Emerging Open Online Distance Education Environment
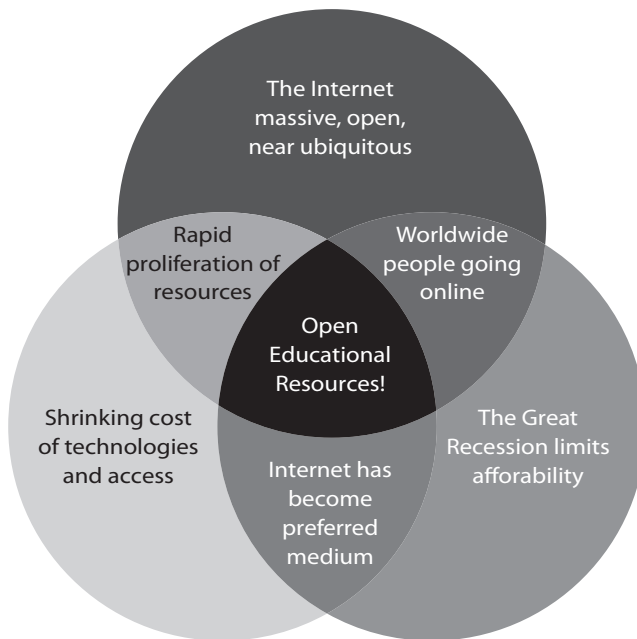
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THE CHANGING CONTEXT IN HIGHER EDUCATION

A revolution of sorts is underway in providing open access to rich resources, actual courses, and even entire degrees online. This revolution is fueled by the combination of a bubble in tuition rates, lingering effects of the recession, monumental student debt exceeding one trillion dollars in the United States, development of increasingly sophisticated online and mobile technologies at shrinking cost, and the near-ubiquity of access to the Internet through fixed and mobile services. Recognizing these factors, entrepreneurs in both the public and private sectors have launched a broad spectrum of opportunities for learners, from short video tutorials such as are the hallmark of the Khan Academy to certificate programs from recognized providers such as the Harvard University / MIT joint initiative edX, to entire open online colleges such as the University of the People.

MASSIVE OPEN ONLINE CLASSES

This convergence of pressures and opportunities gave rise to Massive Open Online Classes (MOOCs) beginning in 2007 (OERu Planning Group, 2011). These MOOCs became the test beds for developing online classes for mass audiences that would evolve into the rich market of delivery options we see today. Even in the early MOOCs, participants joined the classes from around the world. These classes were offered at no charge. With thousands of participants, leaders emerged among the participants in each MOOC to lead discussions and special-interest topical research. In a dispersed and diffuse way, learning was spread across languages, cultures, and groups.

Give the rather broad parameters of the conditions above, it is not surprising that a more formal definition of MOOC has emerged:

> An online phenomenon gathering momentum over the past two years or so, a MOOC integrates the connectivity of *social networking*, the *facilitation* of an acknowledged expert in a field of study, and a collection of *freely accessible* online resources. Perhaps most importantly, however, a MOOC builds on the active engagement of *several hundred*

to *several thousand* "students" who *self-organize* their participation according to learning goals, prior knowledge and skills, and common interests. Although it may share in some of the conventions of an ordinary course, such as a predefined timeline and weekly topics for consideration, a MOOC generally carries *no fees*, *no prerequisites* other than Internet access and interest, no predefined expectations for participation, and *no formal accreditation* (Cormier, McAuley, Stewart & Siemens, 2010).

eduMOOC

In late spring 2011, the Center for Online Learning, Research and Service at the University of Illinois Springfield made a decision to learn more about the MOOC concept. It seemed that there was no better way than to launch a MOOC on a topic with which all in the center were familiar: online learning. This resulted in eduMOOC (Schroeder, 2011). Some 2,700 participants enrolled from 70 countries. The discussion sessions among the experts listed above were streamed every Thursday afternoon (US central time zone) and recorded for later listening. Questions for the panel were taken live off of a Twitter stream each week. Participants were encouraged to tweet questions and listen to the answers. Interactions and engagements took place worldwide in multiple languages and at many levels.

As of the summer of 2011, eduMOOC was the largest recorded MOOC to that date (eduMOOC OERu Planning Group, 2011). Yet, even in the closing panel discussion, participant Seb Schmoller was reporting from the UK that enrollments at the emerging Stanford open class led by Sebastian Thrun, "Introduction to Artificial Intelligence," was approaching and passing the 100,000 enrollment mark (Thrun & Norvig, 2011). In many respects it was this transition between eduMOOC and the artificial-intelligence class hosted by Stanford that marked the passing from the independent entrepreneurial MOOC to the more organized massive classes that followed at the end of 2011 and into 2012.

