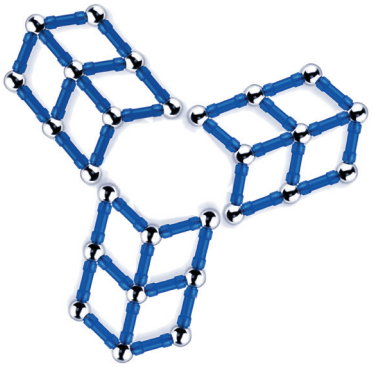
Deloitte.



Massive Open Online Courses (MOOCs): not disruptive yet, but the future looks bright

Deloitte predicts that by 2014, student registrations in Massive Open Online Courses (MOOCs) will be up 100 percent compared to 2012 to over 10 million courses, but the low completion rates mean that less than 0.2 percent of all tertiary education-equivalent courses completed in 2014 will be MOOCs. The growing awareness of online education will force educational institutions to increase investment in this area, drive more acceptance of online education as it becomes accredited, and increase adoption by corporate training groups.

The idea that MOOCs will cause imminent disruption of the existing tertiary education market (also known as higher education or post-secondary education) appears frequently in the media, with over fifteen thousand articles on the subject published in 2013[52]. While this hype creates interest, most large educational institutions will experiment with MOOCs, but they will not disrupt education significantly in the near term. Enterprise training and continuing education looks likely to be the fastest adopter of MOOCs, with significant growth in 2014 and 2015. Although the for-profit and not-for-profit tertiary education market is the largest, at $400 billion per year, the corporate skills development market is not small, at $130 billion annually[53].

Predictions normally looks only at the next 12-24 months, but there appears to be a "perfect storm" of conditions that could make MOOCs a major factor by 2020, representing over 10 percent of all courses taken in tertiary and enterprise continuing education. We discuss this perfect storm after exploring the state of MOOCs in 2014.

Alternatives to in-person education are not new: arguably the first occurred in 1895, in the shape of correspondence courses distributed by mail. In 1921, courses were offered over the radio. In the 1950s, televised courses emerged, and in 1962 Stanford offered the first course on a computer network[54]. Now, most universities and colleges offer at least some courses online, many governments offer training courses over the Internet and more than 75 percent of large organizations use online courses as part of their ongoing employee training processes[55].

How are MOOCs different? They are massive, with potentially millions of users. And they are open: available to anyone, often for free or at minimal cost, much less than a traditional university or college course.

Today, when a tertiary educational institution offers a first year physics course online, it is typically available only to students who have been admitted and enrolled in that school and the tuition is the same as for the traditional version. MOOCs are more efficient because they avoid duplication of effort: first year physics courses tend to have very similar content at every university, which means MOOCs could be used to make a single, well-designed online version available to anyone, for a relatively low fee.

Online training courses on spreadsheet use are common at accounting firms, but tend to be restricted to a firm's employees. However, spreadsheet skills are fairly universal: what if a single, extremely well done spreadsheet course was available to anyone? Enterprises are already beginning to adopt MOOCs for this kind of training.

At the moment, one of the biggest differences between traditional education and MOOCs is the completion rate: one survey found that 93 percent of students who register for a MOOC fail to complete their prescribed course of study[56]. By contrast, most people taking a university course or corporate online training course want to complete it, need to complete it, and keep trying until they pass.[57] There are exceptions, with some students only "auditing" a course for the sake of learning, but this is rare. Even at universities where dropout rates of 50 percent make headlines, students are still completing their education at a rate seven times higher than the average MOOC.

52 In December 2013, there were 15,600 results for a Boolean search for "MOOC" and "disruption". See: http://www.google.ca/ webhp?nord=1#nord=1&q =mooc+disruption&safe =off&tbs=qdr:y

53 The Impact of the MOOC Market on Corporate Training, Josh Bersin, September 11, 2013. https://www.bersin.com/Login.aspx?p=http://insights.bersin.com/research/?docid=16830&h=1 (Registration required.)

