

Date: May 14, 2012**Subject:** Does the Advent of MOOCs Mean That Technology Will Finally Revolutionize Higher Ed?

Over ten years ago new ventures like MIT's OpenCourseWare Initiative and Carnegie Mellon's Open Learning Initiative seemed to promise to use technology to break down the walls of the traditional classroom and pave the way to a future of increased access and decreased cost in higher education. Other major universities joined with related commercial and nonprofit ventures such as Columbia's Fathom and AllLearn, a collaboration between Yale, Princeton and Stanford. An entrepreneur even offered \$100 million to create a free online university. While the MIT and Carnegie Mellon initiatives and others like them have continued to grow and provide free educational resources to millions around the world, they do not provide the degrees or credentials necessary for employment. Additionally, both Fathom and AllLearn folded, and no one took up the entrepreneur on his offer. Meanwhile, technology has been integrated into classrooms in many ways, and online learning has grown exponentially, especially in the for-profit and continued learning sectors. Yet the 'Great Disruption' promised by technology-driven education failed to ignite.

Today, with public financing for higher education eroding, tuition on the rise, and little growth in household income, the idea that technology can and must revolutionize higher education has once again taken strong hold. Recent start-ups, Coursera and Udacity, founded by Stanford faculty members, and a joint MIT/Harvard venture called edX have the country talking once again about the future of higher education. This brief describes these new developments, clarifies the differences between classroom learning, online learning and Massive Open Online Courses (MOOCs), and evaluates their roles in and impact on higher education in the US.

Although many hope that MOOCs will help expand access to and increase affordability of some aspects of higher education (particularly for non-traditional students and students across the globe with little or no access to higher education), no traditional four-year institutions in the US see this activity as a substitute or replacement for the instruction, services, and environment that they currently provide. While institutions plan for these activities to eventually become self-sustaining (or even revenue-enhancing), their provision of the service for little or no cost indicates a strong belief that course content is not the most valuable element of the university education and experience. What institutions like Harvard and MIT gain from investment in these activities includes:

- *Being on the cutting edge of the intersection between education and technology by developing and testing technologies and strategies that may become the standard in large scale knowledge transmission*
- *Providing a high profile global public service by providing valuable, quality content to all who seek to learn and exposing vastly more people to the latest ideas and discoveries forged on their campuses*
- *New opportunities for teaching and learning research that may produce important pedagogical advances that may be used to enhance on campus instruction in the future*

What Are MOOCs?

The resurgence in popular rumination about how technology will force higher education to change to accommodate the modern economy is tied pretty closely with a few high profile ventures emanating from prestigious universities, specifically, two for-profit start-ups ([Coursera](#) and [Udacity](#)) headed by Stanford faculty members, and [edX](#), a large cooperative project between Harvard and MIT. The primary difference between these initiatives and their predecessors is a focus on new technology platforms that host the **Massive Open Online Course (MOOC) model, heralded as much more interactive, cooperative, and conducive to learning than just static video and written content posted on the web.** MOOCs include video lessons, real-time feedback and office hours, discussion groups, question and answers ranked by students, assessment and other interactive features.

The term MOOC was coined by Canadian researchers involved with the first experiment in a massive open course run at the University of Manitoba in 2008. One of the professors of that course, George Siemens, has been instrumental in developing both the theoretical and practical manifestation of MOOCs, primarily based on what he identifies as connectivist pedagogical principles that emphasize learning through diverse and interactive discourse among large groups.¹ For many MOOC pioneers, their efforts reflect the ideal that technology can democratize education in allowing easier and more affordable access to people all around the world and in breaking institutional barriers between teachers and learners to allow more flexibility and diversity in educational exchange.

