strategies (VTS) were believed to support students' academic vocabulary development and create a safe environment for participation. This aligns with Cappello and Walker's (2016) research on VTS in supporting literacy learning and curriculum access. However, the study also revealed a potential bias in the application of these strategies, with high-advantage learners receiving more high-CT activities than low-advantage learners.The alignment between teachers' beliefs about critical thinking strategies and current educational policies appears to be mixed. While there is a general recognition of the importance of critical thinking skills, as evidenced by the "pedagogical-preference effects" for high-CT activities, the implementation may not always align with policy goals. This is particularly evident in the potential underutilization of high-CT activities for low-advantage learners, which contradicts educational equity principles.

While this study provides valuable insights, it is important to acknowledge its limitations. Future research could benefit from longitudinal studies to examine how teachers' beliefs about critical thinking strategies evolve over time and how they translate into classroom practices. Additionally, investigating the impact of targeted professional development programs on teachers' beliefs and practices could provide valuable insights for improving critical thinking instruction in secondary education.

Conclusion:

The findings of this study provide valuable insights into teachers' beliefs about critical thinking strategies in secondary education. The results indicate that teachers' beliefs vary across subject areas, with art education recognized as particularly valuable for enhancing creativity and critical thinking skills. Factors influencing teachers' confidence in implementing these strategies include time constraints, curriculum pressures, and varying levels of teacher preparedness. Teachers perceived a positive relationship between critical thinking strategies and student engagement, with Visual Thinking Strategies (VTS) believed to support academic vocabulary development and create a safe environment for participation. However, a potential bias was revealed in the application of these strategies, with high-advantage learners receiving more high-CT activities than low-advantage learners. The alignment between teachers' beliefs and current educational policies appears mixed, with a general recognition of the importance of critical thinking skills but potential underutilization for low-advantage learners. This highlights the need for targeted teacher education practices emphasizing the appropriate use of high-CT activities for all learners. Cultural factors influence teachers' beliefs about critical thinking strategies, suggesting the need for culturally sensitive approaches to instruction and professional development. Future research could benefit from longitudinal studies examining how teachers' beliefs evolve over time and

translate into classroom practices, as well as investigating the impact of targeted professional development programs on teachers' beliefs and practices related to critical thinking strategies in secondary education.

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