54 Timeline of Online Education, Timetoast, 18 September 2013: http://www.timetoast.com/timelines/timeline-of-online-education

55 Important Statistics about the eLearning Market for 2013 – Infographic, eLearning Industry, 6 March 2013: http://elearningindustry.com/important-statistics-about-the-elearning-market-for-2013-infographic

56 Mooc completion rates 'below 7%', Times Higher Education, 9 May 2013: http://www.timeshighereducation.co.uk/news/mooc-completion-rates-below-7/2003710.article That being said, the analysis of MOOC completion rates is complex. First, there are no truly global studies, merely samples representing less than one percent of all courses taken. Second, completion rates amongst those that have enrolled into the course may not be the best measure to assess MOOCs' success. If the number of students who watched at least one video is used as the denominator (instead of those who registered, and then never watched even one video), the completion percentage climbs to 15 percent. Further, if the assumption that only students who complete at least one assignment (even a short quiz at the end of the first lesson) should be considered serious enrollees, the completion rate skyrockets (for one MOOC, at least) to 48 percent: For more information, see: MOOC Attrition Rates – Running the Numbers, The Huffington Post, 25 November 2013: http://www.huffingtonpost.com/jonathan-haber/mooc-attrition-rates-runn_b_4325299.html. However, while these more restrictive definitions of 'serious students' help drive the completion rates higher, they would shrink the number of students that MOOCs claim to have by at least 80 percent.

57 Statistics on tertiary education dropout rates are complex. They vary by time and by geography, and they usually measure completion of a course of study (like a four-year university program) rather than individual courses, which is the more relevant comparison for MOOCs, which offer courses rather than degrees. In Canada, the total tertiary non-completion rate for courses of study is around 16 percent (see: one in six first-year university students won't make the grade, Toronto Star Newspapers Limited, 20 September 2009: http://www.thestar.com/news/canada/2009/09/20/1_in_6_firstyear_university_students_wont_make_the_grade.html) and the same statistic in Italy is 30 percent (see: University Dropout In Italy, Societa italiana di economia pubblica, 20 September 2011: http://www-3.unipv.it/websiep/2011/201189.pdf) and 50 percent in Spain, see: Drop-out rates shock Spain, Times Higher Education, 8 December 2000: http://www.timeshighereducation.co.uk/155653.article

Why is the MOOC completion rate so low? Not because courses are not enjoyable. One study found that 91 percent of students ranked their MOOC as good, very good or excellent – even though only four percent of those who registered ended up completing the course[58]. Nor is it that MOOCs don't teach subject matter well enough: one experimental Artificial Intelligence course at Stanford was also offered as a MOOC, and 410 online students got better marks on the final exam than any of the in-person Stanford students.

Other studies provide early evidence that MOOCs lead to equivalent educational outcomes[59]. Also, MOOC pedagogy is still in its relative infancy: traditional university courses have had centuries to perfect their teaching and learning methods, compared to less than five years for MOOCs. It appears that, at present, the vast majority of MOOC students that register have goals other than finishing the full course.

Some might be trying out the MOOC format; some might be merely curious. But the number one aspiration is "to learn more about a subject area," not to complete a prescribed curriculum[60].

Given this crucial fact, MOOC registration numbers in the millions need to be viewed in context. There are approximately 100-125 million students enrolled in traditional tertiary and corporate education globally, many of which are taking and completing the equivalent of eight to 10 courses per year, resulting in around one billion non-MOOC courses completed annually[61]. While the top-line growth in MOOC registrations looks impressive, Deloitte predicts that MOOCs completed will represent less than 0.2 percent of all tertiary[62] courses completed in 2014. This suggests that MOOCs' near-term disruption of the $1.5 trillion global market for tertiary education[63] will be minimal.

So, after all the media hype, why haven't MOOCs created more disruption yet?

Despite the view that 'education for education's sake' is a good thing, most people expect something tangible in return for their investment of time and money. Although tuition costs vary widely, fees for tertiary education in mature markets such as Canada, the UK, and the US are typically around $10,000 per year[64]. So a free or low-cost MOOC course offers enormous savings. But in 2014, completing a MOOC course and receiving the course credit carries less weight than passing a traditional or university-sponsored online course: in many cases the credit the student receives is not considered a proper "credential" by the institutions that care most about education.

To enjoy success with tertiary-level students, MOOC course credits need to be fully recognized by some or all of three different groups: government, employers and educational establishments.