MOOCs are quite different than what we think of as ‘online learning’: as opposed to replicating the traditional learning environment on the internet to accommodate different learning styles and lifestyles, MOOCs are much larger in scale and do not seek to exactly replicate the traditional learning experience. While MOOC experimentation has been occurring for several years, the latest iteration spawning the major initiatives detailed below is more reminiscent of traditional learning than previous MOOCs in that it is more linear, lecture-oriented, and assessment-based.²

Udacity, Coursera and edX

In 2011, Stanford allowed three computer science courses to be offered as MOOCs. The most popular of these, *Introduction to Artificial Intelligence*, drew 160,000 students, 20,000 of whom completed the course.³ The success of these courses led to the formation of two competing for-profit venture-funded endeavors described below. Although both companies plan for a future where students participating in MOOCs may receive meaningful educational credit (in conjunction with institutions or through a different body), **the best either of these companies can offer at this time is the acknowledgement of course completion that does not bear the names or stamp of any existing institution.**

- *Udacity (Know Labs):* Using their proprietary platform, *Udacity*, Know Labs was founded by Stanford Professor Sebastian Thrun (since resigned from Stanford to focus on this company) and his graduate student David Stavens. The company has no official affiliation with Stanford and **offers its platform to any faculty member willing to develop and deliver a course** (unpaid). The intent is to eventually build up to a sequence of courses that might resemble a degree program. Courses are free for now, but the company is developing a business plan that includes the possibility of small per-course charges, eventual charges for offering credentials or certificates of completion, or even offering to sell their services to employers for matching high performing students to jobs.
- *Coursera:* Also founded by Stanford faculty members, Andrew Ng and Daphne Koller, *Coursera* is a proprietary platform for offering MOOCs. In addition to any differences in platform features, *Coursera* is not an online university like Udacity plans to be, but **partners with existing institutions to offer some of their courses as MOOCs (currently only to non-enrolled students)**. Current partners include Stanford, Princeton, University of Pennsylvania, University of Michigan, and Berkeley. *Coursera’s* current portfolio of 39 courses includes six in the humanities and social sciences. They are also pioneering both machine and peer grading models⁴.

¹ www.insidehighered.com/blogs/university-venus/massive-open-online-courses-how-%E2%80%9Csocial%E2%80%9D-alters-relationship-between

² www.insidehighered.com/blogs/university-venus/problem-edx

³ www.forbes.com/sites/jamesmarshallcrotty/2012/05/06/mitx-harvardx-edx/

⁴ www.insidehighered.com/news/2012/04/18/princeton-penn-and-michigan-join-mooc-party

A third new venture, *edX*⁵, has grown out of over a decade of open course experimentation at MIT.

- *edX*: MIT, a longtime vanguard in open learning, debuted its own MOOC platform, *MITx*, in 2011. The first course offered via *MITx*, Introduction to Circuits and Electronics, attracted 120,000 students, 10,000 of whom completed the mid-term exam. *MITx* (not MIT) offered a certificate of mastery to all who completed the course, which was a new feature compared to its previous static open courseware offerings. Last month, MIT announced a new partnership with Harvard whereby *MITx* would now be known as *edX*, a joint venture initially funded by each school for a total of \$60 million. Diverging from the for-profit startup companies described above, ***edX will be controlled by the parent institutions, will be run by a nonprofit, and will feature an open source platform that others can improve upon and will not have to pay to use.*** The project will be headed by MIT's Dr. Anant Agarwal, the developer of the platform, and Dr. Alan Garber, professor and provost at Harvard. ***edX will also offer certificates of completion, although they will bear the name of the nonprofit entity, not the institution.*** Also notable is the intention of each institution to collect and analyze data on *edX* students and learning outcomes, which will be made available to researchers studying pedagogy and learning. While *edX* courses are currently free of charge, the institutions intend for it to become self-sustaining over time so as not to divert further resources from their traditional activities.

While all of the efforts described above center on the provision of MOOCs, focusing on large scale transmission of knowledge available to anyone, anywhere, their approaches differ significantly with varying implications for higher education and for institutions.

