INSIDE HIGHER ED

A selection of *Inside Higher Ed* articles and essays
on massive open online courses,
May 2013

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Randy Best on MOOCs

I am pleased that you have turned to *Inside Higher Ed* to learn more about massive open online courses (MOOCs). As the chairman of Academic Partnerships, I am always looking for ways to expand the reach of our partner universities so they can help more students achieve their aspirations. MOOCs can do exactly that.

Because Academic Partnerships believes in the transformative power of higher education to expand opportunity and change lives, we support new technologies and concepts that increase access for all global citizens. The MOOC combined with the latest distance learning technologies represents an unprecedented breakthrough in the quest for universal access.

Academic Partnerships' MOOC2Degree converts the MOOC into a pragmatic tool that leads to a credential. The initiative makes the first course in a degree program a MOOC – free, open and for-credit. The MOOC is the same course with the same academic content, taught by the same instructor, as currently offered in the online degree programs at our partner universities. Students who successfully complete a MOOC2Degree course earn academic credits toward a degree, based upon criteria established by the university.

Making the first course in a degree program a MOOC brings value to both the student and the university. The free start is just the encouragement many working adults need to enroll in a degree program that will have a significant impact on their future success. It benefits our universities as well, since MOOC2Degree is likely to attract larger numbers of qualified students into degree programs.

While the number of online education opportunities continues to increase rapidly, there are still many adults who are uncertain about learning online. This initiative provides a way for them to try online learning risk-free as the first step toward obtaining a degree.

A number of our public university partners are already participating in the initiative and others will do so soon. We are proud to be the first organization to help put students directly into a degree program through a MOOC. We are also pleased that MOOC2Degree has helped transition MOOCs into a practical benefit for students and universities.

We at Academic Partnerships will continue to participate in this discussion and we hope you will do the same.

Very truly yours,

Randy Best
Chairman, Academic Partnerships

The MOOC Moment

The acronym MOOC (for massive open online course) first appeared in *Inside Higher Ed* in December 2011, in reference to a course offered by a Stanford University professor. These days, the acronym is omnipresent and – to many – needs no definition.

Some of *Inside Higher Ed's* first articles on the subject dealt with questions now answered: Would more universities start to offer MOOCs? Yes. Would students flock to the courses? Yes. Would MOOC providers move to find ways to make money off of MOOCs, even as they remained ostensibly free? Yes. Would journalists and policy makers remain fascinated with MOOCs? A decided Yes.

This compilation of articles and opinion essays about MOOCs focuses less on the breaking news about MOOCs and more on how MOOCs are changing the nature of higher education and the conversation about higher education in key ways – and how MOOCs are posing questions that aren't yet answered:

- For some institutions, of course, the debate has been about whether to join one of the major MOOC providers. But many others, by choice or because they haven't been asked, face a different set of questions: How can colleges and universities use MOOCs to improve their own curricular offerings or attract more students to existing programs? And how will MOOCs change (for the better or otherwise) the business model of different types of colleges? Which students and which programs are most likely to benefit from MOOCs? And who isn't?
- For many faculty members, MOOCs raise questions both profound and practical about their roles as teachers. Do MOOCs offer new models for teaching (and, specifically for "flipping the classroom")? Or do MOOCs point to the need to define and defend what is most valuable about traditional classroom teaching?
- For all of higher education, the MOOC phenomenon raises questions about how to judge success. Is it based on the percentage of students who complete courses? Who pass exams? On whether institutions offering MOOCs expand their reach or bolster their finances?

The news articles in this booklet quote MOOC enthusiasts and MOOC skeptics – and the essays reflect a variety of views on the courses. Many more articles and essays may be found in the Technology section of *Inside Higher Ed*: http://www.insidehighered.com/news/focus/technology

Inside Higher Ed invites you to submit ideas for future news coverage or essay ideas – feel free to send them to editor@insidehighered.com

And please join a free webinar to discuss MOOC trends with *Inside Higher Ed* editors on Thursday, May 30 at 2 p.m. Eastern. Sign up at http://highereducationwebinars.adobeconnect.com/e6704poe8gd/event/event_info.html

Sir John Daniel on MOOCs

An international learning pioneer, Sir John Daniel has worked to advance the use of open, distance, and technology-mediated learning around the world and is widely-regarded as an expert on massive open online courses (MOOCs). He is currently a senior advisor to Academic Partnerships, an education master with the Beijing DeTao Masters Academy in China, and chair of the International Board of the United World Colleges (UWC), which focuses on uniting people, nations, and cultures through education.

Q How have MOOCs evolved since the first course carrying the name was offered in 2008?

A The first generation of MOOCs, sometimes called cMOOCs, were aimed at maximizing connections between learners, whereas the xMOOCs that emerged in 2012 adopted a behaviorist, top-down style of teaching. The present phase of evolution is marked by the multiplication of MOOCs initiatives across the world (the IITs in India, Futurelearn in the UK, and most recently OpenUpEd across Europe) and the trend to give credit to successful students.

What effect have these courses had on distance learning?

It would be tempting to say that the involvement of big-name universities in offering MOOCs has made distance learning respectable, but that might be premature. A period of disillusionment with MOOCs will soon set in and their dropout rates could actually reinforce the old image of distance learning as a second-rate alternative.

What effect will they ultimately have?

MOOCs are best understood as part of the general trend to openness and free availability of content that began with the Open Educational Resources movement. This will have two major effects: to cut the cost of higher education and to unbundle the processes of teaching and learning with different institutions supplying different services.

What is the best approach for ensuring that that the courses are of the highest possible quality?

Now that MOOCs are multiplying left and right, the market will partly take care of quality issues. It will favor MOOC-offering institutions that are honest with their students and provide them with follow-up, support, and routes to credit.

What's next for MOOCs?

A fairly savage process of Darwinian selection will now set in. Most of the institutions for which MOOCs are mostly a public relations stunt will fall by the wayside, but the serious players will bring MOOCs into the mainstream of degree study and shake up higher education.

To learn more about MOOCs from Sir John Daniel, **click here** to read

Making Sense of MOOCs:
Musings in a Maze of Myth, Paradox and Possibility.

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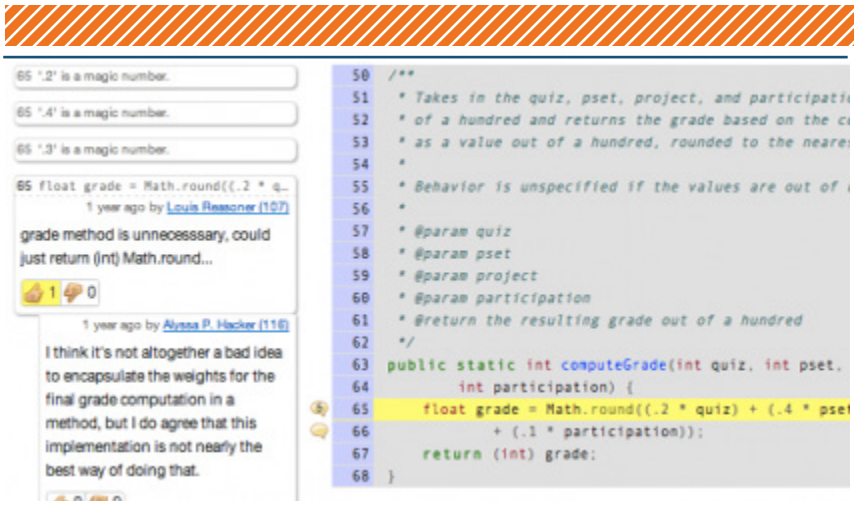
News

A selection of articles by *Inside Higher Ed* reporters on the MOOC phenomenon

Crowdsourcing Comments



Rather than having students wait weeks for feedback on homework, MIT professor has developed computer program that assigns diverse group of people to review small chunks of each student's work. MIT may use program in MOOCs.

By Alexandra Tilsley

Meet Caesar: the computer system that, like its Roman namesake, divides and conquers.

What Caesar divides is large amounts of code submitted by students in professor Rob Miller's "Elements of Software Construction" course at the Massachusetts Institute of Technology. In doing so, it helps Miller and his graders conquer the problem of getting students timely, useful feedback by combining peer review with crowdsourcing.

"Before, [students] would hand in a problem set and the graders would start working on it, but the students would have handed in another problem set, and maybe another, before they started to get feedback about what they had been doing wrong," Miller said.

So, Miller, a principal investigator at the MIT Computer Science and Artificial Intelligence Lab, developed Caesar.

When a problem set is due, Miller's 200 students submit their code to Caesar, which designates chunks of code for review, based on heuristics built into the system and on input from graders, who can provide Caesar with a list of file names that definitely should or definitely should not be reviewed.

Breaking down a long string of code into small portions allows each section to be reviewed by multiple people, makes the process go faster, and ensures that, ultimately, the student will get valuable, correct feedback, since even if one reviewer suggests an incorrect change, someone else can set that person straight, according to Miller.

Once the reviewable chunks of code have been selected, Caesar sends each chunk to a diverse set of reviewers, selected by algorithms. Reviewers are not told who submitted each chunk of code, though students can choose to reveal themselves later in the process.

Here, the system differs from typical peer-review processes, including those used by some massive open online courses. Rather than randomly selecting reviewers for each section of code, Caesar considers a reviewer's role – the reviewing pool for Miller's class includes current students, alumni, and graders – and reputation. Each reviewer has a reputation score, based on the quality of his comments, as judged by how often the comments get a "thumbs up" or "thumbs down." Miller envisions that in the future, the score could also take into account

comment quality, by having graders occasionally assess reviewers' work.

Caesar, then, might assign a chunk of code to someone with a particularly high reputation score, so the student who submitted the code receives valuable feedback, and to someone else with a low reputation score, so that person can learn from the comments left by the more skilled reviewer.

"We want to try to provide some diversity of viewpoint and feedback to the students," Miller said. "This is one way this is potentially superior to having a single grader."

The system also tries to ensure that selections from one student's problem set are distributed to different people. By the end of the semester, Miller said, a student who submitted four problem sets ideally has received feedback from 50 or 60 different people.

On the reviewer's end, Caesar focuses on similarity, rather than diversity. With a typical problem set, a student would receive between 8 and 10 files to review. (Alumni reviewers work with fewer files, since their participation is entirely on a volunteer basis.) The system aims to give each reviewer clusters of two or three files that cover similar parts of the program, so the reviewer can compare and can move more quickly through the process. Most student reviewers, Miller notes, spend about 45 minutes to an hour giving feedback on other students' work.

With Caesar, students now get comments on their work within three days. Though graders still review every student's work, the process goes much faster, Miller said, because they are only looking at certain sections, chosen by Caesar, and because they can simply give a thumbs-up to a comment, rather than starting from scratch. Although the identity of the student who submitted the code remains hidden, comments and thumbs-up or thumbs-down ratings include the reviewer's name, so it's easy for a student to distinguish a grader's note from another student's.

Though Caesar was initially created to solve the problem of slow feedback, Miller sees plenty of other benefits. Students get to hear different viewpoints and have conversations about the material through the Caesar interface. Course alumni, meanwhile, get to help current students and keep their reviewing skills sharp. Eventually, Miller envisions the process could even be a recruiting tool for alumni working in the programming industry, and he hopes to make a concerted push for greater alumni involvement.

A Tool for MOOCs

MIT is also looking at introducing Caesar to some of its courses on edX, the MOOC provider started by MIT and Harvard University. Some MOOCs, mostly those in the humanities, have experimented with peer grading, though users and professors have raised concerns about the quality of the feedback. Miller believes Caesar could help address problems MOOCs have struggled with by bringing in more reviewers and allowing for a conversation, not just static comments.