Some governments consider enrollment in tertiary study as a factor when providing social assistance benefits and many don't require repayment of student loans as long as such study continues[65]. Also, some jurisdictions offer tax benefits or military exemptions related to student status[66].

In 2013, governments were just starting to debate whether enrollment in MOOCs would satisfy these kinds of requirements[67], and it could be years before the debate is settled.

Employers often require formal levels of tertiary education for new hires, or as part of re-training or on-the-job learning. Requirements can range from full graduate and undergraduate degrees and professional designations to two-year diplomas or even completion of single courses. In 2013, only a few employers recognized MOOCs completed and passed as meeting these requirements[68]. Also, many enterprises are reluctant to accept MOOCs as full degree substitutes: according to one survey half of employers would not consider hiring someone who had earned their degree completely online[69].

However, not all education is degree level. Many employers, from web portal companies to steel pipe manufacturers, are enthusiastically adopting MOOCs for internal corporate needs[70]. In fact, one survey found that 70 percent of companies are interested in MOOCs for corporate training, and 31 percent have active plans to use them[71].

Traditional educational institutions are taking a much more conservative approach to recognizing MOOCs: in 2013, it was estimated that very few accredited tertiary educational institutions accepted MOOC credentials, and few students even bothered to take advantage of such credits[72].

Education is a source of revenue for traditional education institutions, but is a cost for governments and enterprises, so it's not surprising that they might be more eager to accept MOOC credits than are universities and colleges, who may see low cost MOOCs as a threat to their business model.

Some early evidence suggests that MOOCs do not lead to inferior educational outcomes[73], so credentialing is likely the biggest impediment to MOOCs becoming truly massive. Resolving this issue might be all that is needed for MOOCs to achieve their disruptive potential.

The Long Term

There appears to be a confluence of major trends and conditions that will likely lead MOOCs to cause disruptions for students, governments, the educational industry, the pace of innovation, continuing education, the digital divide, and society at large.

Cost of education to individuals. The single biggest driver of MOOCs adoption is likely to be their relatively low cost relative to traditional tertiary education: this is a trillion dollar issue over time.

58 91% MOOC satisfaction rating for University of London International Programmes, PR Web, 4 November 2013: http://www.prweb.com/releases/2013/11/prweb11295382.htm

59 Sebastian Thrun: What's Next for Silicon Valley?, Wall Street Journal, 15 June 2012: http://online.wsj.com/news/articles/SB10001424052702303807404577443489129 1657730 and WSJ outcome study: "There is some early evidence that the quality of teaching and learning online can be better than face-to-face, not least because all the interactions are explicit and can be analysed and improved upon, rather than taking place behind lecture room doors." US Department of Education (2010) Evaluation of Evidence-Based Practices in Online Learning, Washington: Center for Technology in Learning. For more information, see: Evaluation of Evidence-Based Practices in Online Learning, U.S. Department of Education, September 2010: http://www.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf

60 The maturing of MOOC, Department for Business Innovation & Skills, September 2013: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/240193/13-1173-maturing-of-the-mooc.pdf

61 Data extrapolated from OECD Indicators: Education at a Glance 2013 DOI: 10.1787/eag-2103.en from OECD publishing, pages 270 – 278.For more information, see: Education at Glance 2013-OECD Indicators, OECD Library, 2013: http://www.keepeek.com/Digital-Asset-Management/oecd/education/education-at-a-glance-2013_eag-2013-en#page1

62 Tertiary education is the globally preferred term. This is synonymous with post-secondary education in North America and also third stage or third level education, and includes terms such as higher education, further education and continuing education.

63 GSV Edu Education Factbook 2012, GSV Advisors,2012: http://gsvadvisors.com/wordpress/wp-content/uploads/2012/04/GSV-EDU-Factbook-Apr-13-2012.pdf

64 Expenditure per student, tertiary (percent of GDP per capita), The World Bank, 8 November 2013: http://data.worldbank.org/indicator/SE.XPD.TERT.PC.ZS/countries?display=default

65 Examples include various Canadian programs student loan programs, see: Paying Back Student Loans, CanLearn, Government of Canada, 2013:http://www.canlearn.ca/eng/loans_grants/repayment/index.shtml and American programs, see: Student Loan Guide, University of Washington, 2013: http://www.washington.edu/students/osfa/ugaid/student.loan.guide.html

