Chapter 55
Technological and Ethical Challenges of Online Education:
Adapting Medical Education to Digital Platforms

Lauren Haar

https://orcid.org/0000-0003-3659-793X
Loyola University Chicago, USA

Simon Kaja
Loyola University Chicago, USA

ABSTRACT

The impact of technology can be felt throughout the medical education continuum. From online learning environments in blended learning approaches to exclusively providing the preclinical curriculum online, there is a growing need to optimize the way that technology supports self-directed learning in the next generation of medical professionals. In this chapter, the authors address issues of best practice surrounding the development of virtual content for medical education. The information presented will be integral for medical education professionals, basic science/clinical faculty, and educational assessment specialists with an interest in the use of technology for contemporary medical education. The goal is to offer an overview of the theory and ethics behind adopting an online strategy for medical education. An emphasis is placed on developing best practices for presenting content, a comparison of blended and online-only approaches, and the ethical considerations necessary for the successful training of medical professionals online.

INTRODUCTION

In recent years, we have seen an explosion of technological advances that have transformed the way we teach, study and learn. The worldwide web now provides virtually instant and universal access to specialized information that used to be available only in university and public libraries. Modern communication tools furthermore provide global access to expert content and led to the implementation of distance and online learning in specialties that used to entirely rely on classroom teaching, such as medical and biomedical education. At the same time, the student body engaging in higher education has diversified, partly due to efforts in decreasing socioeconomic barriers to higher education and partly due to the opportunities of online learning.

Contemporary medical education has endorsed the use of online learning environments (OLE; also referred to as virtual learning environments, VLE) that provide an ever-expanding volume of curated educational content. Together with a trend toward instructional strategies that foster active learning to both tackle the exponential increase in medical knowledge and adapt to learners that have been described as "digital natives", educators face unprecedented challenges. These include implementation of curricula that combine traditional pedagogic approaches and learning microenvironments with OLEs, online content, and flipped classroom approaches.

In this chapter, we will address the opportunities and challenges associated with online education and learning, discuss the obstacles of transitioning from a traditional didactic model to online education, and offer an analysis of the ethical implications of digital learning and education.

DEFINING BEST PRACTICES IN MEDICAL EDUCATION

The increase in OLEs and online education has emphasized a need for devising novel metrics for learning outcomes and assessing whether the inclusion of OLEs and online classes, in fact, increases student achievements. Existing efforts have often been strongly biased by individuals' preconceptions on the effectiveness of OLEs. For example, in a study surveying the opinions of almost 3,000 chief academic officers of colleges, there was a strong positive association between the belief that students learn more in online classes and the extent of which the college was committed to online learning (Allen & Seaman, 2013).

Some of the earliest research on the topic of distance learning pointed out the challenges of accurately assessing educational outcomes. While most studies utilize three metrics to assess effectiveness, i.e. student grades, attitudes and overall student satisfaction, it is important to be aware of the inherent shortcomings of such research (Phipps & Merisotis, 1999; Moore & Thompson, 1990; Ni, 2013). Weak experimental designs, inappropriate statistics, lack of randomization, and an ensuing inability to distinguish cause and effect remain flaws of many studies that have been published on the assessment of online learning effectiveness (Phipps and Merisotis, 1999; McWilliam & Lee, 2006; Ni, 2013).

Classroom delivery has been directly compared to online delivery in the health professions and life sciences literature, specifically for pharmacy, nursing, paramedic, dental hygiene students, and for learners enrolled in a continuing medical education course (Rochester et al., 2008; Levett-Jones 2005; Buckley, 2003; Gallagher et al., 2005; Ryan et al., 2007; Alsharif et al. 2005; Faulkner et al 2005; Moazami et al., 2014; Porter et al., 2014). For example, in one recent study, no difference in student performance between traditional classroom learning and an online course was identified for an elective course on

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