

Massive Open Online Courses (MOOCs): So Far, More Evolution than Revolution

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This paper analyzes the development and shortcomings of Massive Open Online Courses (MOOCs) as well as the growth of Coursera, edX, and Udacity, three of the most prominent MOOC providers.

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When Massive Open Online Courses (MOOCs) gained headlines in the U.S. about four years ago, they were hailed as game-changers. Thousands signed up for free online classes offered by some of the best universities and most distinguished instructors in the world. Start-up companies like Coursera, edX, and Udacity were media darlings, heralded to usher in a new era that would level the higher educational playing field and provide an alternative to a university system whose fees were spiraling out of control.

However, as 2016 approaches, the buzz surrounding MOOCs has become more subdued. They have yet to produce the educational upheaval that many hoped, and some feared. This paper will analyze the development and shortcomings of MOOCs as well as the growth of Coursera, edX, and Udacity, three of the most prominent MOOC providers. While MOOCs have not toppled the traditional higher educational model, they have continued to grow and mature. So far, they have proven to be more of an educational evolution than revolution.

American higher education remains at a crossroads. Although consistently rated the top country in the world in terms of university quality, the cost of college in the U.S. has been increasing rapidly (Universitas 21, 2015, chart 2). Since 2000, American university tuition rates have increased by 72%, and student debt has ballooned from \$200 billion in 2003 to over \$1 trillion just ten years later (Singh, 2014, para. 10). As this trend continues, some are questioning the current

system and looking for alternatives: a way to get credentials without spending massive amounts of money to do so.

In 2011, when Stanford University professor Sebastian Thrun opened his online class to the public free of charge, over 150,000 students signed up worldwide. This watershed moment captured the imaginations of learners and educators and helped spur the establishment of numerous MOOC providers. Less than four years later, however, even with the promise of free online classes developed by top-notch institutions, the MOOC revolution has yet to occur.

One problem frequently pointed to by MOOC critics is the often abysmally low course completion rate by students. For example, a 2013 University of Pennsylvania (Penn) study analyzed sixteen of its own MOOCs featured on Coursera and found that only 4% of students fully completed the classes (McKendrick, 2013, para. 3). The study noted that most students drop out after only the first or second week in the class (Stein, 2013, para. 1). An investigation of Harvard University-based MOOCs showed somewhat better results. Of respondents who indicated they intended to complete a course, 22% did so (Landry, 2014, para. 9).

Since half of the students in the 2013 Penn study indicated they signed up for a MOOC ‘just for fun,’ this may indicate that many students enroll out of curiosity and may lack a strong reason to see the course through (Palin, 2014, para. 11). Two of the most common reasons participants cited for not completing classes were being ‘too busy’ (Fowler, 2013, table 1), and having no live teacher interaction or guidance (Singh, 2014, para. 7). Some argue, however, that even if students don’t fully complete a course, any knowledge they receive from the experience benefits them in their job or personal life (LeBar, 2014, para. 5).

One expectation for MOOCs was that they would help level the educational playing field, allowing students from developing countries and those with little money to have the chance to take top-level classes and earn credentials. While this is still the hope, so far it hasn’t worked out as proponents anticipated.

Although edX reported that students from developing countries make up 48% of its learners, it is the already educated who constitute the largest number of MOOC users (Palin, 2014, para. 17). Numerous studies have indicated that over 70% of students taking MOOCs already have bachelor degrees (Palin, 2014, para. 5; Fowler, 2013, table 1; Kelly, 2014, p.19). Penn’s 2013 study reported that over 44% of its students taking MOOCs had graduate degrees as well (Kelly, 2014, p.19). A study by Hollands and Tirthali (2014) at Columbia University declared that MOOCs were currently “doing more to increase gaps in access to education than to diminish them” (p.8).

One problem is many of the people that educators hoped would benefit

from MOOCs may not have dependable internet access, or even electricity. A further constraint is that most of the courses require students to have a college-level command of English and have yet to be translated into different languages. Until these problems are resolved, MOOCs may not be able to live up to their promise of providing equal educational opportunities for the masses.

Another reason MOOCs have not toppled the traditional higher educational structure is that although providers are now offering ways to receive credentials and in a few cases, college credit, traditional university degrees are still seen as the most reliable way to get a job.

Proponents say that MOOC credentials can be more flexible, allowing students to bundle together courses that fit their needs or specific job situations (Kelly, 2014, p.6). MOOCs can also be used to update workers' skills as new technologies and techniques become available. Supporters note that the digital format of MOOCs allows learners to show prospective employers a tangible, online record of their accomplishments, unlike a university transcript that simply gives a single letter or number grade (Carey, 2015, para. 19).

If MOOC credentials become valued by companies, this may undermine the primacy of the traditional college degree, but this change would likely take time. Some feel that one way to get companies to accept MOOC credentials is to encourage respected companies to create them, which is what some companies, like Udacity, are already doing (Young, 2015, para. 1).

With most provider companies being founded less than five years ago, MOOCs are essentially still in their infancy, and each year brings new developments and results. One thing that's certain is that the number of courses is growing rapidly. In 2011, the first MOOCs were just being unveiled, but by October 2015 there were over 3,300 available (Wexler, 2015, para. 1-2).

