

# Developments in MOOC Technologies and Participation Since 2012

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## INTRODUCTION

Massive open online courses (MOOCs) are a recent approach to education, with much buzz generated around them by technology investors, educators, and the news media alike (Dolan, 2014). At the height of MOOC emergence, The New York Times proclaimed 2012 as “The Year of the MOOC,” with MOOCs hailed as the singular approach that would save higher education’s crises and educate the world using Internet-based technologies (Pappano, 2012). However, despite the hype and the subsequent enrollment of millions of learners into MOOCs, the following years experienced a reversal of energy as the results of studies on the effects and costs of MOOCs began to reveal that MOOCs were not a panacea to formal education’s challenges (Dolan, 2014; Liyanagunawardena, Adams, & Williams, 2013). Over the last two years, partnerships between universities and MOOC providers have become strained as outcomes of these courses remained ambiguous (Kolowich, 2013a, 2013b). Now, in 2016, as MOOCs continue to serve millions of students and there are more courses available than before, key questions persist about the efficacy, relevance, and value of MOOCs.

This chapter examines the state of MOOCs between 2012 and 2016 and discusses advances in knowledge around MOOCs that have been observed from empirical research during this period. We build upon our previous review of MOOCs

that was originally written in 2013 (Riel & Lawless, 2015), as a large number of studies focused on MOOC technologies, efficacy, and goals have been published in the short time between 2012 and 2016.

## BACKGROUND

### Characterizing MOOCs

MOOCs have gained notoriety primarily due to the massive number of participants (DeBoer et al., 2014; Dolan, 2014). While conventional college courses might host hundreds of students, MOOCs have the capability to host hundreds of thousands of students simultaneously with usually just one instructor. However, despite the benefits of reaching a large number of learners, educational researchers have been concerned with the loss of in-person interactions that are known to be beneficial to learning in higher education (Wiebe, Thompson, & Behrend, 2015; Kop, Fournier, & Mak, 2011).

Openness in the case of MOOCs refers to exclusivity or the ability of learners to access the course. In essence, anybody can “attend” the class without having been formally admitted to an educational program, which is one of the primary draws of the MOOC movement (Dillahunt, Wang, & Teasley, 2014; Morgan & Carey, 2009). The “open” policy does not mean all MOOCs are free of cost,

however. Some courses allow anyone to enroll, but charge a fee to receive certain services. For example, MOOC providers often offer premium certificates of completion and dedicated coaching services for a fee. All MOOCs operate on the Internet to some degree. While some MOOCs have been designed to incorporate in-person meetings of students, such as local study groups, all materials and interactivity within a course are generally facilitated online. Many formal college courses now also occur parallel to MOOC courses, with some activities performed in physical classrooms and some performed online (Agarwal & TED, 2014; Collins et al., 2013).

Perhaps the most defining element of a MOOC is that they are centered on a course of study. MOOCs are generally real-time, organized events in which participants are time bound on a course of study around a topic with deadlines and a syllabus (Spector, 2014). This is in contrast to other learning technologies on the Internet, such as articles and text resources, professional learning communities, and tutorials. Participants can ignore course trajectories based on their interests. The diversity of ways in which participants use MOOCs have led to research on course and curricular sequence in MOOCs (Collins et al., 2013; DeBoer et al., 2014).

### Technologies Used in MOOCs

Although a MOOC is often referred to as a singular technology, they rely upon a combination of digital applications to achieve their intended functions. These functions serve to deliver content and information to participants, connect participants with other participants and the instructor, and facilitate activities and interactions that promote learning. The digital applications include:

- **Learning Management Systems:** Learning management systems (LMS), also called course management systems (CMS), are web-based applications that are designed to manage and deliver content to partici-

pants within an online course. Many LMS provide a place to host course content, provide an interface for interactive activities for participants, and keep a record of learners' participation.

- **Multimedia Information Delivery:**

MOOCs are predominantly comprised of video-based lectures and reading materials that can be accessed at a student's own pace within the timeframe of a course. Instructors often record lectures they would give in a conventional classroom and distribute these videos to the online course. Instructors also provide background readings or texts, links to websites, images, and other relevant videos or audio.

- **Interactive Elements / Activities for Creativity and Publication:**

Many MOOC instructors intend for participants to be actively engaged in courses instead of simply watching a series of video lectures. When instructors assign projects to students, students have better opportunity to "learn by doing." Active learning is when a student is engaged on creating or interacting with an authentic project related to the course instead of passively receiving information via text or video. Active learning strategies are supported by technologies that promote creating and publishing documents and media, writing blogs, and wikis. Active learning is supported by allowing students to pose questions to one another, share ideas, and collaboratively develop a better understanding of course topics.

- **Notifications:** It is important to provide students with regular reminders and notifications about new content within a MOOC. To address this, many MOOCs provide regular notifications to participants via multiple media (e.g., text/SMS, email, popups) whenever certain events occur within the course (e.g., new content uploads, comments on others' work, availability of a new activity is available).

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