Scaling Caesar shouldn't be a problem, Miller said, since the bulk of the work is done by the program's algorithms. He acknowledges that the quality of reviewers in a MOOC might be more varied, and that some simply might neglect the task, but he says there are ways to deal with that.

"This is a common problem in crowdsourcing," Miller said. "One solution is making the reputation mean something. If you have to get thumbs-ups on your reviews from a variety of people in order to get a good grade in the class, that's one way to motivate people."

Though Miller does not use Caesar as a grading tool right now – only as a feedback mechanism – he believes it could easily be used for grading within a MOOC.

Miller also hopes using Caesar in a MOOC will help keep course alumni engaged, something Coursera, another MOOC provider, has also been focusing on recently.

Whether Caesar will be useful outside of programming courses remains to be seen, and it's something Miller and his team are investigating.

"Software is interesting, because you really try to design it so there are independent modules," he said. "Writing is a little bit similar in the sense that we do break down arguments into sections and paragraphs, and you can think about giving low-level feedback at least on those individual pieces. But for providing global kinds of feedback, that's something the Caesar approach does not target very well right now." ■

Coursera's Contractual Elitism

Daphne Koller

Many state universities and small liberal arts colleges that want to partner with Coursera may not want to wait by the phone.

By Ry Rivard

If you wonder why your university hasn't linked up with Coursera, the massively popular provider of free online classes, it may help to know the company is contractually obliged to turn away the vast majority of American universities.

The Silicon Valley-based company said to be revolutionizing higher education says in a contract obtained by *Inside Higher Ed* that it will "only" offer classes from elite institutions – the members of the Association of American Universities or "top five" universities in countries outside of North America – unless Coursera's advisory board agrees to waive the requirement.

The little-known contractual language appears in agreements Coursera has signed with the 62 universities it partners with, including in a recently signed contract with the University of California at Santa Cruz, one of a handful of non-AAU universities on Coursera.

The provision obligates the company, on paper at least, to give AAU members de facto preference. That association, which has 62 members (two of them Canadian) in a country with roughly 4,000 colleges and universities, is committed to staying relatively small, to the frustration of universities seeking to join.

Given the AAU's research university orientation, most liberal arts colleges, community colleges and regional public universities could never join -- and many public research universities haven't been asked either.

Meanwhile, universities across the country are clamoring not to be left out of the MOOC craze that some predict will upend the traditional business model for higher ed. Regional colleges and universities, in particular, face "significant risks" if they are left out of emerging online educational offerings such as Coursera, according to an analysis last year by Moody's.

Scores of universities have sought to partner with Coursera or edX, another major MOOC provider. Most, of course, have been denied.

Coursera's co-founder, Daphne Koller, said the AAU-only rule is not ironclad. The one-year-old company has already made several exceptions for non-AAU institutions.

Koller, a computer science professor at Stanford University, said the AAU provision came about during the early days of the company. In late 2011 and early 2012, Coursera was looking to reassure potential partners that it would not end up watering down their brand. Koller called AAU a "self-regulating organization by academics for academics" that created a plausible standard for entry.

"It seemed like a reasonable thing to do, so we did it," she said.

The rule also fits with the company's mission statement, which foresees "a future where the top universities are educating not only thousands of students, but millions."

A spokeswoman for edX said "edX does not currently have any language" resembling the AAU-only language in

the Coursera contract.

EdX has its own elitism. It hosts classes only from 12 universities, including its two founders, the Massachusetts Institute of Technology and Harvard University. But edX's exclusivity was widely perceived, while Coursera's preferences were less clear. Seven of edX's nine North American universities are in the AAU.

The language in Coursera's agreements does not prohibit the company from freely licensing its software to non-AAU universities -- but universities that offered classes that way would not appear on Coursera's website and would not have automatic access to Coursera's three million registered users. EdX has promised to make its software platform freely available on the internet for other universities to use on their own. Asked about edX's commitment to make its software freely available, Koller said it would be "very difficult for an institution to take a bunch of code and run it."

Koller said the exceptions Coursera has made to its AAU rule already show the contractual language may not be ideal and also indicates membership in the association is not the determining factor for Coursera.

"It's a factor but it's certainly not the dominant factor," she said.

The AAU-only language, as it appeared in the recent contract between Coursera and Santa Cruz, commits the company to offer "only content provided by top-quality educational institutions." To Coursera that means it will "provide only content provided by universities that are a member of the Association of American Universities" or universities outside of North America that are "generally regarded 'top five' universities within any country in any given year."

The company, if it wants to host content from other universities, is required to get approval from an advisory board of top officials from Coursera's early partners.

So far, Coursera has admitted six non-AAU North American universities. Three of them are in California -- the Universities of California at Santa Cruz and San Francisco and the California Institute of the Arts -- and two are in the Northeast -- Berklee College of Music and Wesleyan University. The University of British Columbia is the sixth.

"Obviously we feel as an advisory board that approves every single one of those exceptions that the parameters that define the set as AAU are not quite the ones we need going forward, but we have not yet quite identified the right alternative for that," Koller said.

Koller said Coursera is also working with Mt. San Jacinto College to offer a free online writing course to help students get ready for higher-level English courses. Koller said elite colleges can't be of much help when it comes to offering such entry-level courses.

"The kind of teaching that you get at top Ivy Leagues may not be ideally suited for everyone, so we are broadening beyond that," she said.

But what about star instructors at state schools or small colleges that are not members of AAU? Koller said Coursera does not have the staff to find or vet such diamonds in the rough. Getting a course ready for prime time is also fairly intensive and requires hand-holding by company staff. Currently, Coursera has only nine course operators. "We can't handle 500 instructors from 500 institutions right now," she said.

Several higher education insiders were not aware of Coursera's contractual obligations.

The Association of Public and Land-grant Universities represents both AAU and non-AAU members. A spokesman for the association said he spoke with Koller this week about the AAU-only provision.

"The AAU universities that are public and land-grant institutions are outstanding institutions but, at the same time, in talking to Coursera, we understand they are looking to expand the scope of universities they are interested in partnering with," association spokesman Jeff Lieberson said this week.

Koller said Coursera is considering whether the AAU-only language still makes sense. ▪

Establishment Opens Door for MOOCs

Molly Broad

The American Council on Education's plan to pursue credit recommendations for Coursera's massive courses is among wave of MOOC-related grants announced by Gates Foundation.

By Paul Fain

The clearest path to college credit for massive open online courses may soon be through credit recommendations from the American Council of Education (ACE), which which announced in fall 2012 that it will work with Coursera to determine whether as many as 8-10 MOOCs should be worth credit. The council is also working on a similar arrangement with EdX, a MOOC-provider created by elite universities.

The Bill & Melinda Gates Foundation is funding that effort as part of $3 million in new, wide-reaching MOOC-related grants, including research projects to be led by ACE, the Association of Public and Land-grant Universities (APLU) and Ithaka S+R, a research group that will team up with the University System of Maryland to test and study the use of massive open online courses across the system.

Until now, MOOCs have been a source of fascination mostly because they make teaching by top-notch professors at prestigious universities free and available on the Internet to students anywhere, including in developing countries. Most MOOCs from high-profile providers such as Coursera, EdX, Udacity and Udemy feature upper-division material aimed at students looking to hone their skills or who are merely curious.

The rollout of the grants, however, helps open the door to the courses' use by credit-seeking students, particularly the growing adult student market. And the new round of grantees includes 10 institutions that the Gates Foundation has tapped to develop introductory and remedial courses, which often trip up low-income and first-generation college students.

Perhaps most importantly, these announcements signal that traditional higher education (represented by ACE and APLU) and Gates, the primary force behind the national college "completion agenda," both believe in the disruptive potential of MOOCs.

Not everybody is thrilled about MOOCs, however. Some faculty members fear that colleges might rush to use the courses without attention to academic quality or before much is known about how well they work. And automated testing and peer grading remain unproven substitutes for professors, who may also worry about MOOCs being a way for technocrats to cut faculty jobs.

ACE will need to do selling among its members if it is to issue credit recommendations for MOOCs. With more than 1,800 member institutions, the umbrella group represents many colleges that have a chilly take on what the council calls the "disruptive potential" of MOOCs. Some, for example, don't accept transfer students or certain forms of transfer credit. And others do not issue credit based on ACE's credit recommendations.

An even bigger backlash could come from colleges who may see their business models threatened if

the issuing of credits for the courses becomes viable. If that happens, MOOC providers might take money out of the pockets of some open-access colleges whose students seek credit for courses they take elsewhere.

To help consider the potential benefits of MOOCs, as well as their downsides, the council will create a panel of presidents from a wide range of institutions. The group, dubbed the "Presidential Innovation Lab," will look at new academic and financial models inspired by MOOCs, which could in turn help improve degree production.

"They will kick the tires. They will issue reports. They will see how this fits," said Molly Broad, ACE's president.

Likewise, APLU announced Tuesday that it plans to use its Gates grant to create an "interactive learning consortium" that will study how to bring public universities and community colleges together to tap MOOCs' potential.

Representatives from the council and the foundation said the round of grants seek to explore the trendy courses' largely unproven value in helping faculty members reach more students, potentially cutting costs and contributing to evolving teaching methods.

"We are increasingly interested in the potential of MOOCs because they are demonstrating the possibility of making content and learning more accessible and affordable at web scale -- for at least some students and types of content," a Gates Foundation spokeswoman said in a written statement. "We are eager to learn from and share the data that will be generated from our investments in MOOCs in order to advance teaching and learning."

Credit Where It's Due?

Approximately 2 million students have signed up for MOOCs this year, and that number is growing rapidly. But few, if any, of them have received credit for successfully completing those courses.

The major MOOC providers issue some form of non-credit certificates -- a "statement of accomplishment" in Coursera's case. But those documents are signed by individual professors without the seal of their employer. In fact, the fine lines on the quasi-credentials typically include multiple disclaimers that distance their recipients from the universities where MOOC professors work.

> **"[B]y offering these high-quality courses to students in a way that opens the potential of college credit, we hope to ease the path for students toward graduation."**
> **--Daphne Koller**

There are, however, several emerging possibilities for students who might want to seek credit for what they learn in a MOOC.

For example, Coursera struck a licensing deal with Antioch University. Under that arrangement, Antioch will pay to use the company's MOOCs as material for credit-bearing courses. University instructors will oversee those courses, which will count toward bachelor's degree programs.

The licensing agreement with Antioch is one of the first instances where a third-party institution forks up money to use MOOC content from another university in its curriculum.

Another potential path is through prior learning assessment, which is the process of awarding credit for learning that occurs outside of the traditional academic setting. This can take the form of individual student portfolios, where students make the case for what they know through a presentation that is reviewed by faculty members with expertise in relevant subject matter. So far, it's unclear whether students have begun attempting this with MOOCs, but experts said they will soon.

Another form of prior learning assessment is through programmatic review, where the issuer of credit reviews the learning and experience delivered by particular training programs, such as those offered by companies or the military. Colleges do this, particularly those that specialize in serving adult students. And ACE has been a leader on this form of prior learning assessment for decades, bringing in teams of faculty contractors to study on-the-job training and experience offered

by the military and other government agencies, professional associations, labor unions and companies like Starbucks or McDonald's.

But ACE's credit recommendations exist largely behind the scenes, in part because they cater to adult students at open-access colleges -- a group that is often ignored by mainstream news media and decision makers who are likelier to have attended selective institutions. But MOOCs get plenty of attention, and so will ACE for its decision to pursue credit recommendations for the courses.

