Chapter 2
Massive Open Online Courses

Massive Open Online Courses (MOOCs) are a recent popular trend in the online learning landscape that has its roots in the ever expanding repertoire of Open Educational Resources (OER) and distance learning technologies. The term MOOC was coined in 2008 by Dave Cormier to describe the *Connectivism and Connective Knowledge (CCK08)* course and highlight the key characteristics of this new pedagogical model.

Massive—there is no limit on attendance;
Open—free of charge and accessible to anyone with internet connection;
Online—delivered via the internet; and
Courses—structured around a set of goals in a specific area of study
(Fini 2009; McAuley et al. 2010).

Most of the discussions about MOOCs distinguish between two formats with two distinct pedagogical underpinnings, which are often referred to as cMOOCs and xMOOCs. cMOOCs are based on connectivism, which emphasizes interaction with a distributed network of peers, learning artifacts, and learning technologies. Participants are encouraged to utilize different social media and technology platforms to pursue their personal goals, self-organize their participation, and generate and share knowledge with their networks. xMOOCs are more structured and centralized and emphasize individual learning through video lectures and regular assessments. xMOOCs are usually offered by prestigious universities and are predominantly associated with the cognitive-behaviorist approach. As a result, a number of MOOC platform providers emerged including Coursera, Edx, and Udacity (Conole 2013; Rodriguez 2013).

Globalization Opportunities and Challenges

Although different types of MOOCs exist and reflect varying learning theories and pedagogical principles (Conole 2013; Siemens 2013), they all provide universally accessible and affordable quality education to thousands of learners who otherwise would not have access to it, either because of financial, geographical, or time barriers (Carr 2012). For example, as of May 2014, a total of 1,282,949 learners, from 195 countries, registered in MOOCs offered by Harvard University (Nesterko 2013). However, the claim that MOOCs are democratizing and revolutionizing education is still questionable as recent reports show that most MOOC participants are technology-savvy working adults and not the marginalized population MOOCs are meant to serve (Liyanagunawardena et al. 2013). This problem is exacerbated in developing countries where poor digital infrastructure, lack of computer literacy skills, language barriers, and cultural differences limit participation (Liyanagunawardena et al. 2013; Nkuyubwatsi 2013).

Another challenge facing MOOCs is the high attrition rates since less than 10 % of MOOC registrants complete these courses (Taneja and Goel 2014). Furthermore, there are concerns about the viability and sustainability of MOOC providers and the MOOC model in general. Most current MOOCs are not self-sustained and are rather dependent on venture capital and foundation funding. Thus, issues regarding viable business models are a key challenge for sustained future impact and growth of MOOCs (Marshall 2013; Siemens 2013; Taneja and Goel 2014; Yuan and Powell 2013). Although accreditation is a possible revenue generating option for MOOCs, questions about identity authentication, plagiarism, international recognition, and quality assurance are additional challenges that need closer examination (Conole 2013; Marshall 2013; Taneja and Goel 2014; Yuan and Powell 2013). Despite these challenges, MOOCs have made an observable foray into the globalization of learning as described in the examples provided next.

Examples of MOOCs in Schools

The presence of MOOCs in the context of K-12 education is still limited. However, edX, a MOOC delivery platform created by founding partners Harvard and MIT, is widening its customer base by offering organized high school curriculum MOOCs targeting a global audience. In September 2014, edX launched its high school initiative (https://www.edx.org/high-school-initiative) that includes 26 MOOCs developed by 14 global institutions including Georgetown University, the Massachusetts Institute of Technology (MIT), and Universidad Carlos III de Madrid. These MOOCs cover subject areas ranging from history to calculus as well as advanced placement and college preparation courses (Agarwal 2014; Rocheleau 2014).