THE NEXT GENERATION OF MASSIVE OPEN ONLINE INITIATIVES

With the success of Thrun's class and others that immediately followed from Stanford and a number of other institutions, many new initiatives emerged. These are setting the stage for a new context for higher education—the delivery and certification of learning through massive means. The initiatives have taken many paths, including collaborations among existing

universities, stand-alone open initiatives creating entirely new universities, and a host of alternatives in between. These will almost certainly undergo changes, and some may fail, as competition creates a pathway for to new models for the online delivery of higher education.

As of this writing, out of the many early attempts in this field, a dozen leading initiatives are either in planning or underway. Each has a somewhat different approach, but also has the potential to thrive and serve as a model for the future. Collectively, they comprise the emerging open online environment in online learning.

Coursera

Coursera, at this time, is a collaborative online learning effort among five universities: Princeton University, Stanford University, University of California Berkeley, University of Michigan-Ann Arbor, and the University of Pennsylvania. High quality online courses taught by faculty members from those institutions are freely available on a published schedule. The first classes are attracting tens of thousands of enrollees. Academic credit was not offered for the first classes; however certificates are awarded to those who take all of the quizzes and exams in classes (Coursera, 2012).

edX

Harvard University and MIT recently joined together in an open online initiative called edX. It is designed to offer online learning to millions of people around the world. Through the partnership, the two universities intend to "extend their collective reach to build a global community of online learners and to improve education for everyone" (edX, 2012). The not-for-profit edX initiative is equally owned and funded by the two universities. In announcing edX, the founders said it "will never replace the traditional residential model of undergraduate education," but rather that "it will serve to improve and supplement the teaching and learning experienced at both universities" (edX, 2012). The director of MIT's Computer Science and Artificial Intelligence Lab, and the president of edX, Anant Agarwal, says the goal of the combined initiatives is to educate up to one billion people in the coming decade (Darrow, 2012). The edX initiative is based on MITx (described below), which was begun in December, 2011.

MITx

MITx grew out of more than a decade of experience with the MIT OpenCourseWare (OCW) project at MIT. The OCW project was launched in 2001 to make most of the course materials from MIT openly available online.

The MITx initiative has announced that it will provide certificates of successful completion to qualifying students at a modest charge. This raises the potential for badges and certificates to play an important role in the emerging open online higher education environment. The MITx project is the basis of the joint initiative with Harvard, edX, described above.

iTunes U

Apple Corporation, which had long offered iTunes U as an educational site for podcasting, announced an upgrade in its service to include many more features that allow educators to provide entire classes, rather than merely podcast lectures and other presentations (itunes U -, 2012). Apple's iTunes U provides a unique learning management system that supports audio, video, text, and additional multi-media. The free service can be accessed through the web, but also through apps on the iPad, iPhone, and iPod touch (iTunes U -, 2012).

Khan Academy

The now-famous story of the hedge-fund manager who tutored his nieces and nephews online through YouTube is the foundation of this extraordinary initiative of millions of students taught by a faculty of one. Currently more than 3,200 videos are online at the Khan Academy site. Each one is carefully researched and presented by Salman Khan. Universities and schools use these videos as learning objects to supplement and review instruction. Students and informal learners alike use them independently to build knowledge in thousands of areas. Perhaps most interesting is the adaptive-learning feature of the Khan Academy. Each time a student works on a problem, the Khan Academy tracks the learning and time on task. These data are used to suggest the next step, whether it is reviewing problems or moving ahead to the next topic in the field. This approach of using data to dynamically program learning assignments leverages the power of data analytics to guide progress (Khan Academy 2012).

Minerva

The Minerva Project is a singular initiative that seeks to provide elite quality education at a reduced cost online to students worldwide. Scheduled to launch in 2013, it is actively building at the time of this writing. The project describes its approach as transforming "every aspect of the university-student relationship in anticipation of students' changing needs in an evolving world. Across a full life cycle of admission to instruction to post graduation support, The Minerva Project is rethinking the role of an elite

institution of higher learning" (The minerva project, 2012). Cost reductions will come through reduced capital investment in a campus and in encouraging students to cluster together in dispersed communities such as apartment complexes near major cities. Though not open at its core, it remains to be seen which aspects of this initiative will be available to the broader public. The massive online aspects of this project are worth tracking as they influence other online projects.

Peer 2 Peer University

Peer 2 Peer University (P2PU) is a volunteer-driven effort to provide learning opportunities outside of traditional formal higher education through peer-taught courses. Participants learn from each other, and students who complete a course receive a digital badge but no credit or official certificate. This free and open initiative continues to develop and take form. It is at the fully open end of the continuum of initiatives in the emerging environment (P2PU, 2012).

Saylor

The Saylor Foundation has created a site that offers certificates for successful completion of online classes. They describe their initiative in the following manner:

> Saylor.org is a free and open collection of college level courses. There are no registrations or fees required to take our courses, and you will earn a certificate upon completion of each course. Because we are not accredited, you will not earn a college degree or diploma; however, our team of experienced college professors has designed each course so you will be able to achieve the same learning objectives as students enrolled in traditional colleges" (Saylor.org free education, 2012).

