



Contents lists available at ScienceDirect

Currents in Pharmacy Teaching and Learning

journal homepage: www.elsevier.com/locate/cptl

Experiences in Teaching and Learning

Massive open online courses in U.S. healthcare education: Practical considerations and lessons learned from implementation

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ARTICLE INFO

Keywords:

Massive open online course
MOOC
Pharmacy education
Healthcare education
Technology

ABSTRACT

Background and purpose: Massive Open Online Courses (MOOCs) offer an innovative approach to pharmacy education and are expected to challenge traditional pedagogy and foundational knowledge acquisition practices. A survey of the literature reveals no current publications describing implementation of MOOCs in pharmacy education and limited information about MOOC implementation in other healthcare disciplines in the United States.

Educational activity and setting: A few colleges of pharmacy (COPs) and other health professions' educational programs have recently started offering MOOCs.

Findings: Herein we provide an overview of MOOCs and describe the early implementation stages of MOOCs being conducted at two COPs, an interprofessional MOOC, and a variety of MOOCs offered by a public health program. This overview and the four case studies on MOOC implementation in healthcare education provide practical information about course development, descriptions of selected course engagement outcomes, insight into lessons learned by the institutions, and practical considerations for development of future MOOCs.

Discussion: MOOCs prompt diversification of models of teaching and learning, transformation of pedagogical frameworks, and innovation in the scholarship of teaching and learning.

Summary: MOOCs offer exciting opportunities to distribute knowledge on a massive and global scale to a diverse population of learners.

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<https://doi.org/10.1016/j.cptl.2018.03.013>

Received 29 December 2016; Received in revised form 19 December 2017; Accepted 2 March 2018

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Background and purpose

Massive Open Online Courses (MOOCs) are a mechanism of mass dissemination of information through an internet-based educational course to potentially very large and internationally distributed groups of learners. MOOCs engage thousands of students without geographic bounds simultaneously in an internet-based, virtual education and socialization experience. True MOOCs engage the learner actively and relationally through a variety of learning methods and media, including live chat, online learning assessments, and video, for example.¹ In the era of the global virtual classroom, electronic access to higher education coursework is transforming the envisioned possibilities and may be transforming the future of healthcare education. MOOCs function outside the brick-and-mortar and financial model construct of higher education, allowing individuals to selectively acquire knowledge without having to enroll in a particular university, pay tuition, or commit to a degree program.² A low-stakes environment that supports flexible, self-serve learning opportunities may contribute to MOOCs' broad appeal.³ In many ways, MOOCs have evolved into constructive disruptors of the traditional mode of learning and are challenging institutions to rethink students' access to curriculum, blended learning approaches, and open educational content.⁴ Research on MOOCs and their participants is limited, but MOOCs provide opportunities to test theories about online learning and engagement in a way that was not previously possible. The purpose of this review is to highlight the experiences and lessons learned by early adopters of MOOCs and provide practical insights regarding the implementation and implications of MOOCs in healthcare education.

Overview of MOOC models

MOOCs tend to fall into one of two models. The first is connectivist or cMOOCs, which originated in 2008 at the University of Manitoba by Stephen Downes and George Siemens, and in which online communities form around a subject of mutual interest, typically outside traditional educational contexts.⁵ The second is the xMOOC, typically offered by for-profit providers like Coursera® (<https://www.coursera.org/>) or edX® (<https://www.edx.org/>), that supply content from a central source, such as a professor. Since its inception, the original MOOC model has evolved into many different models as non-profit and for-profit providers seek to identify MOOCs' purpose and the business model to drive and sustain it. Some courses are not massive as the name implies. Harvard, for example, limited enrollment in an online copyright course to only 500 students.⁶ Some MOOC instructors incorporate online learner support groups, while others may utilize a face-to-face student meeting component.⁷ Others courses are not open. In fact, most MOOCs do not provide truly "open" content, meaning that their content is not provided under a Creative Commons license that enables content creators to release copyright permissions so their work can be freely used, distributed, and reworked without creating a copyright infringement against the creator of the work.⁸

MOOCs offer various options to demonstrate course completion, ranging from a verified certificate from a higher education institution to actual college credit.⁹ Some colleges and universities allow students to complete MOOC coursework for credit or offer MOOCs with credit options. Although the original intent of MOOCs was to provide free, open access coursework, some MOOCs charge a nominal fee for verifying completion and awarding institutional credit or a certificate.⁴ Nonetheless, this model for more affordable, flexible learning may help to address unmet needs in high demand areas, like healthcare education.¹⁰

MOOCs: pathway to progress or peril for pedagogy?

Deployment of a MOOC can involve some challenges. MOOCs are often criticized for having low completion rates (around 2–10%), which may be because participants often join for just-in-time learning and do not intend to complete the entire MOOC. Participants need to be independent learners with a high level of digital literacy to be successful.¹¹ Depending on the model, developing MOOCs can require significant human and technology resources, including subject matter experts, project managers, curriculum design teams, and video production personnel, sometimes driving costs into the \$100,000 range.¹² In MOOCs where no financial cost is incurred by a learner and where no course credit is awarded, some are concerned about commitment to course completion and student engagement. Variable methods are used to calculate course engagement rates, and they must be interpreted based on the methods used to calculate them. Often, but not always, course engagement is quantified by the MOOC platform, and includes the number of individuals who engage with course materials in some way by clicking on them divided by the total number of MOOC enrollees. However, scholars of teaching and learning investigating student engagement in MOOCs have also identified several markers of higher levels of engagement, including reading, writing about, and discussing course materials with either the instructor or other learners.¹³ Because some of these markers of engagement cannot be visually observed in the virtual classroom, and because online learners may theoretically have even more distractions in unstructured, non-classroom environments than in traditional classroom settings, this can also raise concerns regarding the quality of education being received by the learner. Other academicians may find the depersonalization of the virtual experience a concern with regard to pedagogy and professionalization of students engaging in healthcare education. Finally, even despite the rich amount of electronic data available describing student interaction with the MOOC course environment, others may struggle with difficulty in assessing MOOC learning outcomes, perhaps because of lacking technological resources or skills to tap into these data. Despite these challenges, the MOOC persists and continues to evolve.

Several forward thinking healthcare education institutions perceive the MOOC-associated risks described above as opportunities for innovation and heightened competitive advantage. They recognize the research opportunities in large-scale teaching and learning. Although MOOCs generate massive amounts of quantitative data (e.g., learner behaviors, assessment scores, interaction with tools) from the platforms that deliver them, there is much to learn from the qualitative information as well. Justin Reich, lecturer and research fellow at HarvardX, describes four MOOC research categories: quantitative data from user clicks (the "clickstream") within

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