66 Countries that allow deferral of military service due to student status include Egypt and Israel; examples of countries that provide tax breaks to students include Canada, see: Students, Canada Revenue Agency-Government of Canada, 2013:http://www.cra-arc.gc.ca/students/and the UK, see: What tax credits can I get as a student?, The National Union of Students (NUS), 2013:http://www.nus.org.uk/en/advice/money-and-funding/other-sources-of-funding/what-tax-credits-can-i-get-as-a-student/

67 An important example of progress in government consideration of alternative education models includes the April 2013 decision by the US Department of Education to extend Title IV funding to the College of America based on demonstration of learning competencies rather than hours in the classroom. http://collegeforamerica.org/latest/entry/a-milestone-for-competency-based-higher-ed

68 'A College Degree Sorts Job Applicants, but Employers Wish It Meant More', Chronicle of Higher Education, 4 March 2013: http://chronicle.com/article/The-Employment-Mismatch/137625/?cid=wb&utm_source=wb&utm_medium=en#id=overview

69 "MOOCs are Treated with Suspicion by Students and Recruiters", Financial Times, 18 August 2013: http://www.ft.com/cms/s/2/f6f45fc4-0678-11e3-ba04-00144feab7de.html#axzz2jghwXvRN

70 Yahoo! sponsors employees to earn Verified Certificates on Coursera, Coursera, 2013: http://blog.coursera.org/post/53374336656/yahoo-sponsors-employees-to-earn-verified-certificates; BloomNet(R) selects Udemy to Launch a World-Class Online Education Platform, Wall Street Journal, 30 October 2013: http://online.wsj.com/article/PR-CO-20131030-912463.html; Global Steel Manufacturer Tenaris Adopts edX Platform for Employee Training, EdX, 12 November 2013:https://www.edx.org/blog/global-steel-manufacturer-tenaris-adopts

71 The MOOC Marketplace Takes Off, Forbes, 30 November 2013: http://www.forbes.com/sites/joshbersin/2013/11/30/the-mooc-marketplace-takes-off/

72 Maryland college offering credit for massive open online courses, 4 September 2013:The Baltimore Sun: http://articles.baltimoresun.com/2013-09-04/news/bs-md-mooc-20130815_1_moocs-umuc-higher-education

73 WSJ outcome study: "There is some early evidence that the quality of teaching and learning online can be better than face-to-face, not least because all the interactions are explicit and can be analysed and improved upon, rather than taking place behind lecture room doors." For more information, see: Evaluation of Evidence-Based Practices in Online Learning, Washington: Center for Technology in Learning, U.S. Department of Education, September 2010: http://www.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf

While there are many different models for how students pay for tertiary education, in countries where students pay for a significant portion of tuition and books, the cost of traditional education has been climbing much faster than inflation: in the US, for example, since 1985 the consumer price index has risen 115 percent, while college tuition has risen almost 500 percent[74]. The money that students can earn at minimum wage has not kept pace, therefore US student loan debt has gone from just over $200 billion in 2003 to almost $1 trillion in 2012 while other lending, such as auto loans and credit card debt have stayed in the $600-800 billion range each over the same time frame[75].

This sharp rise in student debt would be less of an issue if it positioned students to find jobs that paid well enough to repay the loans. Unfortunately the reverse is true: the cost of public four-year college tuition and fees in the US is rising faster than the average earnings of full time workers aged 25-34 with a Bachelor's degree only: 72 percent growth in tuition since 2000, versus a 15 percent decline for earnings over the same period[76].

Skills half-life is shortening across industries. In the past, a skill learned often created value for a lifetime. In contrast, the hundreds of millions of workers worldwide whose jobs either have been outsourced to a low-cost country or supplanted by new technology or robotics need to learn new skills. And it's not just older workers who need retraining: the pace of technological advancement is such that the programming techniques computer students learn in first year might already be obsolete by the time they graduate, only four years later.

Cash-strapped governments and re-training. Obsolete skills translate into lower productivity and higher and persistent unemployment rates – both issues of great concern for governments at all levels.