Coursera has received arguably the most buzz among MOOC providers, thanks to its 200+ courses taught by professors at high-profile institutions including Princeton University, the University of Pennsylvania, Georgia Institute of Technology, the University of Michigan and a smattering of foreign universities.

The for-profit company is less than a year old. It was founded by Daphne Koller and Andrew Ng, two Stanford University engineering professors who in 2011 taught free, online versions of their Stanford courses. Coursera received funding from venture capital firms and quickly managed to ink agreements with their university partners.

Udacity is also a private company supported by venture capital. EdX, in contrast, is a nonprofit supported by Harvard University and the Massachusetts Institute of Technology.

Ng and Koller, who are on leave from Stanford, have stuck to a build-it-and-they-will-come approach to their business plan. They have repeatedly said the company has no desire to become an accredited, credential-issuing institution, arguing that it will be an extension of higher education, rather than a direct competitor. Ng and Koller have also shown little interest in pushing a pathway to college credits for Coursera's offerings, at least until now.

"We believe strongly in the value of a college degree and, by offering these high-quality courses to students in a way that opens the potential of college credit, we hope to ease the path for students toward graduation," Koller said in a written statement.

Monetizing MOOCs

Coursera will make some money on credit recommendations, assuming a few of its courses get a thumbs-up from ACE. The likely scenario would be for students to pay for their statements of accomplishment, with that revenue then being divided by Coursera; the universities whose professors created the courses; and, also importantly, ACE.

The company is developing ways to proctor its MOOC assessments, probably through a webcam system where an actual human watches test takers as they work on a "final exam." It plans to charge extra for certificates that include proctoring. Ng said a normal statement of accomplishment would eventually cost $30 to $100, with a proctored version running between $150 and $250. Those amounts are still relatively cheap for online credit, but the money could add up for Coursera, which has had courses attract more than 100,000 students.

Broad said Coursera in August approached the council with the idea of attaching credit recommendations to select MOOCs. A formal agreement is in place, she said, and ACE will begin reviewing courses soon. It will take months to make decisions on whether credit is warranted. A spokeswoman for Coursera said a small number of courses would be considered initially, perhaps eventually as many as 8-10.

As with all other ACE training program reviews, individual colleges will get the final say on whether to accept credit recommendations, she said, even if they generally sign onto ACE's decisions. The council's faculty teams will go MOOC by MOOC, and will look at student outcomes, engagement levels, assessments and how to authenticate student identities, said Broad. "That process is very much like regional accreditation."

ACE is "actively engaged" with EdX to come up with a similar agreement, she said.

Ng said the initial revenue potential for both credit recommendations and licensing deals like the one with Antioch would probably be limited.

"I'm not anticipating that this will be a significant profit for us, definitely not in the short term," he said, adding that the deals would mostly cover costs.

Ng also said that even if institutions begin accepting credit recommendations from ACE, he does not expect those colleges will allow students to transfer in a large number

of MOOC credits. And he said the credit recommendations will drive more people into, not away from, traditional higher education. "Credit has always been important," he said. "Despite all the excitement around MOOCs, I think for the foreseeable future, university degrees will remain valuable."

Free and Open

MOOCs remain tantalizing for their potential use by students seeking prior learning credit through portfolios. That process could get a boost if the courses were closely tied to online portfolio-based services like LearningCounts.org, an offering from the Council for Adult and Experiential Learning (CAEL), or those from individual colleges like the University of Maryland University College. In that scenario, the MOOC providers could direct students toward portfolio services and share data with them, such as records of student engagement, to help verify whether a student participated in the course.

At CAEL's annual meeting in Washington in November 2012, participants discussed whether such agreements could be on the way as well as how they might work. Some observers said there are disagreements about whether the portfolio-based approach or credit recommendations based on course review make the most sense.

So far, however, including MOOCs in portfolios is something enterprising students will have to figure out on their own.

Meanwhile, several colleges plan to use course material from MOOCs for credit-bearing classes. For example, Massachusetts Bay Community College will use an EdX course in introductory computer science next year. A veteran professor at Mass Bay, Harold Riggs, will teach the course, refining and emphasizing material to reflect how he thinks it can best be taught to the community college's students, said Jeremy Solomon, a Mass Bay spokesman.

San Jose State University has begun using an EdX course in a similar way. In both cases, the MOOCs serve more like online course material – open education resources (OER) – than as freestanding classes. And EdX made its courses available free, with little red tape attached. Of course, as a nonprofit attached to universities with deep pockets, EdX might not have the same revenue pressures Coursera and Udacity will likely face.

The sharing of lessons about MOOCs is part of the Gates Foundation's goals with its grants for the creation of introductory and remedial MOOCs. Those relatively modest grants, all but one of which are for $50,000, went mostly to research universities. But several community colleges received grants, including the Cuyahoga Community College Foundation, Mt. San Jacinto College and Wake Technical Community College.

At Wake Tech the MOOC will be a remedial mathematics course, said Stephen C. Scott, the college's president. The course, which is still being developed, will be broken into modules and feature group interaction and some faculty oversight.

The introductory MOOC grants seem like a feel-good story – open-source teaching aimed at underserved student groups. But even that project can be a tough sell. For example, professors at colleges in the San Diego Community College District recently protested their institution's interest in applying for the grant, passing a resolution that said the proposed MOOCs should go through a deliberate curriculum review process and that the courses are "teacherless classrooms" that undermine academic integrity. The district has since formed a committee to discuss MOOCs.

Faculty are not convinced that the courses are the "best thing since sliced bread," said Jim E. Miller, a professor of English at San Diego City College.

And that apprehension isn't due to faculty being Luddites, he said, but arises instead from concerns that the rapid rush toward MOOCs might be driven by a "kind of blind technophilia." ▪

Measuring the Dropout Rate

Are only 10 percent of students finishing courses? It depends on how you count.

By Ry Rivard

Researchers are trying to understand why the vast majority of students fail to finish free online classes and who is signing up for the classes to begin with.

One widely quoted dropout figure for students in massive open online courses is 90 percent. The number would be staggeringly high for a traditional class and has been used to cast doubt on the promise of MOOCs.

The number is simple to come up with: take the number of users who register for a course and compare it to the number still participating at the end. But is it fair?

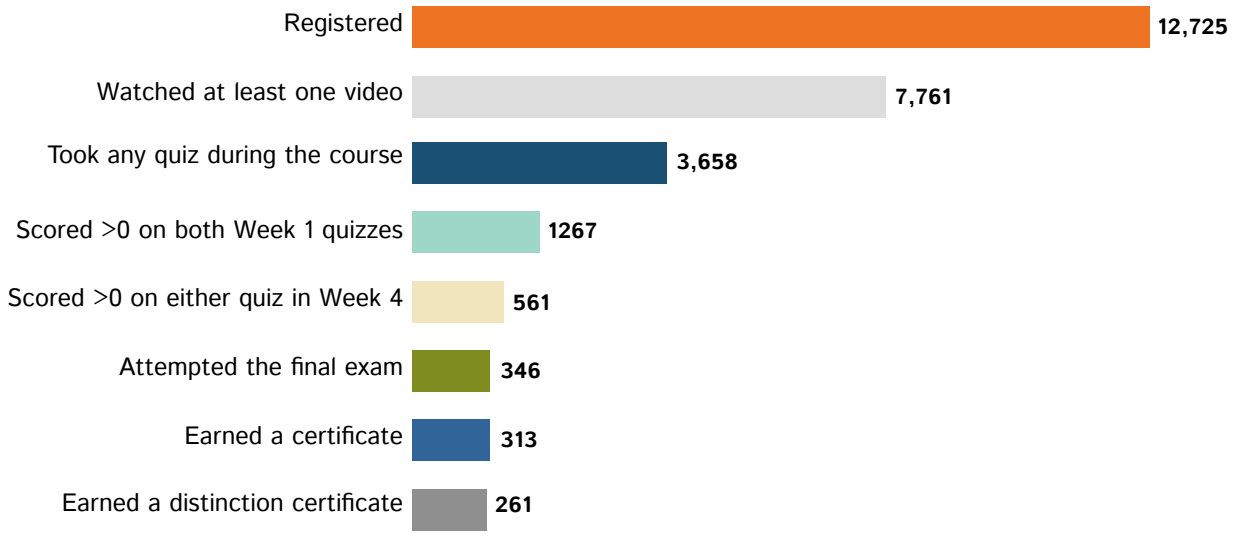
Some researchers say MOOC dropout figures being bandied about do little to describe why hundreds of thousands of people across the world are signing up for MOOCs in the first place. All but a few of the courses offered by MOOC providers are free and don't earn students any college credit. There are also no enforced prerequisites as there are for normal college courses.

That's why it may not make sense to compare the number who register to the number who finish. The widely cited numbers may be "largely missing the point," said Andrew Ho, a Harvard University assistant professor of education who is involved in some MOOC-related research. He said researchers are trying to see what different kinds of people are signing up for the online classes and what their goals are. Some clearly do not intend to ace or even take every test, nor want to earn a largely meaningless certificate of completion.

"What we're trying to do is distinguish between them in a meaningful way," Ho said.

People who register for MOOCs are said to include precocious high school students, college students looking for more ways to study a subject they are learning in a traditional classroom and faculty who want to watch how other

Student Persistence in One MOOC: Bioelectricity, Fall 2012



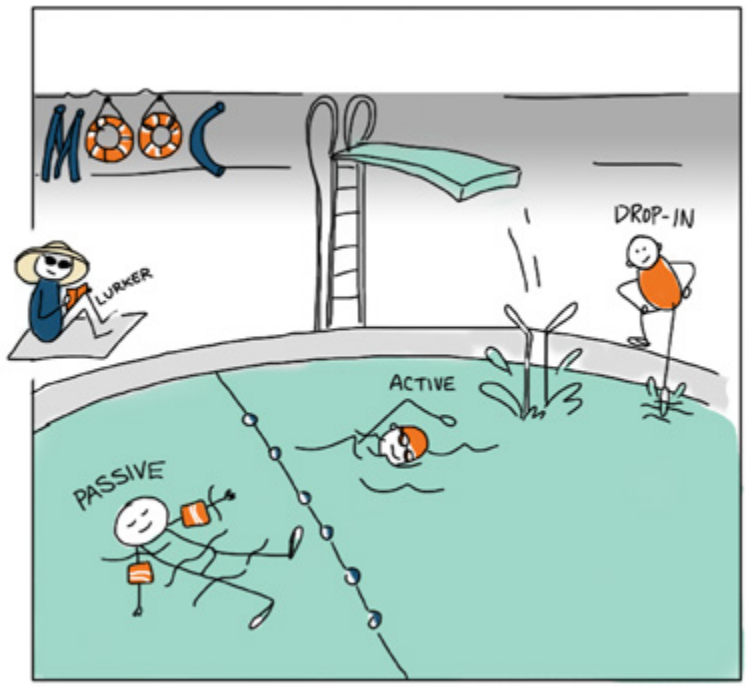
Source: Duke Center for Instructional Technology

faculty teach their subject.

Some users -- including stay-at-home parents or retirees -- may sign up for the same reason they do a Sunday crossword puzzle, said Yvonne Belanger, the head of assessment and planning for the Center for Instructional Technology at Duke University.

"They have nothing more than, 'This is a good way to spend my free time – it's better than television,' " Belanger said.

She worked on a recent summary of enrollment in a bioelectricity MOOC that Duke offered through Coursera. Only about 350 of the 12,700 or so Coursera users who registered for the course took the final exam, which would equate to a dropout rate of 97 percent.