Learning through MOOCs and online courses in general is becoming more widespread. In 2014, it was estimated that about one-third of university students took at least one online class, up from only 10% of students in 2003 (Kelly, 2014, p.5).

Studies have indicated that it's better for course content videos to be kept short to hold students' attention. For example, an investigation of edX courses found the median amount of time students watched a 6-9 minute video was 6.25 minutes (Fowler, 2013, table 1). Anything longer than that and the median viewing time dropped precipitously: down to 4.42 minutes for a 12-15 minute video, and only 3.30 minutes for a 15-40 minute video (Fowler, 2013, table 1).

The difficulty in keeping students' attention may be due, in part, to the late times that they report watching the videos. It was found that the peak time

for learners to watch edX lectures was from midnight to 2 a.m. (Fowler, 2013, para. 19).

Creating MOOCs also requires a large expenditure of time, and often money. A survey indicated that the median amount of time to develop a course was 100 hours, with another 8 hours of work per week while the class was running (Kolowich, March 2013, chart 1). If the course instructor needs design help, edX charges a fee of \$250,000 plus an additional \$50,000 each time the class is offered (Kolowich, April 2013, para. 8). EdX also receives a percentage of any revenue the course may receive (Kolowich, April 2013, para. 8).

Despite this, many students report that they will only take a MOOC if it is free. In the 2013 Penn study, 51% of MOOC takers said they would not pay any amount for a course, even if it cost as little as \$5 (Alcorn, Christensen, and Emanuel, 2014, chart 7).

While Hollands and Tirthali's Columbia study (2014) reported that faculty members are "being vastly underpaid for the opportunity costs of their time to develop MOOC content (p.168)," the hope is that courses could be re-used in the future. However many classes, especially those related to business or science, would likely need to be updated regularly.

Some educators are understandably nervous that if MOOCs became widespread and were used across campuses, their jobs might be in jeopardy (Ruth, 2014, p.7). Conversely, it has been argued that MOOCs could free up faculty to have more time for research. It has also been suggested that MOOCs could be integrated into the university system by 'flipping' classes (Hollands and Tirthali, 2014, p.168). In this scenario, students would watch the videos at home, and then during class time the university instructor would act as a mentor or guide to lead discussions and ensure students have learned the material. Some MOOC platforms like Coursera allow teachers the flexibility to change and reorganize course content to meet the needs of their classes (Griffiths, 2013, p.4).

In my 2013 Tokoha Journal article, *Massive Open Online Courses (MOOCs): The Next Wave in Higher Education?*, I documented the establishment of three of the most prominent MOOC providers: Coursera, edX, and Udacity. This next section will examine how these companies have grown and evolved over the last three years.

Coursera was started in April 2012 by Stanford University professors Andrew Ng and Daphne Koller. In November 2012, Coursera's website noted the company had over one million students from almost two hundred countries. At that time, Coursera was partnered with thirty-three colleges and universities and

listed two hundred courses.

Three years later, the website touts over sixteen million students and 1,475 classes designed by 135 partner institutions from twenty-five countries. As of October 2015, Coursera was the largest MOOC provider by a wide margin, accounting for 34% of the market. EdX was second at 17% (Wexler, 2015, chart 2).

Two Coursera classes are being designed by the University of Tokyo, and as of November 2015, six classes (all from American universities) are available with Japanese subtitles. In an effort to increase its worldwide reach and appeal, Coursera has recruited hundreds of volunteers to translate courses into various languages through its 'Global Translator Community' initiative.

In 2012, one of the big questions facing MOOC providers was how they were going to earn revenue. One way Coursera has addressed this is by offering 'Verified Certificates' of completion for many of its classes. These certificates display the student's name, the course name, and the university or organization that developed the class. Depending on the course, certificates usually cost between \$29-\$99, and can be used by students to bolster their résumés or show current employers that they have enhanced or updated their skills. The same courses can also be taken for free, but students would not receive a certificate.

Coursera has also gone a step further and introduced 'Specializations,' which are groupings of related courses generally designed by the same institution. If students successfully complete all the courses as well as a final project (a 'Capstone Project' that applies what they've learned in the classes), they receive a certificate of specialization. Prices for each class vary, but are usually between \$29-\$99. Most of the specializations are related to fields like business and science, but the University of California-Irvine offers specialization programs in areas such as Academic Writing and a Virtual Teacher Program.

The U.S. Department of Veterans' Affairs has also partnered with Coursera to allow all U.S. armed forces members to receive a free course certificate upon completion of a Coursera class. This partnership both brings revenue to Coursera as well as helping veterans find employment upon their return to the U.S.

EdX was a collaboration founded by the Massachusetts Institute of Technology (MIT) and Harvard University in April 2012. Since then, edX has partnered with thirty-nine other 'Chartered Member' educational institutions including the University of Tokyo, and Kyoto University. EdX also lists other affiliated 'Members' and 'Contributors,' including Osaka University, and the Tokyo Institute of Technology.