Broadly speaking, in the wake of the 2009 global economic crisis, many governments can't afford to re-educate the 20-40 percent of their older workforce that requires it (let alone students who graduated in the last year) in traditional bricks-and-mortar universities, colleges and technical/vocational schools. Governments need a more cost-effective solution for re-training: MOOCs seem likely to be one possible more cost effective solution.

Advances in online education/pedagogy. Education, both online[77] and in person, is moving away from the "sage on stage" approach[78]. "Flipped learning" is a new approach based on the idea that traditional tertiary education has it backwards. Instead of a professor lecturing to passive students, who then go home and struggle with material unsupported, students view lectures at home, and then come to class to get help on assignments from the professor in person. Recent data suggests that over 80 percent of professors who are using flipped learning believe it improves their students' mastery and retention of information[79].

Flipped learning is possible in traditional schools, but because the technique is based on recorded lectures distributed over the Internet, it is particularly suited to MOOCs.

Push vs. Pull. Traditional education is a lot like traditional TV: students show up at scheduled times for lectures and write exams at even more rigorously scheduled times. As younger viewers transition from a world where content is pushed to one where they pull content towards them, we are likely to see students embrace MOOCs that allow them to learn what they want, when they want. Also, younger viewers often don't lock themselves into specific channels, viewing patterns or fixed schedules, but might consume video in small chunks and clips, or perhaps might go on a binge and view everything at once. In the same way, they might acquire education in ways that differ from traditional tertiary education with its clearly defined curriculum and end point. In this new world, completion rates might be less meaningful.

Big data/analytics/granularity. As the cost of education rises, it becomes increasingly necessary to measure its effectiveness. At a national level, across millions of students, measurement and analysis of education outcomes tend to be partial, slow and coarse.

Even collating final exam results from hundreds of institutions takes weeks to months. In contrast, analysis of MOOCs can use modern big data tools to run real-time queries – not just of every mark for every assignment and every test for every student – but even looking at text or lectures while students are reading or viewing them, and then examining specific passages that are being replayed, which might indicate they are poorly written or hard to understand. In this way, educators could use real-time data to improve MOOCs on a daily basis[80].

Technology. Robust Internet, pervasive broadband (landline and wireless) powerful connected devices, powerful collaborative software tools, as well as big data tools and analytics will all make the MOOCs of 2020 even more potentially effective and disruptive than in 2014, especially outside the developed world.

74 College Costs Out Of Control, Forbes, 24 March 2012: http://www.forbes.com/sites/steveodland/2012/03/24/college-costs-are-soaring/

75 The Student Loan Debt Crisis in 9 Charts, Mother Jones, 5 June 2013. http://www.motherjones.com/politics/2013/06/student-loan-debt-charts

76 For public university, see: Shocking Chart on Tuition vs. Earnings for College Grads, The Fiscal Times, 30 November 2012: http://www.thefiscaltimes.com/Articles/2012/11/30/Shocking-Chart-on-Tuition-vs-Earnings-for-College-Grads and for private university, see: Earnings of Young College Grads vs College Costs, Bloomberg Businessweek, 12 September 2009: http://www.businessweek.com/the_thread/economicsunbound/archives/2009/09/earnings_of_you.html

77 Earlier forms of alternate education consisted of a videotape or TV broadcast of a traditional professor standing in front of a blackboard, giving a lecture. Students were expected to watch the video, take notes, do some readings on their own time, take quizzes, and write an essay or two and then a final exam: in other words, alternate education was just like a university course, but on a TV screen.

78 Survey Confirms Growth of the Flipped Classroom, Faculty Focus, 20 November 2013: http://www.facultyfocus.com/articles/edtech-news-and-trends/survey-confirms-growth-of-the-flipped-classroom/

79 "Flipped classroom" Model Shows Proven Progress in Addressing Broken Educational Experience in the U.S., Wall Street Journal, 19 November 2013: http://online.wsj.com/article/PR-CO-20131119-905025.html

80 LEARNING ANALYTICS AT STANFORD TAKES HUGE LEAP FORWARD WITH MOOCS, Stanford University, 11 April 2013: http://online.stanford.edu/news/2013/04/11/learning-analytics-stanford-takes-huge-leap-forward-moocs