The course lost a fourth of its students before it truly began. Nearly 5,000 signed up for the course but didn't watch even the first lecture.

The completion rate for the Duke course looks dramatically better if the comparison starts with the number of students who answered at least one question right on the first quiz. About a quarter of those students finished the course.

Even that figure doesn't give credit to the population of people who just want to watch the lectures and not take quizzes -- akin to auditors in a traditional classroom -- or the users who were simply seeking what Belanger called "a social experience that is intellectually stimulating."

She said that even students who kept taking the course but didn't earn a completion certificate still rated the course highly.

"What's the goalpost?" she said.

The National Science Foundation put $200,000 toward a study of MOOC users. The study, led by the Massachusetts Institute of Technology's Teaching and Learning Laboratory, is based on a detailed look at data from edX's circuits and electronics course last year. EdX was founded by MIT and Harvard University.

Jennifer DeBoer, a postdoctoral associate at the MIT teaching lab, is working on the study to categorize people who take MOOCs. Those categories could then provide a framework for future studies.

"I wouldn't say we have one dropout rate for all of them," DeBoer said. "We have different students who are participating for different reasons."

She said the team is still fine-tuning the categories for its paper, which will be made public in a month or two.

Phil Hill, an education technology consultant who blogs on the site e-Literate, has come up with four categories of MOOC users: lurkers, drop-ins, passive participants and active participants.

Any existing groups could change if MOOCs start charging for entry or make other changes to their registration process.

"I don't know how long MOOCs in this current form will last," Belanger said. "I think [users] just plan to enjoy it while it lasts." ▪

Learning How to Teach

Alan Garber and Anant Agarwal

Massive open online courses prompt some faculty to take a fresh look at their approaches in the classroom.

By Ry Rivard

CAMBRIDGE, Mass. -- Amid the various influences that massive open online courses have had on higher education in their short life so far -- the topic of a daylong conference here -- this may be among the more unexpected: The courses may be prompting some faculty to pay more attention to their teaching styles than they ever have before.

The conference, organized in Cambridge by Harvard University and the Massachusetts Institute of Technology, featured academics and administrators from elite North American universities and other players in the world of MOOCs discussing the rise of online courses and the future of residential colleges and universities.

The new attention to teaching methods and learning sciences is coming from two directions: faculty who want to make sure their teaching is up to snuff for a wider audience, and technology that allows new levels of interaction with students, and new understanding of students' strengths and weaknesses.

Harvard Provost Alan Garber said the free online courses can invite comparisons of faculty and course shopping by students. That, along with their scale -- tens of thousands of students will sign up for a course, versus only scores for a large traditional class -- means MOOC instructors now "are working at an entirely different level."

"Our faculty are extraordinarily successful," Garber said. "They are used to winning. And they don't want to lose this game."

The head of edX, a major MOOC provider founded less than a year ago by Harvard and MIT, said that faculty members looking to adapt their classes to the Web are able to take advantage of technology that didn't exist before, like instantaneously computer-graded tests. He said research has shown instant feedback improves outcomes.

EdX President Anant Agarwal said there is certain learning sciences research that many faculty, including himself, had long ignored as they focused on their own disciplinary fields.

"To me, these papers should be must-reads," he said, citing specifically a 1972 study of memory.

Agarwal said that paper was among the research about learning he had not read until recently. He said he thought other faculty were generally unfamiliar with such research.

"If we followed it, it was completely by accident," he said.

The day of discussion wandered across several key topics, including whether MOOCs can control costs and whether they fundamentally

undermine traditional higher education.

Panelists found few conclusive answers to key questions about the future of the residential college, which remains the popular vision of college even though it is no longer how many students receive postsecondary education.

Reporters were invited to the conference, but most of the proceedings, which included remarks by the president of MIT and the MOOC enthusiast *New York Times* columnist Thomas Friedman, could not be directly quoted according to agreed-to ground rules, though professors were free to talk to the press and top officials were made available for comment at the end of the day. ▪

MOOCs' Little Brother

By Steve Kolowich

The U. of Maine at Presque Isle pilots open online courses that are anti-massive, featuring high levels of instructor feedback and pathways to formal credit.

The buzz surrounding massive open online courses, or MOOCs, has grown nearly as massive as the courses themselves. MOOCs are the new "thneeds," the oddly-shaped items peddled by the Once-ler in The Lorax: Everybody seems to want one, even if nobody yet knows exactly what they are or what they mean.

But amid all this MOOC mania, the University of Maine at Presque Isle is attempting a different kind of free online offering — one that would swap the scale of a MOOC for the high-touch experience of a conventional online course.

Michael Sonntag, the provost, calls it a "LOOC": a little open online course.

Small-scale open courses are not an entirely new concept; David Wiley, an associate professor of instructional psychology and technology at Brigham Young University, began including small groups of non-enrolled learners in an online course at Utah State University when he taught there in 2007.

While Wiley's foray was an individual effort, Presque Isle's open courses are an institutional initiative. Officials at the university say they want to experiment with open teaching to the extent that its modest resources will allow. And while they know the "LOOCs" will never be a cash cow or a disruptive force in higher education, they hope the program might at least help Presque Isle recruit enough students to keep things on an even keel.

"We can't compete with Stanford and the MOOCs" on scale and prestige, says Ray Rice, the coordinator of the OpenU project. But what Presque Isle can offer, says Rice, is a sort of anti-MOOC experience for non-paying students: one that is identical in nearly every way to that of tuition-paying students who are enrolled at the university. "In fact, the OpenU students will learn side-by-side, virtually speaking, with Presque Isle students who are taking the courses for credit."

The lack of "scalability" in the Presque Isle experiment makes it much less significant than the MOOCs as far as redrawing the economics of higher education. But it could shed light on some issues relevant to open education in general. For instance, how important is brand prestige in generating interest in an open course? And how crucial is student accountability and regular contact with an instructor in such courses to performance and attrition rates?

The four open courses at Presque Isle, which the university is piloting this semester under the brand OpenU, are vanishingly small by MOOC standards. Each has admitted two to seven nonpaying students in additional to the 15 or so who are taking the course for $220 or more per credit at the university. (MOOCs have been known to attract tens of thousands of registrants, thousands of which stick around for the duration.)

Like MOOC registrants, the OpenU students will not be vetted ahead of time and will not receive formal credit for completing the course. However, unlike the institutions that are offering MOOCs, Presque Isle is pledging to draw no further distinctions between its paying students and its nonpaying participants.

"Students are not paying, but they

are getting the full experience," says Sonntag. "If they want to write every paper and take every test, our faculty members have agreed to give them feedback."

The great impasse of the "MOOC" movement is the idea that massive open online courses can never fully replicate the experience of a normal course. It is a matter of simple economics: professors cannot give tens of thousands of students their individual attention. They cannot apply an expert critique to every essay. They cannot hound them if they are not keeping up with the work. In the absence of such instructional rigor, the high-profile universities that have so far signed up to offer MOOCs say they cannot in good conscience give institutional credit to even their most successful MOOC students.

Presque Isle's project has no burden of massiveness. That means both instructional rigor and pathways to credit are potentially on the table.

Melissa Crowe, an assistant professor of English at Presque Isle, says she plans to dutifully critique the contributions of her nonpaying students — and that sense of duty will cut both ways: the "open" students will be expected to submit essays, participate in workshops, and generally adhere to the same standards as her regular students. If they don't, Crowe says she will not hesitate to call them at home — and, if necessary, give them the boot.

If a student wants to redeem his efforts for formal credit, Presque Isle provides an option. Through its prior learning program, the university says it wants to give OpenU students an efficient pathway to at least some formal credit.

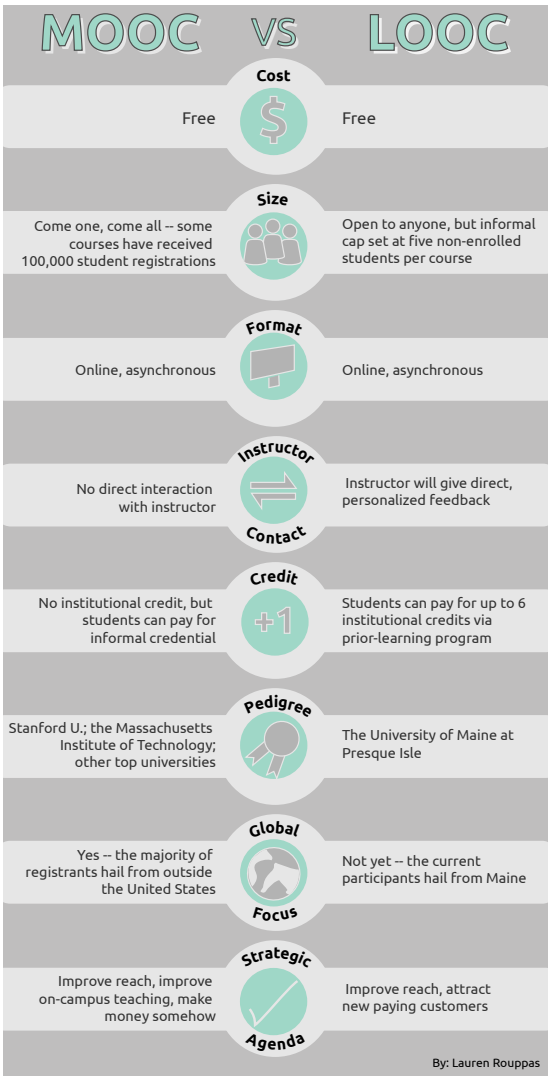
"At some point in the future, if you become an UMPI student, you may be able to earn a total of 6 credit hours of prior learning credit from your UMPI OpenU participation," reads a note on the university's website.

Alternatively, OpenU participants have the option of enrolling as tuition-paying students if they get hooked before the end of the customary add-drop period.

That is where the strategic side of the university's OpenU agenda kicks in.

"If in fact there truly is this large amount of people out there who would like to come back but who are scared, timid, unsure of themselves," then a free trial becomes a persuasive recruiting tool, says Sonntag.

And if they like it, "Well, sure, pay your money and go forward," he says.



Unlikely Pairing

Wellesley's move to join edX and Wesleyan's entry into Coursera offer a chance to apply liberal arts college ideals to MOOCs, and potentially vice versa.

By Alexandra Tilsley

The word massive – as in massive open online courses – seems inconsistent with one of the hallmarks of an education at a small liberal arts college. But for the liberal arts colleges that have partnered with MOOC providers, the size is part of the appeal.

"Our social psych course, for example, more than 20,000 people signed up right away. Meanwhile, most of our classes here have fewer than 20 students," said Wesleyan President Michael Roth. "That's an interesting idea."

Wesleyan, which offers courses through Coursera, was the first liberal arts college to venture into MOOCs, and the announcement this week that Wellesley College has partnered with edX means two of the major MOOC providers now offer courses from liberal arts colleges. In contrast, the founders of MOOCs were almost exclusively prominent research universities where the idea of teaching classes so large the instructor doesn't know everyone's name wouldn't shock anyone.

So how will MOOCs change liberal arts colleges? Or will liberal arts colleges change MOOCs?

For MOOC providers, the appeal of partnering with liberal arts colleges is relatively straightforward: a wider array of courses means a larger number of students. "We want to offer the best programs, and Wellesley certainly fits that criterion," said edX President Anant Agarwal. "They really add a new diversity."