In fall 2012 there were only eight edX classes available. By November

2015 there were over five hundred classes with over 400,000 students receiving certificates from completed courses. In August 2015, edX tweeted that it had reached the five million-student mark (“Udacity, Coursera and edX…” 2015, para. 2).

Like Coursera’s Specialization program, edX offers certificates (XSeries Certificates) for students who complete a bundle of classes in a certain topic. Prices vary by course, but the average price is about \$50 per course.

For high school students, there are over forty courses designed to help students prepare for Advanced Placement (AP) Exams. Students scoring well on these exams can often get university credit or place out of introductory college classes.

In 2015, edX announced the Global Freshman Academy, a partnership with Arizona State University to offer MOOCs to first year students for university credit. The first two courses began in October 2015, with five more slated to start by March 2016. Classes range from English Composition and Western Civilization to College Algebra and Introduction to Astronomy. By fall 2016, Arizona State hopes it will have constructed enough general educational MOOCs to allow students to fulfill all their freshman-year requirements online (Straumsheim, 2015, para. 3).

According to the edX website, students hoping to receive Arizona State credit must first enroll in edX’s ‘Verified Certificate’ option, which costs \$45 per class. Students who pass the course can then apply for university credit, which costs \$200 per credit hour. This is a substantial discount from Arizona State’s usual classroom-based and online class fees, which average about \$500 per credit hour. The MOOCs are also free to anyone wanting to take them for no-credit.

The classes are not meant to be an easy way to breeze through college requirements. Although the courses are only eight-weeks long, Arizona State estimates that students will need to put in about six hours worth of work per week per credit hour. Most of the classes offered are 3 credits, equaling about 18 hours of work per week per class.

EdX CEO Anant Agarwal felt the Global Freshman Academy was the company’s response to the criticism that its course completion rates were too low and that edX classes mainly benefited learners who had already graduated from university (Straumsheim, 2015, para. 10).

But critics note that students could just as easily take similar online classes from a community college, with a real instructor to guide them, at a fraction of the cost of Arizona State’s MOOCs (Read, 2015, para. 3). Community colleges also offer financial aid, something not available in the Global Freshman

Academy. However, the edX program may be attractive for foreign students who cannot find comparable offerings in their home countries, and credits from Arizona State may have more cache than units from a community college (Chung, 2015, para. 9). If students wanted to transfer credits from the Global Freshman Academy to another university, the Arizona State transcript would not indicate that the credits were earned from an online class.

Udacity was founded by robotics experts Sebastian Thrun, David Stavens, and Mike Sokolsky in 2011. In contrast to Coursera and edX, which work primarily with universities, Udacity's courses and programs are mostly collaborations with leading tech companies such as Google, AT&T, and Facebook. Most of Udacity's classes are related to computing and web development, and are rated as 'beginner,' 'intermediate,' or 'advanced.'

In fall 2012, Udacity listed fourteen courses on its website, but by November 2015, over one hundred classes were available. Although all Udacity's classes can be taken for free, the company also offers a paid option for students who want verified certificates. The cost is \$200 per month, and in addition to receiving a certificate, students can get guidance and feedback from instructors and mentors throughout the course.

Many of Udacity's courses can be completed within a month. However, in fall 2015 the company was also offering eight 'nanodegrees,' which are longer, more involved programs. Examples include: Beginner iOS Developer, Data Analyst, and Tech Entrepreneur. Tuition is also \$200 per month, and Udacity estimates that any of its nanodegrees can be finished within one year. To encourage completion, Udacity offers to refund half of the student's tuition if he/she finishes within twelve months. Students are evaluated based on successfully completing projects that apply what they've learned, and it is estimated that they will need to spend at least ten hours per week on each nanodegree program. All videos have English subtitles, and Udacity is working through non-profit Amara.org to find volunteers to create subtitles in other languages.

Udacity has also partnered with Georgia Tech University and AT&T to provide an online Master of Science degree in the computer sciences. The courses are designed by Georgia Tech, and prospective applicants should have a Bachelor's degree in a related field with at least a 3.0 (out of 4.0) grade point average. International students must also score at least 550 points on the TOEFL exam.

Students need at least thirty credit hours to graduate from the program, and most classes are three credit hours each. Georgia Tech estimates that in addition to watching the instructional videos, students will need to spend an average of three hours per week per credit hour. According to Georgia Tech, the

average student should complete the degree in about three years. For students finishing the master's in this time, the cost would be about \$6,600, which is substantially less than the \$40,000 price tag of the on-campus program. Diplomas from Georgia Tech will not indicate that the degree was taken on-line. All of the courses can also be taken for free on Udacity for no credit.

When Massive Open Online Courses burst onto the scene four years ago, some hoped they would create a seismic shift in the landscape of university education. While that has yet to occur, MOOCs and providers such as Coursera, edX, and Udacity continue to grow and mature: creating new ways to get credentials, providing educational opportunities for the masses, and developing critical sources of revenue. Although far from sparking the revolution that many envisioned, if these companies and courses continue to progress and the credentials gain acceptance in the academic and business worlds, MOOCs may ultimately play a significant role in the evolution of higher education.

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