

# Chapter 15

## An Evaluation of E-Learning in Healthcare

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### ABSTRACT

*As new technologies enable a radical transformation of the learning process, new learning approaches and techniques appear, and the need for quality assurance of all learning assets emerges. Although, the existing e-learning standards have managed to cover most of the different aspects of the e-learning process, the shift to new paradigms such as collaborative and community learning sets the need for new standards. The main goal of e-learning standards is to enable and ensure interoperability and re-usability of solutions, systems, objects and processes. E-learning is an extremely useful tool for the healthcare community since it allows professionals, researchers, companies and individuals to improve their skills and expand their knowledge. However, it has faced several difficulties mainly due to the heterogeneity of educational needs. The different user groups have different requirements from e-learning, different availability and resources and consequently different quality standards. In this chapter, the authors emphasize on the quality assurance, and the community aspect of e-learning.*

### INTRODUCTION

E-learning can be used by medical educators to improve the efficiency and effectiveness of educational interventions in the face of social, scientific, and pedagogical challenges. It has gained popularity in the past decade; however,

its use is highly variable among medical schools and appears to be more common in basic science courses than in clinical clerkships (Moberg & Whitcomb, 1999; Ward et al., 2001). The effectiveness of e-learning, especially in medicine, has been demonstrated primarily by studies concerning higher education, government, corporate, and military environments (Gibbons & Fairweather, 2000; Bernard et al., 2004). However, these

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studies have limitations, especially because of the variability in their scientific design (Bernard et al., 2004; Letterie, 2003). Often they have failed to define the content quality, technological characteristics, and type of specific e-learning intervention being analyzed. In addition, most of them have included several different instructional methodologies, which complicated the analysis of educational outcome (Piemme, 1988). Most of these studies compared e-learning with traditional instructor-led approaches (Johnson et al., 2004; Bernard et al., 2004).

Yet three aspects of e-learning have been consistently explored: product utility, cost-effectiveness, and learner satisfaction. Utility refers to the usefulness of the method of e-learning. Several studies outside of health care have revealed that most often e-learning is at least as good as, if not better than, traditional instructor-led methods such as lectures in contributing to demonstrated learning (Wentling et al., 2000). Several studies from the pre-Internet era, including two meta-analyses are cited (Gibbons & Fairweather, 2000) that compared the utility of computer-based instruction to traditional teaching methods. The studies used a variety of designs in both training and academic environments, with inconsistent results for various outcomes. Yet learners' knowledge, measured by pre-post test scores, was shown to improve. Moreover, learners using computer-based instruction learned more efficiently and demonstrated better retention.

Recent reviews of the e-learning (specifically Web-based learning) literature in diverse medical education contexts reveal similar findings. Chumley-Jones et al. (2002) reviewed 76 studies, published in the medical, nursing, and dental literature, on the utility of Web-based learning. According to the authors, one-third of the studies evaluated knowledge gains, most using multiple-choice written tests, although standardized patients were used in one study. In terms of learners' achievements in knowledge, Web-based learning was equivalent to traditional

methods. Of the two studies evaluating learning efficiency, only one demonstrated evidence for more efficient learning via Web-based instruction (Chumley-Jones et al., 2002).

A substantial body of evidence in the non-medical literature has shown, on the basis of sophisticated cost analysis, that e-learning can result in significant cost savings, sometimes as much as 50%, compared with traditional instructor-led learning (Gibbons & Fairweather, 2000). Savings are related to reduced instructor training time, travel costs, and labor costs, reduced institutional infrastructure, and the possibility of expanding programs with new educational technologies (Gibbons & Fairweather, 2000). Only one study in the medical literature evaluated the cost-effectiveness of e-learning as compared with text-based learning. The authors found that the printing and distribution of educational materials is less costly than creating and disseminating e-learning content (Chumley-Jones et al., 2002; Reddy & Wladawsky-Berger, 2001).

Finally, several studies concerning both medical and nonmedical students revealed high satisfaction from e-learning and increased satisfaction in comparison to traditional learning. The ease of use and access, navigation, interactivity, and user-friendliness are some additional benefits for learners (Gibbons & Fairweather, 2000; Chumley-Jones et al., 2002). However, in most cases e-learning was perceived as a supplement to traditional instructor-led training, thus stating the need for a blended-learning strategy (Gibbons & Fairweather, 2000; Chumley-Jones et al., 2002; Walker et al., 2003).

The chapter provides a set of e-learning standards, a reference framework for the description of quality approaches and an introduction on how the e-learning process can be founded on pedagogical standards. The novelty of our approach lies in the fact that it combines the merits of evaluation, self-support and collaboration for improving the quality in learning and makes it an applicable solution for the highly volatile healthcare community. The

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