Agarwal notes that although Wellesley will be the first liberal arts college to join the consortium, edX will begin offering liberal arts courses this spring through its other university partners; Wellesley will launch its first courses in the fall. Still, he believes that adding Wellesley to the mix will attract more and different students, adding that edX's students so far have disproportionately been male, so he's eager to see what happens when a women's college is added to the mix. Wellesley's edX courses, which haven't been announced yet, will be open to both men and women. But Andy Shennan, provost and dean of the college at Wellesley, notes the courses will likely reflect Wellesley's mission as a women's college.

What's less clear in these partnerships, however, is what the colleges stand to gain, particularly when some critics are heralding the rise of MOOCs as the beginning of the end for the liberal arts college.

"Some of my colleagues think this is the devil," Roth concedes.

And while it could be that the doomsday talk in the liberal arts is driving these colleges to jump on the MOOC bandwagon, Shennan insists that's not the case. "The debate over the value of a liberal arts education hasn't been something I've seen as critical to this decision," he said.

Instead, both Shennan and Roth cite a growing curiosity about MOOCs and their potential to shed light on how people learn. They also both acknowledge that the publicity won't hurt.

"Part of the benefit is that many more people will know about what's happening at Wesleyan than would have otherwise, and that will benefit our graduates as they go off into

the world," Roth said. "Especially internationally, I think raising the profile of the school is good for our students and our graduates."

Students – that is, the traditional ones living and studying on campus – could also stand to benefit in other ways, both Shennan and Roth said. Both colleges plan, for example, to engage undergraduate students in planning and teaching the courses, and both hope to take lessons learned from the MOOCs and apply them on campus. "It's a very different enterprise, and I think we can learn from its differences and from the kinds of interactions students have with each other online," Roth said. "We're hoping to learn about how students use technology, what they might be learning, and what they might be interested in."

Once more Wesleyan courses have run online, Roth plans to convene with faculty who are teaching MOOCs to discuss lessons learned and ways to apply them on campus. He's hoping to gain insight into where students, both online and in the classroom, are paying the most attention or the least attention, where they're learning the most and what points they are missing. Similarities and differences, he hopes, will yield insight into how people learn, and will allow professors to improve their courses. He's also hopeful that by finding which parts of online courses are effective, professors might be able to integrate online components into their on-campus classes, as supplements or as part of a blended approach.

Similarly, Shennan said part of the reason Wellesley chose to partner with edX is the wealth of data the consortium provides on its students and how they interact with the course material. He hopes professors will learn more about effective teaching styles and will see ways the online classroom can inform the traditional classroom.

"We're all on the same page that this is different than the residential-based, very intimate atmosphere," Shennan said. "But can some characteristics of the educational experience be translated? That's really the question."

Roth, who is teaching a Coursera course, Modernism and Postmodernism, that launches next semester, said putting the course together is already impacting his teaching. He is teaching the course on campus this semester, and while he was originally planning to just record his classroom lectures to use for the Coursera course, he quickly realized the dynamics of a classroom don't translate to a one-way video lecture. Instead, he is now recording his Coursera lectures before class, which has been an enlightening experience.

"I have to be able to distil the material in a more disciplined way when I'm taping, and I think that has helped me think about some of the issues in the course in a more focused way," he said.

He hopes that when he next teaches the course on campus, he will be able to use his Coursera lectures to supplement the class.

"I expect that I'll use some Coursera lectures to complement what I do in the classroom, which may mean I can be more interactive with my students in class, and have more conversations or group work," he said.

Neither Roth nor Shennan really has a sense of what, exactly, they might learn or how MOOCs might eventually fit into their institutions. Still, both said they have faculty who are intrigued by the format, they see potential benefits, and they want to be part of the movement.

"This is going to be part of the future of education," Roth said. "I just don't know what part."

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Views

A collection of essays and op-eds about the MOOC phenomenon

To MOOC or Not to MOOC?

The dominant model may not make sense for liberal arts colleges, but if you take away the "massive" part, there is great potential.

By W. Joseph King and Michael Nanfito

It seems at present that nearly every American college and university is wrestling with the question of whether to offer MOOCs (massive open online courses). There is something irresistibly seductive about the idea of simultaneously reaching thousands of students everywhere in the world, effectively seating them in an infinite virtual lecture hall. Indeed, the idea has taken on such allure that the University of Virginia (temporarily, as it turned out) fired its president, Teresa Sullivan, for among other things not jumping immediately on the online bandwagon.

But is Sullivan's skepticism unwarranted? And even if it is in a given university's case, are MOOCs appropriate for small colleges to offer for the world or to license for its students? The MOOC seems much more an extension of the large-university tradition, with its massive lecture halls seating hundreds of students per lecture, than it does of the liberal arts college, with its small, intimate classes centered on discussion. When you look, for example, at Ohio State University's fall 2009 course offerings, you find freshman-class enrollments of 374 (Form, Function, Diversity, and Ecology), 298 (Introduction to Theater), 541 (Principles of Macroeconomics), and 671 (Introduction to Biology). All these involve students sitting together in a single lecture hall. Many liberal arts colleges have smaller numbers in their entire graduating class.

The MOOC, then, is essentially a high-tech extension of the traditional industrial-age university lecture-hall experience — and one, moreover, with an unproven financial model. Despite the apparent resonance with the traditional university lecture hall, there remain challenges for MOOCs even in the large research university environment.

They do not lead to a widely recognized credential. There is no workable revenue model in place for the startups and institutions that are funding them. While nearly $100 million has gone into MOOC funding, none of the major players — edX, Coursera, Udacity — has a business plan. (Harvard University and the Massachusetts Institute of Technology have pumped $60 million into edX. Coursera has raised $16 million in venture capital. Udacity has raised an undisclosed amount of money from Charles River Ventures.)

But back to the liberal arts college. When MOOCs are regarded strictly as a delivery model that is antithetical to the nature of the liberal arts college, the answer to the appropriateness question posed above is clearly "No." But strip away the hype about building a college's "brand" and distributing course material to a global audience and you can find in the technology underlying MOOCs something of great value to smaller institutions.

MOOCs, after all, were originally intended to provide for engagement and collaboration. The first MOOC made use of participatory-engagement tools now familiar to all liberal arts colleges: a wiki, a learning management system, blogs, Twitter, and videoconferencing. And originally, the MOOC was based on four types of activity, all key to the connectivist model:

1. Aggregate, in which students engage with lectures from experts, daily content links provided through a course newsletter, and reading content on the Web.

2. Remix, with students being encouraged to communicate with peers about content and what they are learning, through blogs, discussion boards, or online chat.
3. Repurposing, as students construct or create knowledge.
4. Feed-forward, with students encouraged to publish (and thus share their knowledge) in blogs or other "open" venues.

When it comes to MOOCs and the liberal arts college, then, everything but size matters. Take the "massive" out of "massive open online course" and you have a course delivery program/support model highly useful to liberal arts colleges for outreach and engagement. The media hype over industrial-strength instant delivery to massive audiences obscures the real value of MOOCs: the ability they bring to the smaller institution to respond to articulated strategic needs. Rather than connect your college curriculum to anonymous students who will never come to campus or be granted a credential, consider the opportunity to implement the MOOC platform to address other, very real, strategic needs. Redirect the engagement and collaboration that MOOCs in the connective mode make possible. Create connections to new audiences you want (prospective students) and audiences with which you want to ensure continued engagement (alumni).

The key here is thinking of the MOOC not in the standard way, as asynchronous video lectures and course readings, but in the connectivist way. The connectivist MOOC seeks to provide participatory space. This brand of MOOC is useful for outreach to potential students, creating meaningful connections between motivated high-school students and programs your campus has identified as strategic.

Think, for example, of connecting students in AP calculus courses with your campus's introductory curriculum as part of the admissions recruitment culture. You can generate innumerable relationships between your faculty, your flagship programs and potential students. You can create spaces where secondary school students can interact with one another as they negotiate their college choice decision. The opportunity here for the small liberal arts college lies in the potential to encourage engaged discussion across networks, thus building awareness of what makes your campus special. Similarly, the MOOC platform and model can be used to deepen alumni relations in the context of lifelong learning.

"[S]trip away the hype about building a college's 'brand' and distributing course material to a global audience and you can find in the technology underlying MOOCs something of great value to smaller institutions."

Beyond the specific "to MOOC or not to MOOC?" question, small college leaders should consider the MOOC platform as a means to establish and sustain collaborative relationships with other institutions. In this context, such a platform can leverage the depth of course offerings available across a collaborative consortium to the benefit of all its members. Here are some examples of consortial collaborations that leverage the advantages of interinstitutional relationships while sustaining the value of the small liberal arts model:

Sunoikisis

Sunoikisis is a national consortium of classics programs that began as an initiative of the Associated Colleges of the South (ACS). In 1995, faculty from the institutions of the ACS met at Rhodes College to discuss the challenges facing classics programs at small liberal arts colleges. Sunoikisis was created to increase the academic opportunities for students at small colleges hoping to study the classics and also to support faculty development.

In 2000, Sunoikisis began providing interinstitutional classics courses for students. Since its beginning, Sunoikisis has been exemplary in leveraging technology to create extended curricular offerings across multiple campuses, engaging classics students and faculty at its participating institutions. The Sunoikisis program provides students with a wider range of disciplinary coursework and interaction with student peers and faculty than would ever be possible

at a single small liberal arts college. Faculty and students from 35 colleges have participated in Sunoikisis since its inception.

(Between 2006 and 2009, Sunoikisis was administered by the National Institute for Technology in Liberal Education, and in 2009 the Center for Hellenic Studies, in Washington, became its primary sponsor.)

New Paradigms

Building on the success of Sunoikisis, the Associated Colleges of the South recently embarked on an ambitious program to connect courses from various disciplines across its 16 campuses, thus broadening academic offerings not currently available at all ACS institutions.

New Paradigms seeks to leverage the breadth and depth of a consortium that includes 3,000 faculty and 30,000 students, augmenting regular course offerings on a student's home campus with faculty lectures from across the ACS delivered via multipoint videoconference technology.

Texas Languages Consortium

Last year, NITLE consulted with five institutions to help them form the Texas Languages Consortium, increasing foreign language options for their students by managing technology, faculty, and student demands. Concordia University Texas, Lubbock Christian University, Schreiner University, Texas Lutheran University, and Texas Wesleyan University are the inaugural participants.

Through the programs, students will have an opportunity to enroll for courses in German, French, Mandarin Chinese, and Spanish. Enrollment for the courses is managed through the students' home campuses. Each university will provide courses through high-definition video conferencing labs with assigned faculty and proctor support.

Small colleges have been successfully developing such creative connections between students, faculty, campuses, and consortia for many years. Clearly, the value of collaboration has long been a component of their strategy.

So perhaps the question for them is less when they should offer that first MOOC and more how they can use MOOC technology to continue creating and sustaining their collaborative tradition. ■

W. Joseph King is executive director and Michael Nanfito is associate director of the National Institute for Technology in Liberal Education (NITLE).

Higher Ed Disruption: Not So New

Many of the hot ideas about technology and teaching reflect a century of research.

By Alexandra W. Logue

Are you a faculty member or administrator who thinks that the latest technologies are finally going to enable us to teach our students well, or do you at least hope that's the case? If so, you should reconsider, because the vaunted elements of the latest technologies have been around for some 100 years. It isn't having the technology, but using the technology that is key to helping students learn well.

For at least the past decade there has been much talk about the advantages of highly sophisticated online courses and the use of online tools in traditional courses. One of the significant advantages of technology-enhanced courses, it is said, is that they can be tailored to individual students' needs, and thus achieve desired learning outcomes for each student better and faster.