TED-Ed

TED is the very popular video and discussion site that addresses many topics of importance in learning and more broadly in science and society. In response to open online initiatives, TED released a beta project to add learning components to videos. They describe the initiative in this way:

> Within the growing TED-Ed video library, you will find carefully curated educational videos, many of which represent collaborations between talented educators and animators nominated through the TED-Ed platform. This

platform also allows users to take any useful educational video, not just TED's, and easily create a customized lesson around the video. Users can distribute the lessons, publicly or privately, and track their impact on the world, a class, or an individual student (TED-Ed, 2012).

Udacity

After his huge success with the artificial-intelligence MOOC conducted in the fall of 2011, Sebastian Thrun resigned as a professor at Stanford University and started up a for-profit open online higher education intiative, Udacity. The site unabashedly claims that the classes are rigorous: "Udacity classes will make you sweat. Passing a Udacity class is as demanding as passing a university-level class…. In return for your hard work, Udacity offers a range of certification options that are recognized by major technology companies who are actively recruiting from the Udacity student body" (Udacity, 2012). The business model is that revenues from the placement service, which will charge the employer 20 percent of the first-year salary that is awarded top students, will fund the operating expenses of making the classes open to everyone.

Udemy

Udemy is one of the early models of offering open online classes that can be created by anyone and taken by anyone. Much like P2PU, Udemy is a fully open project. Its stated goal is "to disrupt and democratize education by enabling anyone to learn from the world's experts" (Udemy, 2012).

University of the People

Billed as "the world's first tuition-free university," the University of the People started in 2009. This is how UoPeople describes itself:

> Based on the principles of e-learning and peer-to-peer learning, coupled with open-source technology and Open Educational Resources, UoPeople is designed to provide access to undergraduate degree programs for qualified individuals, despite financial, geographic or societal constraints (University of the People, 2012).

Using volunteer faculty, the university offers baccalaureate degrees in business administration and computer science and has accepted students from 130 countries. The Bill & Melinda Gates Foundation recently awarded it $500,000 to help it gain accreditation.

GRANTING CREDIT

The question remains, how will credit be given to those who successfully completed many of these new initiatives? One emerging model is to use the long-standing option of "credit for prior learning" that many universities and the Council for Adult and Experiential Learning (CAEL) support. This promises to transform MOOC learning and certificates from such programs as edX into credit granted at colleges and universities nationwide (Fain, 2012).

The MacArthur Foundation entered the field by supporting Mozilla's Open Badges project, which provides a standard for the display of badges and certifications earned by students taking open online classes (Mozilla, 2012). This project has developed infrastructure to secure and verify the credibility of badges award by colleges, universities, and other institutions. We have long recognized the Microsoft and Cisco certified badges that reflect credentials earned by engineers and programmers. The Mozilla project expands this to all disciplines and institutions. It now seems possible that learners will soon be able to present to prospective employers credentials that verify their completion of courses from institutions such as MIT, Stanford, Yale, Princeton, and many more.

Another initiative in this area is the Open Educational Resources university. Initiated in 2011, this growing consortium includes 15 universities worldwide. North American members include Empire State College (SUNY), University of Southern New Hampshire, Thomas Edison State College, Thompson Rivers University, and Athabasca University. The members offer full academic credit to students who have completed open online classes and take assessments such as custom final exams offered by the member institutions. The cost of those credits, limited to recovery of the cost of offering the assessment, is far lower than traditional tuition and fees (OERu, 2012). As this model matures, it may become the bridge between traditional degrees and the burgeoning open-learning field.

LOOKING TO THE FUTURE

MOOCs emerged rapidly, fueled by Internet connectivity, technology, and societal need for affordable access to learning. It seems likely that the underlying pressures will continue: affordability considerations, technology advances, and increasing Internet ubiquity are likely to be relevant for some years to come. The early responses have evolved from disparate individual efforts into an array of larger initiatives, including some that are

well organized and coordinated. It seems most likely that some of these open online learning initiatives will merge or fall out as others grow in size and acceptance. Still others will enter the field in the coming months and years.

Credentials, assessments, and validation of learning that may replace or bridge to traditional universities are now in formative stages. Based on prior experiences, we cannot rely upon federal or state policymaking and regulatory bodies to anticipate these changes and take proactive moves. Historically, policy and regulations trail the innovations in education rather than leading them, at least in this country.

In the coming years, we can anticipate that this approach will become truly disruptive in higher education. We will see refinements in deployment, assessment, and credentialing. While these initiatives are unlikely to fully replace the traditional university, they will fill an important role in accessible and affordable learning opportunities. Universities will need to adapt to the changing environment. No longer do public and private universities have a virtual monopoly in higher education. Continuing education departments have the opportunity to lead change by offering just-in-time and career-oriented learning opportunities capitalizing on the new badges and certificate initiatives. An exciting future awaits interconnected, international learning opportunities through Internet delivered massive open online classes!

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