Integrative Review: The Relationship of Personality Traits and Learning Styles to Computational Thinking Skills Across Vocational Disciplines

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Abstract

This study employs an integrative review to synthesize scholarly literature on the influence of personality traits and learning styles on the development of computational thinking (CT) skills in vocational education students. As an indispensable 21st-century skill, CT empowers vocational graduates to solve complex problems and adapt to technological innovations across various industrial sectors. However, a comprehensive understanding of how individual factors shape the acquisition of these skills remains limited and fragmented in existing research. Consequently, this review addresses this gap by analyzing findings from diverse published qualitative and quantitative studies. The review focuses on the traits of conscientiousness and openness to experience, which have been shown to be demonstrably relevant to academic and technical success. Furthermore, it explores the contributions of the dominant kinesthetic and visual learning styles prevalent in vocational settings. This analysis aims to reveal how these individual characteristics specifically influence core CT elements such as decomposition, algorithmic thinking, abstraction, and generalization. The expected outcomes include the formulation of a new, comprehensive conceptual framework and the identification of future research gaps. The findings will also provide pedagogical implications to help educators design more personalized and effective CT teaching strategies. Ultimately, this review offers a valuable, evidence-based contribution to the vocational education literature for both educators and policymakers.

Keywords: vocational education, computational thinking, personality traits, learning styles