Another example of MOOCs in K-12 contexts is The Cambridge GCSE Computing Online MOOC (http://www.cambridgegcsecomputing.org/), a product of the partnership of the UK exam board OCR (Oxford Cambridge and RSA), Cambridge University Press (CUP), and the Raspberry Pi Foundation. The MOOC provides access to the full computing curriculum of OCR's General Certificate of Secondary Education (GCSE). The content is provided via short, interactive videos and supporting resources delivered over a MOOC platform. The videos are written and presented by computer science experts and teachers. The target audience for the GCSE MOOC is 14–16 years old but it is free and open to all.

Examples of MOOCs in Higher Education

A prime example of a cMOOC in higher education is the *Connectivism and Connective Knowledge* course, which was offered through the Learning Technologies Center and Extended Education at the University of Manitoba and facilitated by George Siemens and Stephen Downes. The goal of this MOOC was to explain and enable the understanding of the principles of connectivism as a learning theory of the digital age. The MOOC was offered for credit to 25 paying students from the university and was also open for registration at no cost to those interested in participating without credit, which brought the total number of participants to over 2000 across 81 nationalities. This MOOC spanned 12 weeks, each of which included an introductory video, a synchronous session, and suggested readings and activities through the course wiki. Collaboration and discussion were encouraged through different online venues such as discussion forums, twitter, and blogs. Because the course emphasized learner autonomy, participants were encouraged to set their own personal goals, participate in the course using other social media tools, and decide on their level of participation in the different activities. Interestingly, the open nature of the course and its emphasis on autonomy and diverse networks enabled participants to develop their own sessions and learning venues such as Second Life meeting areas, Google and Facebook groups, and a course page on Twine (Downes 2008; McAuley et al. 2010).

As mentioned earlier, xMOOCs are mainly offered by elite universities through one of the three major MOOC platforms in the U.S.: Coursera, edX, and Udacity. These courses are more structured and centralized than their cMOOCs counterparts. An example of an xMOOC in higher education is MIT's *8.02x Electricity and Magnetism* course, offered through edX during the spring of 2013. This MOOC followed the MIT on-campus class and occurred over 17 calendar weeks, with weekly releases of chapters. Each chapter consisted of lecture sequence (videos, resources, homework, and examinations) and sophisticated interactive simulations developed for MITs Technology Enabled Active Learning (TEAL) classroom. Grades were distributed across different activities such as homework sets, midterms, final exam, lecture sequence, and the simulations.

Participants were required to achieve a final grade of at least 60 % to earn certificates. Although a total of 41,307 participants registered for the course worldwide, only 1,716 were granted certificates (Seaton et al. 2014). Another example is the world's first Chinese-language MOOC platform, XuetangX (www.xuetangx.com), developed by Tsinghua University and powered by edX's open source platform. Nine universities in mainland China, Taiwan, and the Americas have joined this initiative and are delivered free online courses. XuetangX currently offers over 200 courses covering a variety of subjects. XuetangX learners also have access to courses offered by edX's partners around the world.

Examples of MOOCs in the Workplace

Udemy for Organizations (https://www.udemy.com/organizations/) is one of the leading MOOC platforms specifically designed with corporate learning and employee training in mind. Udemy offers over 11,000 self-paced, on-demand, skill-based courses (e.g., communication, advertisement, marketing) that can be accessed using any web-enabled device. 1-800-FLOWERS.com recently partnered with Udemy to build the new Floriology Institute Online education portal for its retail florist network BloomNet. This online portal delivers hand-picked training courses from Udemy's content library covering topics such as business management, customer service, and social media as well as custom developed courses such as floral-design and other floral specific training courses (Abbasi 2014; Place 2013). Another example of MOOCs in the workplace is Eduson (https://www.eduson.tv/), a Russian MOOC provider that delivers online business courses to corporate and individual customers via the Eduson LMS (Learning Management System). Almost one-third of the courses are free, with the majority of them offered in English and the rest in Russian, Portuguese, and Chinese. Eduson users are primarily from the US, Brazil, and Russia.