Bottom line

MOOCs are a fast-growing trend in the educational landscape. In the short term, MOOCs aren't a threat to traditional tertiary education providers, and in fact might never be a threat, even in the long term: MOOCs and traditional education might not be a zero-sum game. People whose primary learning motive is certification or in-person networking might still pay the higher cost of traditional programs. However, providers of MOOCs are branching into new business models. In addition to the revenue from providing fee-based platform services to traditional universities, MOOCs are currently collecting modest fees from certification options, as well as from partnerships with employers to provide targeted learning programs, which might become material in the medium term if the enterprise MOOCs market is the first to take off[81]. The US Department of Education's decision to provide funding based on demonstration of competencies rather than hours spent in the classroom suggests that at least one government is willing to start endorsing non-traditional education approaches in the face of mounting pressure to do something about the looming student debt crisis[82].

MOOCs don't provide the same on-campus experience and social component as bricks and mortar institutions. However, the percentage of students over the age of 25 is increasing faster than the percentage of students under the age 25 as life-long learning becomes a requirement for continued employment[83]. These older learners might be less interested in the campus experience that is so appealing to 18-22 year olds, and might prefer being able to learn on their own time and turf: particularly as the perceived isolation of online learning is mitigated by new social media elements. MOOCs seem well placed to meet the needs of the next generation of learners, who are increasingly disillusioned with the idea that a degree is necessary for success[84], more comfortable with multi-media content delivery, and increasingly averse to student debt.

While MOOCs might not be a significant presence in the traditional for-profit tertiary education market today, colleges and universities need to take the MOOCs threat seriously and learn how to harness it, much like traditional media and music companies have benefited from embracing digital content.

As MOOCs become larger and better credentialed, they could become a disruptive force, especially because of how cross subsidization works in for-profit tertiary educational institutions today. The current financial model for most high tuition tertiary education is that courses in the first and second year tend to be very large (with thousands of students in a lecture hall listening to a single professor), while third and fourth year classes are very small (less than 50 students). Yet the tuition is the same because the first two years effectively subsidize the cost of the final two years. However, MOOCs seem particularly well suited to replace first and second year classes. If students take those classes through MOOCs, and then transfer into a traditional tertiary school for the final two years, colleges and universities may become almost entirely uneconomical, unless they raise tuition for the later years to reflect their true cost (more or less double the current levels.

One of the key positive aspects of MOOCs is the educational opportunities they provide to those who would otherwise not have access to tertiary education, due to factors such as cost, distance, language, and the need to work. MOOCs can be a game changer in those instances, and in developing nations won't have the same kind of installed base of incumbent educational institutions to compete with for credentialing status. Also, there is an opportunity in those nations for governments to support MOOCs in the same way public universities are supported in many developed countries.

81 Examples include the economics courses offered to IMF employees via MOOCs platform. See: I.M.F. Courses Offered Online, The New York Times, 18 June 2013: http://www.nytimes.com/2013/06/19/education/imf-courses-offered-online.html?_r=0

82 On April 18, 2013 ,the U.S. Department of Education (DOE) announced that the College for America had obtained approval to be eligible for title IV Higher Education Act (HEA) funding for its competency-based model. For details, see: A MILESTONE FOR COMPETENCY-BASED HIGHER ED, COLLEGE for AMERICA, 18 April 2013: http://collegeforamerica.org/latest/entry/a-milestone-for-competency-based-higher-ed

83 Digest of Education Statistics, 2011 (NCES 2012-001), Chapter 3, U.S. Department of Education, National Center for Education Statistics, 2011: http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2012001

84 In a poll conducted in Oct. 2013 by the College Board and National Journal, 46 percent of respondents, including more than half of 18- to 29-year-olds, said a college degree was not needed to be successful. For more information, see: Why Minorities Are More Optimistic About the Value of College, National Journal, 7 November 2013: http://www.nationaljournal.com/next-america/education/why-minorities-are-more-optimistic-about-the-value-of-college-20131107. Only 40 percent of Americans think college is a good investment, according to a study by the Pew Research Center titled Is College Worth It? For more information, see: Is College Worth It?, PewResearchCentre, 16 May 2011: http://www.pewsocialtrends.org/files/2011/05/higher-ed-report.pdf

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