What Might the Rise of MOOCs Mean for Traditional Higher Education?

A model like ***Udacity seeks to cut out or replace the institution as a middle man by offering individual faculty members a platform for providing instruction directly to large numbers of students across the globe.*** Accreditation and assessment are obvious hurdles to credibility with this model, which directly challenges whether the primary economic value in higher education lay in the instructor and course content or in the institution. Additionally, like for-profit and non-research institutions today, this model relies on research institutions continuing to produce new knowledge and course content. ***Coursera approaches institutions more as partners, offering its electronic platform as a host for the courses and content created at and owned by those institutions,*** which will ultimately be able to determine when and how participants in such courses are recognized by the institution (if at all). Institutions may prefer not being responsible for designing, improving and maintaining the platform, but also may face long-term problems with being locked into a proprietary system (like Blackboard) that might not evolve as they and students desire over time.

Four features of *edX* are especially interesting because they present a model whereby institutions can experiment with MOOCs without losing independence by locking in a proprietary system.

- It is an institutional effort (yet pioneered and led by academics) and will develop in the context of the interests of the institutions, which likely explains the focus on gathering data to research teaching and learning.
- The open source platform means other institutions can freely utilize *edX* while maintaining independence. Open source software often lowers the overall costs for the software user, features increased flexibility and customizability, and, perhaps most importantly, reduces the dependence on outside vendors.

⁵ www.insidehighered.com/news/2012/05/03/harvard-joins-mit-platform-offer-massive-online-courses

- It is a nonprofit entity (with self-sustainability as a goal) with initial funding provided. The development of high quality online learning has been hampered by the pursuit of profit or efficiency as an overriding motivation.
- It is already offering certificates of mastery for successful completion of courses, although those certificates will not bear the name of the institutions but the non-profit organization.

Because *edX* will exist within the confines of the existing reputational capital built up by the prestigious institutions involved, it will be interesting to see how it fares compared to a model like *Udacity* which seeks to circumvent the institution as a wall between the student and the instructor. On the other hand, institutions have previously failed at turning these endeavors into successful, self-sustaining programs and a startup company might prove more adept at turning these ideas into successful practice.

Remaining Questions

If the rise of MOOCs resembles previous disruptions in the world of higher education we can expect that they will likely under-deliver on the promise of completely remaking and revolutionizing the industry, but continue to develop and expand where value is clear, perhaps even transforming certain segments and elements of higher education such as:

- Providing educational opportunities to students across the globe with no access to American education
- Providing material and other content to newly developing universities across the globe
- Supplementing traditional instruction by replacing much of the knowledge transmission portion of basic courses and freeing up classroom time for interactive instruction and feedback
- Providing more affordable and available alternatives for nontraditional students currently being served by for-profit, community college and education outreach/extension programs
- Fostering community and interdisciplinarity across the globe both within and outside academia
- Exposing vastly more people across industries and cultures to the ideas and knowledge of the world’s best scholars and teachers outside of the confines of expensive degree or certificate programs

Ultimately, none of the current MOOC models provides room for the basic research, interpersonal, apprenticeship-based teaching and learning, and college environment provided by traditional institutions. MOOCs are in no way a substitute for that experience and are unlikely to supplant it even if they become a useful educational supplement. However, no-frills, practical programs like community colleges, for-profit institutions, lower tier public institutions, and continuing education/extension efforts could face real competition from such a model. Before any of this can truly happen, however, **the problem of ensuring that the enrolled student is the one completes the work must be solved, reliable assessment for written work must be developed, a long term answer to sticky questions about the ownership of course content must be addressed, and viable business plans that do not rely on free academic labor driven by a strong belief in experimentation and commitment to open access education must be developed.** All of these issues and more will need to be addressed before MOOCs can become much more than a grand experiment in teaching, learning and technology, MOOCs are off to a promising start and the diversity of competing approaches may bode well for their future.

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