Consider for example, this quote from the website of the Apollo Group, the parent company of the University of Phoenix: "Based upon the belief that learning is not a one-size-fits-all experience, Apollo Technology developed the technology to deliver data-driven, personalized education tailored to the individual. Apollo Technology's unique student data system collects and analyzes individual student data, and delivers automatic just-in-time guidance that can significantly improve student outcomes." In 2010, the University of

Phoenix announced a new Learning Management System, the Learning Genome Project, that "gets to know each of its 400,000 students personally and adapts to accommodate the idiosyncrasies of their 'learning DNA.'" Similarly, a recent article in *The New York Times* stated: "Because of technological advances — among them, the greatly improved quality of online delivery platforms, the ability to personalize material … MOOCs [massive open online courses] are likely to be a game changer."

These statements are evidence of the general belief that now, using technology, we can achieve all sorts of personalized instruction, which constitutes a revolution in how we can help students learn.

But using technology to individualize student learning is not at all a new idea — it does not originate with online courses or with the technology developments of the past decade, or two, or even three. Using technology to individualize student learning is an idea going back at least 100 years. One of the original learning theorists of the modern era, Edward Thorndike, stated in his 1912 book: "If, by a miracle of mechanical ingenuity, a book could be so arranged that only to him who had done what was directed on page one would page two become visible, and so on, much that now requires personal instruction could be managed by print."

A couple of World Wars later, one of Thorndike's intellectual descendants, B.F. Skinner, recognized as the most eminent psychologist of the 20th century, was developing and crystallizing the field of operant conditioning, the form of learning in which so-called voluntary behavior changes as a result of its consequences. In the third and final volume of his autobiography, Skinner relates that in 1953, in seeing how his daughters were being educated at the Shady Hill School, "I suddenly realized that something had to be done. Possibly through no fault of her own, the teacher was violating two fundamental principles: the students were not being told at once whether their work was right or wrong (a corrected paper seen 24 hours later could not act as a reinforcer), and they were all moving at the same pace regardless of preparation or ability. But how could a teacher reinforce the behavior of each of 20 or 30 students at the right time and on the material for which he or she was just then ready?.... A few days later I built a primitive teaching machine."

Skinner later developed more sophisticated versions of teaching machines, demonstrating one at the University of Pittsburgh in 1954. These machines presented math problems one at a time, with students having to solve each problem before being able to go on to the next.

In 1961 Skinner took a somewhat different approach to personalized instruction when he published, with Holland, the programmed textbook *The Analysis of Behavior*. This book focused on the principles of learning, more specifically, the principles of classical (Pavlovian) and operant conditioning, with an emphasis on the latter. The introductory pages of the book, echoing Thorndike in 1912, state that "the material was designed for use in a teaching machine…. Where machines are not available, a programmed textbook such as this may be used. The correct response to each item appears on the following page, along with the next item in the sequence."

Students wrote down their answers before turning the page, and repeated a section if more than 10 percent of the answers in that section were incorrect. I first encountered this book in the summer of 1968, as a 15-year-old student in a psychology course taught under the auspices of the National Science Foundation. Similar to other students in my group that summer, I finished this text within weeks and loved it. In 1964, in seventh grade, I had been the beneficiary of another programmed textbook, *English 3200*. This book was part of a very successful series that taught English grammar.

Another well-known figure in the origins of operant conditioning, Fred Keller, published his iconic

article, "Good-bye Teacher…" in 1968. In this article he essentially advocates breaking down the entire teaching process to its elements, and conducting each of those elements more efficiently. The prime function of the teacher becomes, not to lecture, which is best left to automated means, but to engage in direct interaction with students in support of their individualized instruction. More specifically, Keller points out as important the following teaching elements:

1. Highly individualized instruction that allows students to progress at their own speed.
2. Clear specification of learning outcomes (the specific skills to be achieved).
3. Clear specification of the steps needed to achieve these learning outcomes.
4. A goal of perfection for each student and for each stage in the learning process.
5. Two types of teachers: Classroom teachers whose duties include "guiding, clarifying, demonstrating, testing, grading," and other teachers who deal with "course logistics, the interpretation of training manuals, the construction of lesson plans and guides, the evaluation of student progress, the selection of [classroom teachers], and the writing of reports for superiors."
6. Using lectures as little as possible — more as a way to motivate students, and using student participation as much as possible.
7. Lots of testing, all with immediate feedback to students, which helps to ensure student learning.

This breakdown of the learning process makes large parts of that process, parts that are ordinarily done in classrooms involving direct human interaction, well suited for being done by technology. However, humans are clearly still needed for specifying the learning outcomes and the steps required to reach them, as well as other tasks involving analysis and creativity and complex interactions with students.

Just a few years later, in the fall of 1972, I took an undergraduate course on learning at Harvard University, taught by William Baum, that followed the "Keller plan." The work was divided into 26 units, each requiring some reading, some questions to which answers had to be found and learned (50 to 80 such questions per unit, some of which would require an essay to really answer properly), and a written and an oral quiz. Students were not allowed to progress to the next unit until they had passed the written and oral quizzes for the preceding unit, and individual instruction with Baum or his graduate teaching assistant was always available. However, due to the large number of units in this 14-week course, and the difficulty of the quizzes, which students often did not pass, very few students finished the entire sequence and so very few students received an A. Thus using the Keller method does not automatically result in students doing well. The application of such teaching techniques is critical.

Lest anyone think that visions of improving learning by the use of technology are limited to psychologists, 1995 saw the publication of an outstanding work of science fiction by Neal Stephenson, *The Diamond Age*. A central theme in this work is an interactive book, owned by a small girl, that greatly facilitates her learning, development, and upbringing. We cannot yet achieve the degree of device interactivity that Stephenson describes, but we can achieve elements of that interactivity, and Stephenson gives us a vision of the possibilities.

In 1998, Frank Mayadas, then a program director at the Sloan Foundation, gave the keynote address at the City University of New York's Baruch College's first annual Teaching and Technology Conference. In

this address he pointed out that all forms of college learning have three elements in common: an expert, who oversees the process; information sources; and colleagues, with whom a student learns. All three are important in the learning process, and all three may be instantiated in different ways depending on the modality of instruction. Although current technology cannot by itself design a new course, it can serve well as an information source, and it can assume some of the functions of colleagues. As technology continues to develop, the functions that it can serve will increasingly closely resemble those that have traditionally been served by humans.

The more recent past, 2010, saw the publication of *DIY U* by Anya Kamenetz. Consistent with Keller in 1968 and Mayadas in 1998, Kamenetz also would separate the components of the learning process, instead of concentrating them all in a course's single professor as has been largely the case until now. In her vision of the future, individualized instruction is assumed, with technology playing a significant role, including by taking over those parts of teaching that can be automated.

Kamenetz's vision is not far away given what is already happening on today's campuses. As stated in a 2012 report from the Ithaka organization, "Barriers to Adoption of Online Learning Systems in U.S. Higher Education": "Literally for the first time in centuries, faculty and administrators are questioning their basic approach to educating students. The traditional model of lectures coupled with smaller recitation sections (sometimes characterized as 'the sage on the stage') is yielding to a dizzying array of technology-enabled pedagogical innovations." One primary use of technology is to deliver lecture material outside of class, while class time is used for discussion and other active interactions involving the instructor and the students. This is known as the flipped classroom, which turns "traditional education on its head." But recall Keller's 1968 suggestions about how teachers should be used for "guiding, clarifying, demonstrating, testing, grading," and that lectures should be "used as little as possible … and student participation as much as possible." It seems that the new invention of the flipped classroom is not so new at all.

What encourages these recent statements about the benefits of technology for learning is a worldwide recognition that what is important in higher education is the achievement of specific, agreed-upon learning outcomes. Although this emphasis was present at least from 1912 in the work of learning theorists such as Thorndike, who emphasize the end result — the behavioral goal — in their approach to changing behavior, it has only been in the past few decades that such recognition has become prominent in higher education.

One example is contained within what is known as the Spellings Report (the 2006 report of the commission that was appointed by then-Secretary of Education Margaret Spellings). A major point of this report was that "[a]ccreditation agencies should make performance outcomes, including completion rates and student learning, the core of their assessment as a priority over inputs or processes." It is this emphasis on learning outcomes that, in part, enables the use of technology in the learning process. Once the learning outcomes are specified, the process of helping students to achieve them can be programmed, using increasingly sophisticated technology.

Many of the elements of good teaching discussed here — for example, individualized instruction, frequent testing, focus on outcomes,

immediate feedback — now have sound laboratory evidence to support their use. We seem to have forgotten their behavioral psychology origins and history, yet it is their effectiveness that is important in the end. Perhaps there are additional lessons to be learned from behavioral scientists, however, in the use of technology to facilitate instruction. We have only to look at casino attendees, particularly the users of slot machines, to see evidence of what Skinner and Keller knew firsthand in the laboratory with rats, that animals (including humans) respond at a high, continuous, persistent rate on variable ratio schedules (situations in which each reward arrives after a variable number of responses). Using such knowledge, in addition to knowledge from cognitive psychology about how best to structure concepts, can result in online courses that not only make concepts easy to learn and remember but, similar to slot machines, are almost irresistibly attractive.

Keller in 1968 summed up his position on teaching with the following:

Twenty-odd years ago, when white rats were first used as laboratory subjects in the introductory course, a student would sometimes complain about his animal's behavior. The beast couldn't learn, he was asleep, he wasn't hungry, he was sick, and so forth. With a little time and a handful of pellets, we could usually show that this was wrong. All that one needed to do was follow the rules. "The rat," we used to say, "is always right."

My days of teaching are over. But … I learned one very important thing: the student is always right. He is not asleep, not unmotivated, not sick, and he can learn a great deal if we provide the right contingencies of reinforcement.

Although we can all agree that college students are certainly not the same as casino attendees or lab rats, we can also all agree that technology, designed and used correctly, can facilitate instruction through personalization as well as through motivation. (The popular appeal of many online role-playing games is one example of that.)

The teaching techniques and tools discussed here have been promoted by behavioral psychologists for the past century. What lessons can we learn from this? One is that it is possible to facilitate learning using the techniques discussed here, such as personalized instruction, without ever having to use the latest (very expensive) technology. There are times when a relatively cheap programmed textbook will help someone learn, perhaps not as well as the best online programs, but very well.

A related lesson is that it is not the existence of the latest technology or its potential uses that will help us to maximize student learning, but using what we know and have. Faculty must be both aware of the techniques and tools at their disposal, and want to use them. This requires proper training during graduate school, professional development later on, and appropriate college and university incentive structures (all of which have been too often missing if the repeated rediscovery of these techniques and tools during the past century is any indication).

The sorts of tools that we have needed to help students learn have been around for 100 years, albeit continuously improved. It is our job to — finally — use those tools. ▪

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Don't Follow the Crowd

Historically black colleges need a digital learning strategy, but they should resist the temptation to focus on MOOCs or other approaches that weren't designed for the students they serve.

By Roy L. Beasley

Sometime in the next few months the Digital Learning Lab that I manage at Howard University will survey the websites of the 105 officially designated historically black colleges and universities, just as it has done in previous years, in order to determine which HBCUs are offering

online degrees that are based on credit courses that deliver at least 80 percent of their content via the Web.

The higher education media have interpreted our previous reports as showing that HBCUs "lag" non-HBCUs in their production of online programs -- which is true.

The media have then explicitly stated or strongly implied that this "slow" pace was "bad" and that HBCUs should produce more online degrees at a faster pace -- which, IMHO, is a highly counterproductive value judgment.

