Chapter XVI
Constructivist Strategies to Optimize Four Levels of Interaction in a Distributed Learning Environment: A Case Study

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ABSTRACT

This case study describes how a constructivist theory of learning guided the design of a distributed learning environment for a three credit hour graduate level course on instructional design. Four types of interaction data were collected from 27 participants, one instructional designer/instructor, and two assistant designers. Overall, constructivist strategies appeared to contribute to a successful learning experience as measured by participant surveys, designer observations, and academic performance. A strong majority of students considered a number of constructivist strategies beneficial, such as the provision of a variety of reading and learning activity options, as well as participation in an authentic and relevant learning task. Academic quality of end of semester instructional products was high. A strong majority of participants received a rating of excellent, as determined by designer/instructor and mentor evaluations. Some constructivist strategies appeared to detract from the learning experience. Data related student-to-student, student-to-content, student-to-teacher, and student-to-interface interaction
suggests the need to clarify expectations for small group discussions and participant blogs, rewriting or repositioning an instructional story as a case study, increasing design-document specific feedback, using a broad and shallow interface structure and moving selected course content to pre-packaged paper-based format to reduce cognitive demands related to reading while online.

INTRODUCTION

This case study identifies constructivist design principles behind the creation, implementation, and assessment of a semester-long graduate-level distributed education course. Distributed education involves multiple sources of information, occurring in or outside a classroom or campus, often mediated by technology, with time and location independence (Obinger, Barone, & Hawkins, 2001). The role of technology in facilitating constructivist instructional strategies is explored and analyzed in this chapter to direct future distributed learning case study design and assessment studies.

In its broadest sense, a constructivist learning experience is one in which the student is provided with opportunities to create knowledge and understanding as they reflect upon authentic learning activities. Students in this case study participated in a distributed education course titled “Instructional Design.” Students, hereafter named participants, were required to create (construct) self-paced instructional modules for two audiences: a teaching mentor, and the mentor’s students. Course content involved participant problem solving and creative thinking in the context of uniquely identified instructional problems. Participants were required to generate a number of documents and products including: analysis instruments, needs assessments, self-paced instruction, learning assessments, and weekly reflection blogs.

While the course was delivered online, participants interacted with a variety of learning resources characteristic of distributed learning environments. Participants in this student were involved in:

- one on one interaction with designers as questions arose
- online collaboration/interaction with other study participants, fellow graduate students who also were taking the class and also creating units of instruction
- interaction with a mentor based upon instructions to "find someone whose teaching you admire and hope to emulate"
- interaction with the mentor's students

The unit of instruction developed by the participant involved:

- conducting a needs assessment and learner analysis
- developing instructional objectives, strategies and assessments
- implementing the instruction
- evaluating (formatively and summatively) the effectiveness of the instruction

The problem solving nature of the instructional design course, coupled with authentic design tasks and audiences, provided a strong opportunity to analyze and assess the implementation of constructivist learning strategies.

This chapter begins by describing key terms and concepts used in the context of this study. Constructivism, rich environments for active learning (REALs) and resource-based learning (RBL) are defined. The influence of cognitive load theory and interaction design in the imple-