Chapter 1
Pedagogical and Technological Considerations Designing Collaborative Learning Using Educational Technologies

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ABSTRACT

Digital educational technologies can be used by instructors to help students create collaborative knowledge in the higher education classroom. This chapter describes six case studies, based on a mixed-methods research approach, that demonstrate the use of a specific digital educational technology. These technologies, which include social media, collaboratively written online documents, webinars, clickers, simulation games, and Web technologies, have been integrated into a course for the purpose of enhancing both learning and collaboration among students. The instructors explained how these technologies improved student learning and fostered collaboration. Each case study provides technical, epistemological, cognitive, and social design features and suggestions for other instructors who are considering applying these technologies to their own courses.

INTRODUCTION

The use of technology in the classroom as a means of promoting collaborative learning can be explored through the use of many different types of technology. As more students enter higher education classrooms with expectations of using technology to learn, the classroom model is evolving. The evolution is toward using technology to address a particular objective in the course through student collaboration inside and outside of the traditional course time in face-to-

face, blended, and online settings. As the use of technology increases to promote collaborative learning in the higher education classroom, it is important to determine how instructors use digital technologies to help students create collaborative knowledge and what factors contribute to successful teaching and learning. In this chapter, six case studies are provided that demonstrate the use of a specific technology with the goal of enhancing collaboration among students while learning the content as specified in the course objectives.

When designing class activities or considering integrating a new technology into classroom instruction, instructors can benefit from information about how others have integrated these technologies for collaborative knowledge creation. Both the instructors' and the students' perceptions on the effectiveness of these technologies help to inform course design and application to practice. With the rapidly changing nature of technology, case studies of other instructors' experiences provide inspiration and insights to instructors considering using these technologies for collaborative knowledge creation. The case studies also provide opportunities for instructors to gain exposure to the use of technology across disciplines and provide best practices to adapt the technology use for their own application.

BACKGROUND

Collaborative Learning

When groups experience cohesion and become a learning community, the quality of collaboration increases and the productivity of the group are positively affected (Viilo, Seitamaa-Hakkarainen & Hakkarainen, 2011). Collaboration can be enhanced in virtual learning environments when flexibility of time and opportunity for synchronous as well as asynchronous collaborative efforts can be executed (Ibanez, et al., 2011; Vesisenaho, et al., 2010). The learning curve for use of a new

technology is important to take into consideration because initial collaborative efforts may result in technical difficulties that demand troubleshooting and take time. The learning curve is more evident when using more complex technology.

The intentional creation of learning groups to complete problem-based learning exercises was found to result in significantly higher levels of course satisfaction when clear goals were set, best practices of teaching were employed, and appropriate workloads and assessments were assigned (Downing, Ning & Shin, 2011). The implications of using technology for collaboration promotes authentic knowledge creation and systematic learning with support and content facilitation provided by the instructor (Songhao, Saito, Maeda, & Kubo, 2011). Collaborative learning opportunities explicitly incorporated into course design promoting the use of technology can be very useful in the enhancement of the course material and the engagement of students.

Technology in Higher Education

Higher education instructors are rapidly integrating Web 2.0 and other recently developed digital technologies into classroom instruction. A study (Salaway, Caruso, and Ellison, 2008) of undergraduate student use of information technology found that between 17% and 47% of learners were engaged in the use of socially oriented Web 2.0 tools, including wikis, blogs, Twitter, Facebook, and others. While today's students have exposure to a wide variety of technologies, they lack an awareness of how those tools can be used for learning (Diaz, 2010), yet these tools are increasingly being utilized in education due to their ease of use and the opportunity for low- or no-cost instructional innovation (Diaz, 2010; Chong, 2010). This demonstrates the importance of using scaffolding activities and technology to promote positive experiences and build social relationships within the community (Viilo et al., 2011). The use of technology as a tool to increase

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