Chapter XII
Investigating Prospective Teachers as Learning Design Authors

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ABSTRACT

This chapter reports on findings from a recent project situated in the area of preservice teacher education. The project investigated prospective teachers authoring and using their own contextualised learning designs. The chapter describes how 17 secondary and primary preservice teachers adapted existing, well-researched learning strategies to inform the design of their own specific online learning tasks and how they implemented these tasks in the context of their teaching practicum. The prospective teachers used an online learning design authoring system as a tool and flexible 'test-bed' for their learning designs and implementation. An account of the ways in which the prospective teachers developed sophisticated understandings of their chosen learning strategy and developed fresh insights into online and face-to-face teaching issues is presented.

INTRODUCTION

A problem facing teacher education today is the resilient nature of teachers' beliefs that shape their (face-to-face and online) classroom practices and the need to provide them with opportunities to discuss and reflect critically on these beliefs. For example, preservice teachers study

a variety of learning principles and strategies in theory classes at university, and are exposed to an increasing range of online learning designs in their studies. (The term *learning design* (LD) in this study is informed by Oliver and Herrington (2003) and refers to a sequence of coordinated online learning experiences underpinned by a learning strategy, learning resources, and support mechanisms to provide guidance and feedback to learners.) However, preservice teachers often struggle to implement theory into practice (Fang, 1996), and there is good evidence that when faced with the hectic pace and demands of every day teaching duties, they revert to more traditional didactic teaching methods (Goodrum, Hackling, & Rennie, 2001). Furthermore, design of online activities tends to be pedagogically shallow and content-driven (Odlyzko, 2001).

This study investigated these problems by situating preservice teachers as learning design authors and examining how the process of authoring and implementing a contextualised learning design might help 'build bridges' between theory and practice in their university course. It explored the efficacy of teachers creating their own Web-based learning task using a learning design authoring system and how they can use, and reflect upon, these contextualised designs on their school teaching practicum. In this study, the scope of these learning tasks was at the level of 'lesson component' and typically comprised a 20–30 minute online learning activity. The main research question for this study is: *How does preservice teachers' authoring and use of contextualised online LDs enhance their development as teachers?* Subsidiary questions for this chapter include: *To what extent do preservice teachers develop knowledge of (online and face to face) teaching and learning?* and *To what extent is their understanding of specific learning strategies enhanced?* Although findings are mostly generalisable to all domains, the study was confined to math and science education contexts due to budget and time constraints.

BACKGROUND

This study aims to build on the current interest in LDs to investigate pertinent issues involved in preservice teacher education. It highlights prospective secondary and primary teachers as important stakeholders and introduces school-based classroom contexts to the LD research agenda. Research into teachers' use of LD authoring systems is a crucial but underdeveloped area of the LD research agenda.

Teachers, Learning Designs, and Learning Design Authoring Systems

Researchers have recently identified and explored the underpinning support structures and learning strategies incorporated in exemplary online learning designs, particularly from tertiary education contexts (Agostinho, Oliver, Harper, Hedberg, & Wills, 2002; Laurillard & McAndrew, 2003). For example, multimedia-supported predict–observe–explain (POE) tasks use the well-researched POE learning strategy (White & Gunstone, 1992) to effectively scaffold students' learning in an e-learning environment, presenting digital demonstrations set in real-life contexts as stimuli for their learning (Kearney, 2002). However, research into how teachers might adapt and use LDs is in its infancy (e.g., see Bennett, Lockyer, & Agostinho, 2004; Cameron, 2007; Kearney, 2006) and has mainly been confined to tertiary teachers. This study builds on the Kearney (2006) study by focusing on three exemplary learning strategies across two disciplines, and also involves participants' use of a LD authoring system—in this case, the *learner activity management system* (LAMS) (Dalziel, 2003)—as a 'test-bed' for teachers to contextualise and implement their specific LDs. LAMS (version 1.0 at the time of the study) was chosen primarily because its intuitive drag and drop authoring environment was considered user-friendly for novice (student teacher) participants; it was freely available as open source software,

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