Chapter 17
Flipped or Inverted Learning: Strategies for Course Design

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ABSTRACT
A number of researchers have explored the use of multimedia to support instruction in inverted classrooms providing a functional approach for university face-to-face and hybrid courses. Students in inverted learning work online before class listening to prerecorded lectures and completing related activities reserving class time for problem solving, projects, authentic applications, and reflection. The purpose of this chapter is to explore the value of cognitive and metacognitive elements in flipped – also known as inverted – learning that promote active learning. Practical strategies for course design and technical considerations related to how multimedia tools can be used to deliver and support instruction are also addressed.

INTRODUCTION
Inverted learning is a unique learner-centered approach to teaching and learning. This instructional model adjusts the design and delivery of instruction so students take the lead and responsibility for learning before class so the instructor can spend class time working on applied learning activities. The model relies on the active involvement of the learner and results in increased teacher-student interaction (Kahn, 2011). This chapter will review the theoretical background for inverted learning as well as the instructional design and technical considerations involved in planning and implementing the model. Objectives related to this chapter focus on flipped/inverted learning and strategies for course design:

1. Explore the concerns for meeting the needs of the learner;
2. Understand the constructivist design features of inverted learning;
3. Analyze the cognitive and metacognitive features of multimedia used to promote learner engagement online;
4. Understand the structure, components, and process used in developing an inverted course;
5. Consider important guidelines and technical considerations for course design; and
6. Summarize the special features and future research areas related to inverted learning in higher education.

BACKGROUND

Inverted learning is an emerging instructional approach that can be used to support or change the pedagogy of teaching in education. The system customizes the student’s learning experiences promoting student discovery and management of learning. Concerns about traditional learning models in higher education coupled with an increasing desire to meet the learning needs of the adult student have resulted in the recent interest and experimentation with inverted learning. Inverted learning is rooted in the constructivist model and the fields of active, social, situated, learner-centered, and virtual or e-Learning (see Key Terms and Definitions).

Most universities still deliver instruction based on a philosophy of a teacher-controlled learning model that promotes passive learners. It is a formal, impersonal learning environment created by direct instruction with an emphasis on gaining information, note taking, and following procedures (Cole, 1990) with less focus on the learner and how learning occurs. This lecture-based format fails to engage students (Trees & Jackson, 2007) developing passive, non-thinking learners (McKeachie, 2002). Meyers and Jones (1993) reported students exposed to a lecture format were inattentive 40% of the time affecting both learning and retention (p.78). Gleason (1986) observed that passive learners also appeared disconnected from the instructor, classmates, as well as the course content. Arum and Roska (2011) questioned the effectiveness of traditional learning in higher education and used the Collegiate Learning Assessment (CLA) to assess content retention in college students. They reported most students demonstrated limited growth in learning and retention. Bok (2006) determined students in lecture courses only remembered 42% of material taught and found retention a week later deteriorated to 20% (p. 123). Crouch and Mazur (2001) also found students in lecture classes were unable to relate or retain content knowledge. It appears direct instruction often results in inefficient or ineffective learning.

Another consequence of the lecture model is the amount of teacher-instructor contact time. Khan (2011) found instructors in a traditional class spent less than 5% of instructional time interacting and working with students (n. p.) affecting the scope and depth of exposure to course content and limiting the time available for problem-solving, critical thinking, as well as the application and transfer of learning needed to move skills from theory to practice. Some instructors may ask questions or conduct an activity but most courses can be described as lecture heavy. In contrast to straight lecture, Marton and Saljo (1976) recommended a learner-centered approach that results in developing deep and reflective learning. In learner-centered classrooms, effective learners frequently pause and reflect for understanding, adjusting learning strategies as needed. Brockbank and McGill (2007) described this process of reflection as third order learning (p. 49) important for the growth and efficiency in learning. It appears “what we know about good learning is almost wholly contrary to the structure and conditions of lecture courses” (Foreman, 2003, p. 14). Traditional instructional methods typically used in higher education also seem inconsistent with the core learning theories found in psychology and education.
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