Contrary to the torrents of hype about how online programs will save higher education that have filled the media in the last year or so, especially in the wake of the MOOC tsunami, online courses -- i.e., courses that deliver more than 80 percent of their content over the Web -- and online degree programs aren't good enough for everyone... yet.

Please note the qualifiers "good enough" and "yet." Even the best-designed online courses still require students to have higher motivation, a greater capacity to study alone, better time management skills, stronger fundamental math and language skills, and stronger study skills -- e.g., organizing notes during reviews for homework and tests, extracting correct interpretations from reading texts, listening to audio, viewing video presentations, etc. -- than do face-to-face or blended courses.

These prerequisites for online success will surely fade in the coming years as adaptive e-learning technologies enable online courses to be tailored to the prior knowledge, aptitudes, and learning styles of individual students, and as social media and other support tools become as effective as office hours and face-to-face tutorials. But at the present time colleges and universities should actively discourage students who lack these prerequisites from taking online courses and actively encourage them to take blended or face-to-face courses.

Given their historic commitment to providing opportunities for higher education to black students who have been academically handicapped by circumstances beyond their control, HBCUs should deliberately "lag" non-HBCUs that have not made such commitments with regard to the percentage of HBCU courses and degrees that are offered in online formats.

This is not to say that HBCUs should not produce online courses and degree programs, just that they should not be as quick to do so as non-HBCUs because they have deliberately enrolled a higher percentage of students for whom online formats are not good enough ... yet.

HBCUs should invest a higher percentage of their limited resources to provide training and financial incentives for their faculty members to upgrade traditional face-to-face courses to blended/hybrid formats. Recent research confirms expectations from common sense that blended courses are more effective for a higher percentage of students than either traditional face-to-face courses or courses offered in online formats.

Online courses and programs are the most advanced segments of a broad array of rapidly evolving e-learning technologies that are generally characterized as "disruptive." The descriptor is apt, but misleading. Too often the term is used to describe profound innovations that organizations fail to adopt, rather than strategic opportunities that were seized. Existential threats are nothing new to HBCUs. Each generation of HBCU leaders has taken office with a clear understanding that their success or failure would determine whether their institutions would survive into the next generation.

So the current leaders understand that they have no choice but to act on the certain knowledge that their HBCUs must disrupt or die. More specifically, they must embrace the mix of new e-learning technologies that will work best for their HBCUs as fast as possible, but no faster -- regardless of what Harvard or Stanford or MIT is doing. ▪

Roy L. Beasley is a member of the senior staff of Howard University, but the views expressed here are his own.

Peer Grading Can't Work

The author found much to like in a MOOC in which he enrolled, but writes that the use of students to evaluate one another does not work and undermines the role of professors.

By Jonathan Rees

The top of the annual performance review form at my university has a blank space for us to list any additional education we obtained during the previous year. I've never filled that space in before, but that will change in my review for 2012 because I spent part of my sabbatical last fall as a student in a massive open online course (or MOOC).

I'm an American historian by training, but ever since I left graduate school a global perspective has become increasingly important for historians of all kinds. That's why I decided to get some free professional development in world history, courtesy of Coursera. I learned a lot of interesting and useful specific factual information from the MOOC instructor (or superprofessor, as the lingo goes) that has already helped me become a better teacher and scholar.

But I didn't just listen to the lectures. Like any other student (since that's what I was), I also wrote out all the assignments and helped grade papers written by my peers in class. This peer grading process differs from peer evaluation (which I use in class all the time) since students not only read each other's work, they assign grades that the course professor never sees. Professors in the trenches tend to hold their monopoly on evaluating their students' work dearly, since it helps them control the classroom better by reinforcing their power and expertise. On the other hand, superprofessors (and the MOOC providers that teach for them) have begun to experiment with having students grade other students out of necessity since no single instructor could ever hope to grade assignments from tens of thousands of students by him or herself.

With MOOCs in their infancy, few precedents exist for designing online peer grading arrangements for humanities courses. For this reason, I don't intend to criticize my superprofessor's choices here. However, I do have to describe some of the peer grading process from my class in order for my critique of peer grading in general to make sense. All students in the MOOC were supposed to write six essays between the start of the course and its end. For each assignment, we could choose one of three single-sentence questions to answer in 750 to 1,000 words. The week after we submitted those essays, we were supposed to grade the essays of five of our peers with respect to their argument, evidence and exposition, and leave comments. If you didn't grade the essays your peers wrote, you didn't get to see the grade you earned.

With respect to the grades I earned, I think my peers graded my essays just right. The grading scale in our MOOC went from zero to three. When I already knew a fair bit about the topic of the question that I answered or I tried very hard to write the best essay I could, I earned mostly threes from my peers. When I didn't try very hard, I tended to get twos. While I listened to all my superprofessor's lectures fairly closely, I never read the recommended textbook, which also undoubtedly hurt my scores.

For me at least, the primary problem with peer grading lay in the comments. While I received five comments on my first essay, for every subsequent essay I received number grades with no comments from a minimum of two peers and as many as four. In one case, I got no peer grades whatsoever. That meant that the only student who evaluated my essay was me. Every time I did get a comment, no peer ever wrote more than three sentences. And why should they? Comments were anonymous so the hardest part of the evaluative obligation lacked adequate incentive and accountability.

I read in *The New York Times* a few weeks ago that a study had begun to examine whether peer grades would match the grades assigned by professors and teaching assistants in one sociology MOOC. While that would prove an impressive feat if true,

it would in no way validate the process of peer grading. Learning, as any humanities professor knows, comes not through the process of grades but through the process of students reading comments about why they got the grades they got. That's how students find out how to do better next time.

To be fair, the course included a good set of instructions about how to grade a history essay linked from the course homepage. Unfortunately, there was no way for the superprofessor to force students to read those instructions, and due to the inevitable pressure to cover as much world history as possible, he never discussed how to grade in any of the class lectures. How could he? Good grading technique is difficult enough for graduate students to learn. Because of the size of the course I think I can safely assume that many of my fellow MOOC students inevitably had no history background at all, yet the peer grading structure forced them to evaluate whether other students were actually doing history right.

The implicit assumption of any peer grading arrangement is that students with minimal direction can do what humanities professors get paid to do and I think that's the fatal flaw of these arrangements. This assumption not only undermines the authority of professors everywhere; it suggests that the only important part of college instruction is the content that professors transmit to their students. How many of the books you read in college can you even name, let alone describe? It's the skills you learn in college that matter, not the specific details in any particular class, particularly those outside the major.

Over the course of my career, I have increasingly begun to spend much more time in class teaching skills than I do content. Some of this has been a reaction to encountering students who do not seem as prepared for reading or writing college-level material as the students I had back when I started teaching. However, I have also come to believe that teaching these skills is much more important than teaching

any particular historical fact. After all, it really is possible to Google nearly anything these days.

Certainly good students can do a good job grading peer essays and I got a few short but insightful comments on the papers I wrote for my MOOC. Even if all of my comments had been less than helpful, I didn't come into the MOOC process seeking to improve my writing skills. I wanted to learn new information, and many other students who engaged the material the same way that I did probably felt the same way.

Students like me won't be the ones who'll suffer because of peer grading. Its victims will be the future students who take MOOCs to earn college credit at increasingly cash-strapped universities. Who will teach them how to write well? Who will monitor their progress through the peer grading assignments? Who will help them understand that history is as much about argument as it is about facts or that literature can be appreciated on multiple levels? While other students can certainly teach other students some things, they can never teach students everything that a living breathing professor can.

Education startups like Coursera are experimenting with peer grading not because it is the best way for students to learn history or English, but because it is the only way that the MOOC machine can ever run itself in a humanities course. If MOOCs incurred high labor costs the same way that colleges do, those startups would never be able to extract a profit from those classes. While that's a legitimate concern for Coursera's venture capital investors, everyone else in academia – even the superprofessors – should give more weight to purely educational concerns. ▪

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The Particle Accelerator of Learning

A look inside the latest laboratory spawned by MIT and Harvard: edX, the nonprofit MOOC provider.

By Peter Stokes

"The fruit ripens slowly," the Guru Nisargadatta Maharaj once observed, "but it drops suddenly."

In a similar fashion, MOOCs (or massive open online courses) seem to have arrived almost out of nowhere, in quick succession – first Udacity in February 2012, followed by Coursera in April, then edX in May. Remarkable as it may seem, MOOCs as we know them today have been with us only for as long as it has taken the Earth to make one orbit around the sun.

"I like to call the last year 'the decade of online learning,' " joked Anant Agarwal, president of edX, during my recent visit to the offices of his bustling startup in the Kendall Square area of Cambridge, Mass.

As accelerated as the progression of MOOCs has been from curious acronym to household name, and as much as it may seem that MOOCs themselves have fallen from the sky, in truth MOOCs have been ripening for some time.

Consider the free "courses" delivered through iTunes U for the last several years, or TED Talks, and Khan Academy, not to mention some of the early progenitors of MOOCs themselves, including Dave Cormier, credited with coining the phrase in 2008, as well as George Siemens, Stephen Downes, Alec Couros, David Wiley, and others.

Recall Carnegie Mellon's Open Learning Initiative, the "open educational resources" movement, and MIT's OpenCourseware, launched all the way back in 2002. And let's not forget Fathom.com, an initiative out of Columbia University launched at the turn of the millennium, or even the early days of America Online and Compuserve, both of which offered educational content through their services as early as the 1990s.

MOOCs, then, are not as new as they seem – though the world today appears to be more ready for them than it was in decades past. Indeed, it isn't hard to see how forces as diverse as Clayton Christensen's theory of "disruptive innovation" from the late 1990s, the expansion of online enrollments over the last decade, the reformist intentions of the Spellings Commission on the Future of Higher Education from 2005-2006, the great recession of 2007-2009, or the completion agenda supported by the Lumina and Gates Foundations over the last few years have all contributed to a public thirst for what look like very high-quality educational offerings at very low – or even zero – cost.

"I also call the last year," Agarwal added, " 'the decade of innovation.' "

And like many innovations before them, MOOCs have been received with the usual contradictory apocalyptic fervor – where some believers foresee the arrival an educational golden age and others see the eventual destruction of our institutions, our faculty, and the intangible value of face-to-face learning.

Writing in *The American Interest* this month, for example, Nathan Harden claimed that "ten years from now Harvard will enroll ten million students." He went on to argue that as a result of the MOOC movement, "the changes ahead will ultimately bring about the most beneficial, most efficient and most equitable access to education that the world has ever seen."

At the other end of the apocalyptic continuum, Gregory Ferenstein, writing for TechCrunch last month, foresaw a future in which MOOCs wreaked a terrible devastation on the land, as "part-time faculty get laid off, more community colleges are shuttered, extracurricular college services are closed, and humanities and arts departments are dissolved for lack of enrollment."

The real significance of MOOCs lies, however, not in their being a harbinger of our educational salvation or demolition. Nor does their real significance lie principally in their

potential to increase access or reduce costs – at least not for Agarwal and edX.

"We are about two things," Agarwal told me. "We are about dramatically increasing quality and impacting campus learning. We are being very deliberate. This is not a numbers game – this is not a game at all. This is a quality quest."

Funded with $60 million in seed capital from MIT and Harvard, edX can make a claim to being the first MOOC platform to market, inasmuch as its predecessor, MITx, was launched in December 2011. Until this week, the edX consortium featured five independent member institutions (MIT, Harvard, the University of California at Berkeley, Georgetown University, and Wellesley College) and one state university system comprising 15 colleges and universities (the University of Texas System). In February 2013, it added six more, including several outside the United States.

