Chapter 4
Standardized, Flexible Design of Electronic Learning Environments to Enhance Learning Efficiency and Effectiveness

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ABSTRACT

The demand for mobile, electronic learning environments has increased, but so, too, has the demand for performance-based outcomes. Within this context, efficiency and effectiveness have become the gold standards for quality. The design of electronic learning environments, both blended and fully mobile, requires unique considerations, particularly in regards to self-regulated learning, cognitive load, and learner characteristics. Repeated development of an effective and efficient electronic learning environment can be facilitated through the use of a standardized, flexible course design model. A sample course design model that promotes efficiency and effectiveness, while catering to the unique considerations for mobile learning in an electronic learning environment are presented along with suggestions for future conversations and research.

INTRODUCTION

Henry Ford, American industrialist and pioneer of the automobile said, "A market is never saturated with a good product, but it is very quickly saturated with a bad one." With the current economic market's emphasis on improved performance comes the necessity to establish a trend towards improved the design of blended and full mobile electronic learning environments. Standardization may help.

The concept of standardization may bring about thoughts of Ford's best known invention, the assembly line. Instead of an automobile factory, though, it is a learning factory in which knowledge is the product of instructional components strung together like an anthology of widgets. This vision begets the question: "Can standardization generate a rich, relevant learning experience or does it lend to the diploma mill image too often associated with mobile learning?" The answer to this two-part question is "maybe" and "not necessarily," respectively. The answer is dependent on the structural design of the "assembly line" and the selection of "widgets." If the design is architecturally matched to how people learn and offers opportunities for meaningful learning experiences, then the possibilities for advantageous learning outcomes abound.

Contrary to negative connotations often associated with standardization, calibrating instructional design can actually facilitate and even ensure the development of a repeatedly rich, germane, electronic learning environment. When that environment is flexible and coupled with high quality, relevant learning objects, and features that promote self-regulated learning and reduced cognitive load, both instructors and learners can profit. Learning, however, cannot be the only measure of excellence. During an economic era in which greater pressure is being placed on individuals and organizations to improve performance, efficiency and effectiveness become the golden measure of quality.

This chapter will make a case for using a standardized, flexible course design model that supports learning objects to improve the efficiency and effectiveness of instruction. The discussion will begin with a look into the current demand for and the popular criticism of mobile learning. Within this context, the unique challenges and opportunities afforded by electronic learning environments (ELEs) will be examined from the perspective of efficiency and effectiveness. (ELEs, as a term, will be used synonymously throughout the chapter to refer to online, computer-based, or high technology learning forums). Considerations for human cognitive architecture, particularly cognitive load and self-regulated learning, will be part of this examination. Next, a standardized, flexible course design model will be proposed as a means to address these considerations and capitalize on these opportunities. Part of this defense will include a foundational review of the standardization of distance-based learning and how the principles relayed relate to the design of ELEs. Within this discourse, a sample course design model and other enhancements to improve ELEs will be presented. Finally, suggestions for future conversations and research will be shared.

BACKGROUND

The Growth and Criticism of Mobile Learning

Wiley (2000) stated that "Technology is an agent of change, and major technological innovations can result in entire paradigm shifts" (p. 2). This observation is particularly evident in the explosion of online courses, degree programs, and universities. According to the United States-based 2006 Sloan Consortium report, *Making the Grade – Online Education in the U.S.,* enrollment in one or more online courses increased from 1.6 million students in 2002 to 3.2 million students in 2005; the growth rate from 2004 to 2005 was thirty-five percent Using results from over 2,500 colleges and universities nationwide, this annual

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