Chapter 5
A Framework for Promoting Complex Learning in a Blended Learning Environment

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ABSTRACT

Different learning outcomes warrant different learning strategies. Instructional sequencing is dependent upon the various learning outcomes that are intended for a particular course or instructional unit. Complex learning integrates a learner's knowledge, skills, and attitudes, newly obtained skillsets, and the transference of learning in an applied environment. A challenge that many educators face when teaching complex tasks is the ability to assist students to draw from prior knowledge from various subjects in order to approach problem solving. The intent of this chapter is to provide educators with strategies to promote complex learning within a blended learning environment.

INTRODUCTION

The demands of education are ever changing and the traditional classroom, as we know it, has been transforming into a digital learning environment. Online education has continued to grow with more and more educational institutions turning towards virtual schools. While many institutions still want to embrace the traditional classroom and face-to-face instruction, they are turning to a blended approach to instruction. Blended learning provides students with the opportunities to engage and interact with their instructors and peers in a more personal manner along with the convenience associated with self-directed online learning.

A challenge that many educators face is the ability to assist students with retrieving and drawing upon prior knowledge from various subjects in order to approach problem solving and critical thinking exercises. Students must be provided with supplantive learning opportunities to guide them through the process of organizing information that will foster complex learning skills. These instructional strategies are used to facilitate and scaffold (van Merriënboer et al., 2003) information in order to assist the learner will the ability to

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transfer the information to other contexts. Instructors must find balance between "the need to require sufficient mental effort to lead toward learning, and the need to support the learners' processing sufficiently in a way that does not overload their working memory" (Smith & Ragan, 2005, p. 143).

The Four Component/Instructional Design (4C/ID) model provides a format for teaching complex learning by proceeding through 10 steps that are categorized within learning tasks, supportive information, procedural information, and part-task practice (van Merriënboer & Kirschner, 2007). This model can be incorporated within any education framework to teach students how to effectively solve problems utilizing a blended-learning approach. Teaching complex learning must be done using a scaffolded approach to alleviate intrinsic and extraneous cognitive load while identifying opportunities for students to engage in participatory and learner-centered activities in a blended learning environment.

The intent of this chapter is to provide educators with suggestions for instructional strategies to promote complex learning within a blended learning environment. The information discussed in this chapter will be applicable to educators in elementary, secondary, and higher education institutions.

BACKGROUND

Research has found that blended instruction significantly enhances learning outcomes compared to courses that are led solely online. Blended instruction provides the opportunity for both self-directed learning that can be achieved through online activities and face-to-face instruction where an instructor can have more interaction with a student and provide immediate feedback (Lim & Morris, 2009; Laurillard, 1993). Blended learning consists of a combination of traditional face-to-face instruction with learning technologies (Bielawski & Metcalf, 2003). Blended learning can consist of a mix of classroom instruction and online instruction that is taught in both synchronous and asynchronous formats. Synchronous and asynchronous instructional activities should be determined based on the learning goals for the course. Blended learning environments may consist of learning activities that are evenly distributed between face-to-face instruction and online learning activities or activities that are more heavily classroom-oriented. Carmen (2002) suggests that instructors must take into account the number of live instructional events they plan on incorporating within a course as well as the desired amount of self-paced activities and collaborative group learning experiences.

Research studies have identified a number of ways in which blended instruction improve or enhance the educational experience for students such as "improved pedagogy, increased access to knowledge, fostered social interaction, increased amount of teacher presence during learning, improved cost effectiveness, and enhanced ease of revision" (Lim & Morris, 2009, p. 282). Different learning outcomes warrant different instructional strategies regardless of whether they are being taught in a face-to-face traditional classroom, web-based, or blended learning environments. There are three premises that instructors must follow when selecting instructional strategies for a course: (1) there are different types of learning outcomes and each type calls for a different types of instruction; (2) instructional sequencing relies upon relationships among the various learning outcomes; and (3) instructional strategies should facilitate the internal process of learning (Richey, Klein, & Tracey, 2011, p. 105).

The sequencing of instructional activities is dependent upon the nature of the task and how that task fits into the greater picture of what is being taught. The alignment of instructional strategies and how they relate to one another must also be taken into consideration when sequencing instruction. The way in which instruction is presented to learners pertaining to complex tasks