

Chapter 3

Scaffolding Problem– Solving and Instructional Design Processes: Engaging Students in Reflection–in– Action and External Representations in Three Online Courses

Tian Luo

Old Dominion University, USA

John Baaki

Old Dominion University, USA

ABSTRACT

Instructional design is an applied field of study that involves considerations for complex problem solving and authentic learning. Instructional guidance and scaffolding is particularly critical in facilitating online instructional design students, thus helping them succeed. In this chapter, the authors share how they designed and facilitated three instructional activities in three courses to scaffold a student-centered learning environment online. Using a case study approach, the authors describe their design considerations and how the instructor made decisions to incorporate external representations as a unique instructional technique into the three courses. Through student self-reporting, the instructor's formative and summative evaluation, and the authors' close review of drafts, the design process resulted in final products that were refined and noticeably improved. The authors conclude the chapter by reiterating the importance of scaffolding the problem-solving process with external representations and provide recommendations for future researchers and practitioners.

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INTRODUCTION

While the earliest face of online learning, distance education, has existed for merely a few decades, the evolution of online learning has been growing exponentially in the higher education field. Driven by economic, social, and technological changes of the digital era, online learning has been rapidly taking the place of traditional face-to-face classroom learning and becoming one of the most promising practices in higher education (Rudestam & Schoenholtz-Read, 2010). As faculty members from an institution carrying 30 years of experience delivering higher education at a distance, the authors strive to improve instructional and pedagogical practices of online learning to help graduate students prepare for an ever-evolving, complex world. This chapter focuses on this overarching question: how can instructors provide an online learning environment where instructional design students engage in collaborative reflection and ideation, and enhance the design process when problem-solving?

The context of the study resides in an instructional design and technology (IDT) program where the majority of students are online students who work fulltime. Online courses are offered both synchronously and asynchronously. Almost all IDT students take their courses via video web conferencing delivery methods while these courses occur in real time on a specific day and time each or every other week. Students are able to engage and participate in class discussions and activities with all of their classmates at a distance. With a webcam and microphone, online learners can participate in real time during live online classes, seeing and hearing the instructor and all of their classmates. During the weeks where students do not meet synchronously, instructors design online, asynchronous activities so that students can participate in Blackboard, or other technology-supported platforms and applications. This format of blended learning provides unique opportunities to engage students in collaborative, reflective learning and problem-solving.

The authors designed instructional activities for three different IDT courses and focused on three aspects of collaborative problem-solving in an online learning environment. First, the authors provided students with ample opportunities to reflect-in-action when solving ill-structured problems. Reflection-in-action requires students to monitor and adjust their behaviors while engaged in the learning activity when it is happening (Schön, 1983). When students think on their feet, keep their wits about themselves and learn by doing, students can not only critically think by doing but can critically think about doing something while doing it. Second, the authors engaged students in practices and activities where students can seamlessly design and develop external representations. External representations, such as prototypes, sketches, models, and concept maps, are documentation and reflections on what is happening in the design; are made to communicate to the designer; and provide information, interpretation, and inspiration for ideas (Huybrechts,

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