In less than a year, edX's 25 courses have enrolled close to 700,000 people. "That's more than the combined alumni of MIT and Harvard over their combined 500-year history," Agarwal observed with a mixture of pride, enthusiasm and amazement. What really pleases him, though, is something else.

Rolling his chair across the office, Agarwal waves me over to his monitor and shows me the virtual laboratories edX has been developing for its courses. We start with his own course on Circuits and Electronics (6.002x in the edX course catalog).

"Many MOOCs are just about analyzing problems," he said. "We give you a blank sheet of paper and say, 'Go build, design, create, construct something.' " With drag-and-drop alacrity, Agarwal moves the components of a circuit into place on a piece of digital graph paper and clicks a button to test its performance. "Computers do the grading," he said, "in real time."

"The media focus on numbers, they focus on cost," Agarwal sighed. "But they should focus on something else – quality. And they should focus on efficiency. What is efficiency? It's a ratio of quality and cost."

"The real significance of MOOCs lies, however, not in their being a harbinger of our educational salvation or demolition. Nor does their real significance lie principally in their potential to increase access or reduce costs."

Agarwal knows that MOOCs have their doubters, and he believes that they can only be persuaded with proof. He cites the case of San Jose State University, which licensed his own course on circuits and ran it as an adjunct to the school's own classroom-based instruction. The results, Agarwal claims, were impressive. "The fail rate dropped from 40 percent to 9 percent," he told me. "That's a quality improvement." And the costs to San Jose State were minimal. That's efficiency. Agarwal says San Jose will be sharing more details about their experience with edX in the near future.

With the avidity of the prototypical startup entrepreneur, Agarwal talked excitedly about the potential for MOOCs to improve pedagogy. "We have our xConsortium," he said. "All of the schools in our consortium have access to all the data in the platform in an anonymized format. This is what I call 'the particle accelerator of learning' – big data in learning in real-time." In a sense, then, edX's quality quest, as Agarwal calls it, is seeking out the educational equivalent of the Higgs Boson, as well the other fundamental elements of learning, in order to better understand what kind of learning objects, what kind of real-time remediation, and what kind of learning materials – whether analysis or laboratory or other – produce the best results from one learning context to the next.

I ask Agarwal what distinguishes edX from its fellow MOOC platforms. "We have a fundamentally different mission," he replied. "We're nonprofit. We're open source. Our technology is for everyone. And we have a commitment to campus learning."

In February 2013, the American Council on Education completed an evaluation of five courses on the Coursera platform, developed respectively by Duke University, the University of California at Irvine,

and the University of Pennsylvania. Intriguingly, all five courses were approved for credit through the ACE credit transfer program. But just in case the future of MOOCs was beginning to make sense to you, consider this – all three of these institutions have made it clear that they, at least, will not be awarding credits for the courses, irrespective of the fact that they developed the courses themselves.

MOOCs are puzzling.

Will they last? It's not, I suspect, a question that would bother Agarwal very much one way or the other. "For us," he said, "it's not about MOOCs. We are trying to reimagine our own campus. The lecture wasn't working. Quality has been static for decades, but costs are going up. There's a trillion dollars in student debt. We are trying reimagine campus education from the ground up – with new ways of learning that are more enriching, more engaging, more efficient, and that produce better outcomes." ▪

How do you like them apples?

Peter Stokes is executive director of postsecondary innovation in the College of Professional Studies at Northeastern University, and author of the Peripheral Vision column.

English Prof as Entrepreneur

Scholars in the humanities have a money-making tradition to draw upon, and they should embrace it.

By Richard Utz

In 1892, the president of Leland Stanford University, David Starr Jordan, managed to convince Ewald Flügel, a scholar at the University of Leipzig, to join the young institution's rudimentary English department. Flügel had received his doctoral degree in 1885 with a study of Thomas Carlyle under the aegis of Richard Wülcker, one of the founders of English studies in Europe. Three years later, he finished his postdoctoral degree, with a study on Sir Philip Sydney, and was appointed to the position of a Privatdozent at Leipzig.

The position of the Privatdozent is one of the most fascinating features at the modern German universities in the late 19th century. Although endowed with the right to direct dissertations and teach graduate seminars, the position most often offered only the smallest of base salaries, leaving the scholar to earn the rest of his keep by students who paid him directly for enrolling in his seminars and lectures. In a 1903 Stanford commencement speech Flügel warmly recommended that his new colleagues in American higher education embrace the Privatdozent concept:

What would the faculty of Stanford University say to a young scholar of decided ability, who, one or two years after his doctorate (taken with distinction), having given proof of high scholarly work and spirit, should ask the privilege of using a certain lecture room at a certain hour for a certain course of lectures? What would Stanford University say, if – after another year or two this young man, unprotected but regarded with a certain degree of kindly benevolence […], this lecturer should attract more and more students (not credit hunters), if he should become an influence at the university? What if the university should become in the course of years a perfect hive of such bees? […] It would modify our departmental boss-system, our worship of "credits," and other traits of the secondary schools; it would stimulate scholarly life at the university; it would foster a healthy competition in scholarly work, promote survival of the fittest, and keep older men from rusting.

Unabashedly Darwinian, Flügel was convinced that his own contingent appointment back in Germany had pushed him, and pushed all Privatdozenten, to become competitive, cutting-edge researchers and captivating classroom teachers until one of the coveted state-funded chair positions might become available. He held that the introduction of this specific academic concept was instrumental at furthering the innovative character and international reputation of higher education in Germany. Flügel himself had thrived under the competitive conditions,

of course, and his entrepreneurial spirit led him to make a number of auspicious foundational moves: He took on co-editorship of Anglia, today the oldest continually published journal worldwide focusing exclusively on the study of "English." And he founded Anglia Beiblatt, a review journal that quickly established an international reputation.

Despite his formidable achievements, however, he could not secure a chair position as quickly as he hoped. Since he was among the very few late 19th-century German professors of English who possessed near-native proficiency, he began to consider opportunities overseas. Even the dire warnings from a number of east coast colleagues ("the place seems farther away from Ithaca, than Ithaca does from Leipzig"; "they have at Stanford a library almost without books") could not scare him away. Once he had begun his academic adventure in the Californian wilderness, he took on a gargantuan research project, the editorship of the Chaucer Dictionary, offered to him by Frederick James Furnivall, the most entrepreneurial among British Chaucerians and founder of the Chaucer Society. As soon as he took over from colleagues who had given up on the project, he found, in this pre-computer age of lexicography, "slips of all sizes, shapes, colors, weights, and textures, from paper that was almost tissue paper to paper that was almost tin. Every slip contained matter that had to be reconsidered, revised, and often added to or deleted."

Undeterred by this disastrous state of affairs, he decided to resolve the problem with typically enterprising determination: Although grant writing was uncharted territory for him, he applied for and secured three annual grants for $7,500 and one for $11,000 (altogether the equivalent of at least $300,000 in today's money!) from the Carnegie Foundation for the Advancement of Teaching between 1904 and 1907 "for the preparation of a lexicon for the works of Geoffrey Chaucer," bought himself some time away from Stanford, and signed up a dozen colleagues and students in Europe and North America to assist him in his grand plan.

"[B]y making English a bastion of (self-) righteous resistance against the evil trinity of utilitarianism, pragmatism, and capitalism, English professors have relinquished the ability to be public intellectuals and to shape public discourse."

His and their work would become the foundation of the compendious Middle English Dictionary which now graces every decent college library in the English-speaking world and beyond. Beyond the work on the Chaucer Dictionary, the completion of which he never saw because of his sudden death in 1914, he maintained an impressive publication record and served in leadership positions such as the presidency of the Pacific Branch of the American Philological Association. When Flügel passed away, his American colleagues celebrated his "enthusiastic idealism" and remembered him as "more essentially American" than the other foreign-born colleagues they knew, an appreciation due to his entrepreneurial spirit.

I am relating this story to counteract the often defeatist chorus sung by colleagues in English and other humanities departments when confronted with a request, usually from impatient administrators in more grant-active areas, for at least giving grant writing and other entrepreneurial activities a try. There is no doubt that, compared to the situation in most other Western democracies, government support through the National Endowments for the Humanities and Arts is small in the U.S. Conversely, the number of private foundations, from the American Council of Learned Societies through the Spencer Foundation, makes up for some of the difference.

In my experience, what keeps the majority of English professors from even considering an involvement with entrepreneurial activities is that they deem them an unwelcome distraction from the cultural work they feel they have been educated, hired, and tenured to do. Most grant applications require that scholars explain not only the disciplinary, but also the broader

social and cultural relevance of their work. In addition, they entail that scholars put a monetary value on their planned academic pursuits and create a bothersome budget sheet, learn how to use a spreadsheet, develop a timeline, and compose an all-too-short project summary, all grant-enabling formal obstacles many colleagues consider beneath the dignity of their profession.

In fact, many of us believe that the entire discipline of English and the humanities in general may have been created so as to counterbalance the entrepreneurial principles and profit motives which, from within the English habitat, seem to have a stranglehold over work in colleges of business, computing, engineering, and science. However, by making English a bastion of (self-)righteous resistance against the evil trinity of utilitarianism, pragmatism, and capitalism, English professors have relinquished the ability to be public intellectuals and to shape public discourse. After all, too many of our books and articles speak only to ourselves or those in the process of signing up to our fields at colleges and universities.

Ewald Flügel labored hard to remain socially and politically relevant even as he was involved in professionalizing and institutionalizing the very discipline we now inhabit. Recognizing that the skills and kinds of knowledge provided by his emerging field were insufficient for solving complex real-world issues, he became a proponent of a more co-disciplinary approach to academic study, a kind of cultural studies scholar long before that term was invented. Most of us would agree that he applied his formidable linguistic and literary expertise to a number of problematic goals, speaking to academic and public audiences about how the steadily increasing German immigration and the powers of German(ic) philology should and would inevitably turn the United States into an intellectual colony of his beloved home country. However, even if his missionary zeal reeks of the prevailing nationalist zeitgeist, I can appreciate his desire to experiment, innovate, and compete to make the study of historical literature and language as essential to the academy and to humanity as did his approximate contemporaries Roentgen, Eastman, Edison, Diesel, Marconi, and Pasteur with their scientific endeavors.

Perhaps his example might entice some of us to revisit and even befriend the idea of entrepreneurship, especially when it involves NGOs or the kind of for-profit funding sources the Just Enough Profit Foundation might define as (only) "mildly predatory" or (preferably) "somewhat," "very" and "completely humanistic." At the very least, Flügel's biography provides evidence that today's prevailing anti-entrepreneurial mindset has not always been among the constitutive elements defining the "English" professoriate.

There are signs that some colleagues in English have begun to abandon that mindset: George Mason University's Center for Social Entrepreneurship (directed by Paul Rogers, a professor of English) and the University of Texas consortium on Intellectual Entrepreneurship (directed by Richard Cherwitz, a professor of rhetoric and communication), show promising cross-disciplinary collaboration between the academy and society; English professors at Duke, Georgia Tech, and Ohio State, funded by the Bill & Melinda Gates Foundation, are among the national leaders testing the pedagogical viability of the controversial massive open online courses (MOOCs); and Ellito Visconsi of the University of Notre Dame, and Bryn Mawr colleague Katherine Rowe created Luminary Digital Media LLC, a startup that distributes their "Tempest for iPad," an application designed for social reading, authoring, and collaboration for Shakespeare fans with various levels of education. I believe Ewald Flügel would find these projects exciting.

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