


Chapter 1

Towards a Pedagogy of Engagement in Technology- Enhanced Teaching

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ABSTRACT

This chapter provides an overview of seven trends in technology-enhanced teaching and their relationship to cognitive, emotional, and behavioural engagement in learning. In addition to the benefits and challenges, cases are presented that show specific practices in secondary or higher education. Hybrid models extend access and offer students greater control over the place of learning, but they pose challenges for teachers in connecting to all students, both onsite and online. Games and gamification stimulate adaptive learning and motivation for learning through challenge and reward. Data-driven instruction enables educators to make more informed pedagogical decisions, tailoring support to individual needs and preferences. Virtual reality offers immersive experiences that enhance in-situ experiences, while online discussion forums can promote dialogue and collaborative knowledge building. Educational video platforms provide annotated reflections and feedback, and generative AI tools open new possibilities for creativity and personalized support for diverse learners.

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INTRODUCTION

The integration of technology in education has led to the increased use of various tools and methods, such as virtual learning environments, simulation software, educational games, and gamification. Additionally, there are virtual experiments and visualization tools for complex models. These advancements also include communication platforms that allow students and teachers to collaborate via email, electronic forums, and instant messaging systems. At the beginning of this century, technology use mainly aimed at *facilitating* existing teaching approaches such as the use of presentation software, electronic whiteboards, virtual learning environments, and email (Winn, 2002; Wu & Wang, 2016). More recently, technology has been applied to *adapt* teaching approaches, inspired by changing ideas about what effective teaching and learning imply and supported by the increase in smartphones, tablets, social media, smart technologies, and high-speed internet connections (Kimmons et al., 2021). In recent years, the landscape of available technology for education has expanded, with the most influential example being the use of Artificial Intelligence in education (Imran et al., 2024). These tools hold the potential to *transform* education by making learning experiences more interactive, personalized, and responsive to individual student needs. However, despite their growing availability, the pedagogical approaches employed in many educational settings have not evolved at the same pace (Ramdahani, 2025; Sailer et al., 2024). This disconnect presents a critical challenge: how can we redesign pedagogies to make meaningful and effective use of the digital tools now at our disposal?

At the heart of this challenge lies the issue of learner engagement. Decades of educational research underscore that engagement—whether cognitive, emotional, or behavioural—is a vital condition for learning. Yet many learners are not engaged in their education, resulting in high attrition and low interest, motivation, and academic outcomes (Rumberger & Rotermund, 2012). Learner engagement is not a “nice-to-have” addition to learning; it is a prerequisite. Without cognitive, emotional, and behavioural engagement, deep and sustainable learning is unlikely to occur (Ballale, 2024; Perry, 2022). Educators must shift towards pedagogies that put students at the centre of the learning process (Martin & Bolliger, 2018). Technologies can support these pedagogies by offering adaptive learning paths, personalized feedback, and individual learning experiences. This requires not only technical capacity from the teacher but also a renewed commitment to learner engagement as the core principle of effective teaching. Without rethinking pedagogies, technology risks being used in ways that merely replicate teacher-centred practices rather than pedagogies focused on engaging learners in learning. This chapter aims to provide implications of learner engagement at the centre of the learning process for pedagogies using technology in upper-secondary and higher education.

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