Chapter 4

Active Learning Strategies for Online and Blended Learning Environments

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ABSTRACT

Students must be engaged in active learning opportunities that allow them to feel connected to the class and not just a passive spectator. However, that may require the instructor to learn and try different methods of teaching and learning that are more student-centered and less faculty-centered. The purpose of this chapter is to assist faculty in developing active learning strategies that will advance their personal skill sets to better embrace learner-centered instruction with the use of technology tools for online and blended environments.

INTRODUCTION

In recent years, models of active learning strategies have expanded (Gibson & Shaw, 2011). In the past, lecture was the choice for teaching and written exams were used for assessments. Early on, Bloom, Englehart, Furst, Hill, and Krathwohl (1956) noted that the delivery and assessment of knowledge in this manner did not require students to use any type of critical thinking or analysis of content. However, recent studies have proven that active teaching strategies support critical thinking more readily than monotonous lectures (Neuman et al., 2009; Penningroth, Despain, & Gray, 2007; Ridley, 2007; Whitmire, 1998). Furthermore, fostering student engagement through active learning activities and assessments can impact comprehension, retention, and problem-solving skills (Bluestone 2000; Bransford, Franks, Vye, & Sherwood, 1989; Krain & Shadle, 2006; Michel, Cater, & Varela, 2009; Switky, 2004). Students must be engaged in active learning opportunities that allow them to feel connected to the class and not just a passive spectator.
Much has been written about passive and active learning since Piaget’s (1972) theory of Cognitive Constructivism and Vygotsky’s (1978) Social Constructivist Theory provided the foundation of a broad constructivist learning theory, also called constructivism. Constructivism emphasizes that the student creates their knowledge and learning based upon previous experiences. Smith and Ragan (1999) identified the foundational assumptions of constructivism:

- Knowledge is constructed from experience.
- Learning results from a personal interpretation of knowledge.
- Learning is an active process in which meaning is developed on the basis of experience.
- Learning is collaborative with meaning negotiated from multiple perspectives. (p. 15)

More than ever, in both K-12 and higher education, constructivist teaching methods and active learning strategies are utilized to better prepare digital age students. In addition, constructivism has maintained its relevancy in the literature. At the same time, the literature acknowledges that constructivism increases online student engagement while supporting student success (Shelton, Cummings, & Mason, 2014).

**BACKGROUND**

Constructivism teaching and learning methods such as active learning are being implemented more frequently now that students are needing a more student-centered approach. Active learning strategies are rooted in constructivist learning theory because of its emphasis on the student being actively engaged in knowledge construction (Cakir, 2008; Jones & Brade-Arjave, 2002). Many researchers have prescribed the implementation of active and collaborative learning processes to guide the development of course content and contextual meaning, to improve higher order thinking skills, and to encourage shared exploration (Brindley, Walti, & Blaschke, 2009; Jonassen, Davidson, Collins, Campbell, & Haag, 1995; Simiens, 2002). Because a growing body of evidence indicates that inductive teaching and learning methods such as simulations, role playing, problem or project-based, and case-based learning produce more positive learning gains than traditional lecture methods (Hovancsek, 2007; Prince, 2004), each method is explored in this chapter. In addition, in order to support active learning, the following tools and approaches are also discussed: Web 2.0 tools, collaboration, building community, and flipped classrooms.

**Simulations**

Interactive simulations are defined as programs that attempt to replicate an authentic system, event, or process where learners interact with the simulation (Alessi & Trollip, 2001; Blake & Scanlon, 2007; de Jong & van Joolingen, 1998; Lean, Moizer, Towler, & Abbey, 2009; Mislevy, 2011). As an active learning strategy, simulation encourages students to practice critical thinking skills and reflection on their actions (Morse, 2012). As faculty move to utilize experiential learning in classrooms, interactive online simulations have become a popular trend (Hanlon, 2008; Lean, Moizer, Towler, & Abbey, 2009).

According to Blake and Scanlon (2007), numerous benefits of using simulation in the science classroom have been identified. Simulations can replace laboratory activities that are considered dangerous, reduce the costs of lab equipment and supplies, lessen time spent on experiments, allow teachers to interact with students in lieu of management and supervision of the experiment, and promote inquiry-based learning through the development of hypothesizing and exploration. By allowing the learner to control the pace and content, learning can be individualized to match each learner’s needs (National Research Council,
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