Chapter 13
Strategies to Promote Pedagogical Knowledge Interplay with Technology

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ABSTRACT
The transformation from face-to-face instruction to digital instruction or hybrid learning requires robust pedagogical strategies. This chapter addresses key pedagogical strategies used to support online learning experiences through the lenses of evidence-based educational theories. Additionally, the TPACK framework, which asserts that instruction requires the interplay of technological knowledge, content knowledge, and pedagogical knowledge, is used to analyze students’ perceptions of flipped and double flipped online courses. The data show positive dispositions of flipping and double flipping the classroom as pedagogical strategies. Flipped content provided powerful instruction and provided participants with opportunities to utilize learned multimedia skills and receive constructive feedback from the instructor and peers. Double flipping promoted more classroom engagement, interactivity, and class discussions. In both flipped and double flipped classrooms, there was a shift from an instructor-driven learning environment to a whole-class driven learning environment.

INTRODUCTION
With technology driving 21st century education, the infusion of appropriate pedagogical strategies supported by research-based theories will enhance digital delivery, promote positive learning outcomes, promote self-reflection and self-assessment, engage all learners in the process, and provide powerful learning experiences. Courses with online learning, fully online or hybrid/blended tend to produce stronger student learning outcomes than completely face-to-face instruction (U.S. Department of Education, 2010). The shift from face-to-face instruction to digital instruction or hybrid learning requires sound pedagogical strategies. Digital instruction includes didactic
lectures or interactive text delivered over the web, internet-based collaboration, role-playing, simulations, and problem-solving instructional games. Digital instruction is designed mainly as a replacement for face-to-face instruction through virtual courses or as an enhancement for a face-to-face learning experience through hybrid or blended delivery. Pedagogical experiences determine who delivers the instruction or what controls how learners experience and acquire knowledge. These pedagogical experiences are classified into three major categories: expository learning or instruction, active learning, and interactive learning. Expository instruction deals with how digital devices are used to transmit knowledge. Active learning deals with how the learner builds knowledge through manipulation and interaction with digital resources. Interactive learning deals with how the learner builds knowledge through inquiry-based collaborative learning with instructors and peers.

This chapter addresses key pedagogical strategies and resources used to support learning experiences, digital instruction, synchronous, asynchronous, and hybrid learning. These pedagogical strategies are addressed through the lenses of evidence-based educational theories: the constructivist approach; technological knowledge, content knowledge, and pedagogical knowledge frameworks; self-efficacy theory; multiple intelligences theory; Bloom’s taxonomy revised; the Universal Design for Learning principle; and flipping and double-flipping of the classroom frameworks.

The Constructivist Approach and Digital Learning

The constructivist approach deals with how knowledge is constructed to facilitate instruction and engage learners in powerful learning experiences. It serves as a framework to expository learning or instruction, active learning, and interactive learning. The constructivist approach is guided by six tenets (Bull, 2010), which are foundational pedagogical strategies to address the who, the how, and the what of learning:

1. **Learning should be context based.** All instructional content, assignments, projects, and class activities requiring digital engagement should focus on what people need to know, how they learn, where and when they will learn, and who needs to learn (National Education Technology Plan, 2010). It is the curriculum that drives technology infusion and not technology that drives the curriculum. As instruction is designed, emphasis should be on how well the content is supported by learning technologies and not how well learning technologies are supported by the content.

2. **Conceptual learning is through active involvement.** Effective use of digital and learning technologies requires active involvement of students in the learning process as consumers and producers of knowledge. This involvement includes the student as a learner, a co-instructor, a peer evaluator, a producer of knowledge, a consumer of knowledge, an evaluator, and a self-assessor. Key pedagogical strategies addressed later in this chapter -- Bandura’s self-efficacy theory (Bandura, 1977), Bloom’s taxonomy revised (Anderson & Krathwohl, 2001), and flipping (Khan, 2011) and double-flipping of the classroom (Bull, 2014), -- provide guidelines on how to facilitate learning with digital content and learning technologies through active involvement.

3. **Learning is through collaboration with others.** Sharing digital resources, online discussions, class presentations and group activities are key pedagogical strategies to promote collaboration (Ryan, 2007). Collaboration is a key pedagogical strategy to support effective delivery of digital learning. When promoted effectively, collabora-