Chapter 14

Essential Design Features of Online Collaborative Learning

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ABSTRACT
With the goal of working towards a paradigm shift from delivery-centered to participation-centered pedagogy in mind, this chapter presents a set of essential design features that readers need to consider for designing online collaborative learning environments. Meaningful interaction and collaboration in online environments need the consideration of design elements as well as the understanding of the affordances of interactive learning technologies. This chapter presents a 3-dimensional design activity - social structures, tools, and learner diversity - as the fundamental elements that educators and instructional designers need to consider. It is important to note that the combination of these essential features is not prescriptive, but rather, is situational dependent on the learning context to achieve the “goodness of fit” for the desired learning outcomes. To demonstrate the design and enactment of the 3-D design features, the authors present a case example of a problem-centered learning environment designed for secondary learners’ science learning. In conclusion, the authors suggest that while the pedagogical advantages of collaborative learning have been well-supported, more research is needed to better understand the complex nature of designing collaborative learning in online settings, especially through the mediation of emerging technologies such as Web 2.0 technology tools.

INTRODUCTION
One of the prominent trends in K-12 education, higher education and corporate training is the adoption of online learning to complement traditional forms of learning conducted in bounded physical settings. For the past several years, the population of online learners and online courses has been growing substantially (Allen & Seaman, 2007, p. 68; Downes, 2005). It is not uncommon to find
schools and institutions offering online or blended types of courses to extend learning opportunities beyond classrooms. Further, the recent advances of wireless mobile technologies and social software tools based on Web 2.0 technologies provide new possibilities to design seamless learning spaces cutting across formal and informal settings (Hemmi, Bayne, & Landt, 2009; Sharples, Taylor, & Vavoula, 2007). Now, learning at anytime and anyplace seems more possible with such emerging technologies that maximize mobility, connectivity, and versatility.

Despite the increasing adoption of learning technologies, however, pedagogical changes in online learning have been slow, as seen in online courses focusing on content delivery and tutorial based instruction. Simply turning classroom lectures into online learning formats do not necessarily provide learners with the opportunities for rich interactions arising from engagement in activities that make learning experiences meaningful. Instead, it is important to have deep understandings of how people learn as well as what new technology can provide for the successful design of technology-integrated learning environments (Bransford, Brown, & Cocking, 2002).

To overcome problems underlying current content-driven practices, a paradigm shift from delivery-centered to participation-centered approach is needed. Beyond downloading learning materials and files, learners should engage in meaningful activities with their peers to develop 21st century learning skills, such as solving ill-structured problems, expressing critical thinking skills, working effectively in teams, adopting diverse perspectives, and creating meaningful content. Towards this paradigm shift, this chapter presents a set of essential design features that readers need to consider for designing collaborative learning activities in online environments.

THEORETICAL BACKGROUND

Situative Perspectives and Collaborative Learning

Drawing on the social-constructivist view of learning which posits that knowledge is constructed as people negotiate meanings with others, situative perspectives of learning expound the social-constructivist construct by emphasizing on the in-situ nature of learning. Learning in this view is performative that is tightly bounded in activity, that is, practice. According to Lave and Wenger (1991), practice can be thought of as “a way of being that emphasizes on the inherently socially negotiated character of meaning, and the interested, concerned character of thought and action of persons-in-activity” (pp. 50-51). In other words, the knowing, thinking and doing of the persons performing activities in context are based on the situated negotiation and renegotiation of meanings in the particular context. In turn, these meanings are constantly being renegotiated and changed in the course of activity. Thus, practice is social and socially mediated, and the development of human knowing is through participation in a socially constituted world.

Collaborative learning that emphasizes the social construction of knowledge and skills through interaction with others is one approach of translating the social-constructivist theories to instructional situations. Collaboration is conceptualized as a process of shared meaning making that provides opportunities for learners to experience multiple perspectives from others who have different backgrounds, and to develop critical thinking skills through the process of judging, valuing, supporting, or opposing different viewpoints (Fung, 2004; Lipponen, Hakkarainen, & Paavola, 2004). In the continuous process of interaction, prior knowledge is assimilated to bootstrap new understanding. In other words, learners try to make sense of the new knowledge by building on their existing frames of reference.
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