References

Abbasi, S. (2014). *1-800 Flowers Leveraged Udemy to Launch Online Education Platform*. [Web log message]. Retrieved from https://www.udemy.com/organizations/blog/2014/02/27/1-800-leveraged-udemy-to-launch-online-education-platform/.

Agarwal, A. (2014). We are launching a high school initiative. [Web log message]. Retrieved from https://www.edx.org/blog/we-are-launching-high-school-initiative#.VDP3Nb49Xww.

Carr, N. (2012). The crisis in higher education. *MIT Technology Review*. Retrieved from http://www.technologyreview.com/featuredstory/429376/the-crisis-in-higher-education/.

Conole, G. (2013). *MOOCs as disruptive technologies: Strategies for enhancing the learner experience and quality of MOOCs.* Retrieved from http://eprints.rclis.org/19388/.

Downes, S. (2008). Places to go: Connectivism and connective knowledge. *Innovate: Journal of Online Education*, *5*. Retrieved from http://bsili.3csn.org/files/2010/06/Places_to_Go-__Connectivism__Connective_Knowledge.pdf.

Fini, A. (2009). The technological dimension of a Massive Open Online Course: The case of the CCK08 course tools. *The International Review of Research in Open and Distance Learning, 10*(5). Retrieved from http://www.irrodl.org/index.php/irrodl/article/view/643/1402.

Liyanagunawardena, T., Williams, S., & Adams, A. (2013). The impact and reach of MOOCs: a developing countries' perspective. *eLearning Papers*, *33,* 38–46.

Marshall, S. J. (2013). Evaluating the strategic and leadership challenges of MOOCs. *MERLOT Journal of Online Learning and Teaching, 9.*

McAuley, A., Stewart, B., Siemens, G., & Cormier, D. (2010). *The MOOC model for digital practice.* Retrieved from: www.elearnspace.org/Articles/MOOC_Final.pdf.

Nesterko, S. (2013). *Interactive visualization of worldwide enrollment for HarvardX courses.* [Web log message]. Retrieved from http://harvardx.harvard.edu/blog/interactive-visualization-worldwide-enrollment-harvardx.

Nkuyubwatsi, B. (2013). Cultural translation in Massive Open Online Courses (MOOCs). *eLearning Papers*, *33,* 47–59.

Place, C. (2013). BloomNet(R) selects Udemy to launch a World-Class online education platform. *The Wall Street Journal.*

Rocheleau, M. (2014). *Online education company edX offering free high school courses.* The Washington Globe. Retrieved from http://www.bostonglobe.com/metro/2014/09/09/online-education-company-edx-expanding-offer-free-courses-aimed-high-school-students/wWdR6XQakRKIxAhaH580ZP/story.html.

Rodriguez, O. (2013). The concept of openness behind c and x-MOOCs (Massive Open Online Courses). *Open Praxis*, 5. Retrieved from https://www.openpraxis.org/index.php/OpenPraxis/article/view/42rules. *Journal of Chemical Education, 89,* 1133–1137. doi:10.1021/ed200531.

Seaton, D. T., Reich, J., Nesterko, S. O., Mullaney, T., Waldo, J. Ho, & A. D., et al. (2014). *8.02x Electricity and Magnetism MITx on edX Course Report—2013 Spring* (MITx Working Paper No. 10). Retrieved from http://ssrn.com/abstract=2382328 or http://dx.doi.org/10.2139/ssrn.2382328.

Siemens G. (2013). Massive open online courses: Innovation in education? In R. McGreal, et al. (Eds). *Open Educational Resources: Innovation, Research and Practice* (Ch 1, pp. 5–15). Athabasca, Canada: Athabasca University Press.

Taneja, S., & Goel, A. (2014). MOOC providers and their strategies. *International Journal of Computer Science and Mobile Computing, 3*, 222–228.

Yuan, L., & Powell, S. (2013). MOOCs and disruptive innovation: Implications for higher education. *eLearning Papers, 33,* 60–70.