External Representations and the Design of Seamless Learning Systems

# Details

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[The chapter is a theoretical study based on existing literature in the area.]

## Implications For Educators About

## Implications For Stakeholders About

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# Abstract

Current trends in technology-enhanced learning highlight the increasing importance of mobile digital tools in learning scenarios; seamless learning, or learning that spans contexts and activities within and without the classroom, is becoming mainstream. Despite the growing body of the literature in this area, this chapter highlights a general focus on technological issues and perspectives and a lack of theoretically driven discussion. We argue that theoretically/conceptually inspired literature reviews covering pedagogy and cognitive aspects of learning are currently needed to establish a grounded framework for future research in this area. This paper contributes one such analysis—it proposes and reflects on the issues raised when considering seamless learning from the perspective of the established literature on external representations (ERs), a core concept in distributed or embodied accounts of cognition. Core issues we discuss are: (a) what are the challenges facing seamless learning from an ERs perspective? (b) how can knowledge about ERs be applied to seamless learning systems?, and (c) what methodological challenges will emerge if seamless learning systems are studied from the perspective of ERs? This discussion is intended as a bridge between practical and applied work in seamless learning and theoretical or laboratory-based work in ERs—it seeks to drive the field of seamless learning forward by highlighting best practices from an established theoretical perspective. By elaborating on a theoretically grounded lens, we seek to empower researchers to identify promising approaches for the design and evaluation of next-generation high impact seamless learning solutions.

# Outcome

"We argue that the design and evaluation of next generation seamless learning seamless systems needs to move beyond technological concerns to also include a focus on fundamental theoretical issues—the representational perspectives outlined in this paper are one such focus. More specifically, we have also shown how insights from ER research can be applied to seamless learning scenarios in terms of both the intrinsic challenges this poses and via recommendations that can guide researchers and designers toward viable solutions." (Authors, 67-68)