

Chapter 22

A Reconstructed Conception of Learner Engagement in Technology Rich Online Learning Environments

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ABSTRACT

Teaching and learning in a technology rich digital context challenge established thinking about student engagement in their learning. This chapter presents a reconstructed conception of learner engagement for online environments consisting of: engagement with community; engagement with technology; engagement with mathematics content; and an amalgam of all three. This descriptive, cross-case study combines current literature with the authors' past research to develop characterizations of these components of online learner engagement. This reconstructed model of learner engagement is the focus of the study, providing: 1) a vocabulary for developing a narrative describing how teachers as students think and learn with technology in an online environment and 2) a framework for mathematics teacher education professional development. Results indicate that this model supports teacher educators in both describing and evaluating how teachers as learners engage in a unit of instruction, and framing the course design and instructional strategy choices that support learner engagement.

INTRODUCTION

Student engagement has long been recognized as a critical component of successful learning (Pike, Kuh, & McCormick, 2010; Zepke, Leach, & Butler, 2010). Current research describes student engagement in relatively amorphous and vague terms, focusing on issues such as time spent studying, time spent in co-curricular activities, and taking part in effective educational practices (Carini, Kuh, & Klein, 2006;

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Trowler & Trowler, 2010). With teaching and learning transitioning to more digitally situated contexts, the onsite, face-to-face perspective of student engagement lacks the focus and granularity to adequately characterize student engagement in online learning environments where technology plays a critical role in both the teaching and learning. Furthermore, as education evolves incorporate online, digitally-mediated experiences, the existing conceptions of student engagement provide an insufficient framework for teachers to construct effective learning experiences. For these 21st century technology rich online learning environments, teachers need a more comprehensive concept of student engagement if they are to create experiences where the technologies serve as more than content tools used for multiple tasks, to: navigate the online environment, use as pedagogical tools, and use as objects to think with (Roepstorff, 2008).

Today's teachers have not typically learned content using technology-based learning tools (Fanning, 1994; Rakes, Flowers, & Casey, 2012). For example, teachers likely have not explored and learned mathematics using dynamic tool sets such as those available in iPads. To teach with technology-based learning tools, teachers need educational experiences that support and engage them in learning how to learn mathematics with these digital technologies (Lee & Kim, 2014; Niess et al., 2009). They also need to learn how to effectively engage students with these new tools for learning mathematics. They need opportunities to rethink, unlearn and relearn ways that change, revise and adapt their mathematical content and pedagogy for engaging students in learning in light of the affordances of the technologies (Polly & Orrill, 2012; Srisawasdi, 2012).

Designing effective learning experiences that transform teachers' knowledge becomes even more challenging when teachers' continuing education courses are taught in online environments (Dabbagh & Kitsantas, 2012). To support teachers in creating effective online learning experiences, this research proposes an enhanced model of student engagement (hereafter referred to as *learner engagement* to include teachers as students who are learning to teach mathematics) consisting of four components:

1. Engagement with the learning community;
2. Engagement with the technology;
3. Engagement with the content of the learning event; and
4. Engagement within the intersection of all three.

This research investigates the proposed model for learner engagement as an effective framework for describing how students engage in their learning activities. Two questions guided this research:

1. How does the proposed model of engagement describe how students engage in the online learning experience? This engagement would include, but not be limited to: interacting with other students and the instructor; interacting with technology as a tool to navigate the online learning environment (i.e. Blackboard to receive and submit assignments) and using technology as a learning tool (i.e. Google Docs to support collaboration); taking part in inquiry-based based activities where the student investigates the ideas and concepts in the course.
2. How does the model inform teachers about learner engagement as a foundation for designing and facilitating online learning experiences? With a more descriptive model of online student engagement, teachers would be better prepared to create online learning experiences that facilitate this engagement. Additionally, with an effective model of online learner engagement, teachers would have a useful tool to evaluate and redesign online learning experiences to increase learner engagement.

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