Investigating Preservice Teachers' Metacognition Skills by Developing Meta-Strategic Knowledge

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Abstract: Metacognition is an influential tool for effective learning and empowers individuals to take control of their cognitive abilities, yet it is underdeveloped in preservice teaching programs. This research reviews the literature on a subdivision of metacognition known as meta-strategic knowledge (MSK). It investigates how preservice teacher programs can use explicit teaching of MSK through visible thinking routines to close the theory-practice gap in higher-order thinking skills instruction.

Purpose and perspectives

Classrooms are messy, complex environments, and thus, interdisciplinary, action-oriented, and contextualized research is needed to support students' long-term flourishing (Hoadley, 2018). In the inaugural edition of the *Journal of Learning Sciences,* Kolodner (1991) writes, "We hope, in this journal, to foster new ways of thinking about learning and teaching that will allow the cognitive sciences to have an impact on the practice of education" (p. 1). Much has been learned in the last 33 years since she wrote this. However, though there are pockets of excellence created by our best teachers, many classrooms still primarily focus on knowledge transmission, with little implementation of theoretical findings affecting how secondary students learn (Dennis & Somerville, 2023). As a Lecturer in a Bachelor of Education Program in Western Canada, I observe our pre-service teachers' difficulty in breaking away from the traditional ways they were taught and embracing new knowledge about teaching and learning. In provinces such as British Columbia and Ontario, as well as countries across the globe, educators are trying to close this skills gap by implementing curricula that prioritize deep conceptual understanding and higher-order thinking skills (HOT) (*Curriculum | Building Student Success - B.C. Curriculum*, n.d.; *New Curriculum and Resources*, 2020; *Next Generation Science Standards*, n.d.). However, teachers are struggling to make the shift to teach and assess these complex skills.

Sawyer (2022) identifies the translation of scholarship into practice in complex classrooms as a vital theme for future research. Educational research often explores what is possible tomorrow, but it does not always address what is practical today (McKenney, 2013). The result is a persistent and problematic gap between theory and practice, which is prevalent in teaching HOT. This research explores how explicit instruction of MSK in preservice teaching programs can be leveraged to improve metacognition in preservice teachers to address the widespread challenge of teaching HOT.

This research identifies two main exploration areas in response to the research question. First, how visible thinking routines can be used as an intervention for explicit instruction of MSK (Ritchhart et al., 2011). Second, how visible thinking routines can reduce the research/theory gap in MSK development and HOT teaching.

Research Question

Can explicit instruction of meta-strategic knowledge (MSK) with preservice teachers bridge the gap between theoretical frameworks and practical application in teaching higher-order thinking skills (HOT)?
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