

Universities Reshaping Education on the Web

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As part of a seismic shift in online learning that is reshaping higher education, Coursera, a year-old company founded by two Stanford University computer scientists, will announce on Tuesday that a dozen major research universities are joining the venture. In the fall, Coursera will offer 100 or more free massive open online courses, or MOOCs, that are expected to draw millions of students and adult learners globally.

Even before the expansion, Daphne Koller and Andrew Ng, the founders of Coursera, said it had registered 680,000 students in 43 courses with its original partners, Michigan, Princeton, Stanford and the University of Pennsylvania.

Now, the partners will include the California Institute of Technology; Duke University; the Georgia Institute of Technology; Johns Hopkins University; Rice University; the University of California, San Francisco; the University of Illinois, Urbana-Champaign; the University of Washington; and the University of Virginia, where the debate over online education was cited in last's month's ousting — quickly overturned — of its president, Teresa A. Sullivan. Foreign partners include the University of Edinburgh in Scotland, the University of Toronto and EPF Lausanne, a technical university in Switzerland.

And some of them will offer credit.

“This is the tsunami,” said Richard A. DeMillo, the director of the Center for 21st Century Universities at Georgia Tech. “It’s all so new that everyone’s feeling their way around, but the potential upside for this experiment is so big that it’s hard for me to imagine any large research university that wouldn’t want to be involved.”

Because of technological advances — among them, the greatly improved quality of online delivery platforms, the ability to personalize material and the capacity to analyze huge numbers of student experiences to see which approach works best — MOOCs are likely to be a game-changer, opening higher education to hundreds of millions of people.

To date, most MOOCs have covered computer science, math and engineering, but Coursera is expanding into areas like medicine, poetry and history. MOOCs were largely unknown until a wave of publicity last year about Stanford University’s free online artificial intelligence course attracted 160,000 students from 190 countries. Only a small percentage of the students completed the course, but even so, the numbers were staggering.

“The fact that so many people are so curious about these courses shows the yearning for education,” said Molly Corbett Broad, president of the American Council on Education. “There are going to be lots of bumps in the road, but this is a very important experiment at a very substantial scale.”

So far, MOOCs have offered no credit, just a “statement of accomplishment” and a grade. But the University of Washington said it planned to offer credit for its Coursera offerings this fall, and other online ventures are also moving in that direction. David P. Szatmary, the university’s vice provost, said that to earn credit, students would probably have to pay a fee, do extra assignments and work with an instructor.

Experts say it is too soon to predict how MOOCs will play out, or which venture will emerge as the leader. Coursera, with about \$22 million in financing, including \$3.7 million in equity investment from Caltech and Penn, may currently have the edge. But no one is counting out edX, a joint venture of Harvard and the Massachusetts Institute of Technology, or Udacity, the company founded by Sebastian Thrun of Stanford, who taught the artificial intelligence course last year.

Each company offers online materials broken into manageable chunks, with short video segments, interactive quizzes and other activities — as well as online forums where students answer one another’s questions.

But even Mr. Thrun, a master of MOOCs, cautioned that for all their promise, the courses are still experimental. “I think we are rushing this a little bit,” he said. “I haven’t seen a single study showing that online learning is as good as other learning.”

Worldwide access is Coursera’s goal. “EPF Lausanne, which offers courses in French, opens up access for students in half of Africa,” Ms. Koller said. Each university designs and produces its own courses and decides whether to offer credit.

Coursera does not pay the universities, and the universities do not pay Coursera, but both incur substantial costs. Contracts provide that if a revenue stream emerges, the company and the universities will share it.

Although MOOCs will have to be self-sustaining some day — whether by charging students for credentials or premium services or by charging corporate recruiters for access to the best students — Ms. Koller and university officials said that was not a pressing concern.

About two-thirds of Coursera’s students are from overseas, and most courses attract tens of thousands of students, an irresistible draw for many professors. “Every academic has a little soapbox, and most of the time we have five people listening to us,” said Scott E. Page, a University of Michigan professor who taught Coursera’s model thinking course and was thrilled when 40,000 students downloaded his videos. “By most calculations, I had about 200 years’ worth of students in my class.”

Professors say their in-class students benefit from the online materials. Some have rearranged their courses so that students do the online lesson first, then come to class for interactive projects and help with problem areas.

“The fact that students learn so much from the videos gives me more time to cover the topics I consider more difficult, and to go deeper,” said Dan Boneh, a Stanford professor who taught Coursera’s cryptography course.

The Coursera contracts are not exclusive, so many of its partner universities are also negotiating with several online educational entities.

“I have talked to the provost at M.I.T. and to Udacity and 2Tor,” which provides online graduate programs for several universities, said Peter Lange, the provost of Duke University. “In a field changing this fast, we need flexibility, so it’s very possible that we might have two or three different relationships.”

One looming hurdle is overcoming online cheating.

“I would not want to give credit until somebody figures out how to solve the cheating problem and make sure that the right person, using the right materials, is taking the tests,” said Antonio Rangel, a Caltech professor who will teach Principles of Economics for Scientists in the fall. Udacity recently announced plans to have students pay \$80 to take exams at testing centers operated around the world by Pearson, a global education company.

Grading presents some questions, too. Coursera’s humanities courses use peer-to-peer grading, with students first having to show that they can match a professor’s grading of an assignment, and then grade the work of five classmates, in return for which their work is graded by five fellow students. But, Ms. Koller said, what would happen to a student who cannot match the professor’s grading has not been determined.

It will be some time before it is clear how the new MOOCs affect enrollment at profit-making online institutions, and whether they will ultimately cannibalize enrollment at the very universities that produce them. Still, many professors dismiss that threat.

“There’s talk about how online education’s going to wipe out universities, but a lot of what we do on campus is help people transition from 18 to 22, and that is a complicated thing,” said Mr. Page, the Michigan professor, adding that MOOCs would be most helpful to “people 22 to 102, international students and smart retired people.”

Eventually, Ms. Koller said, students may be able to enroll in a set of MOOCs and emerge with something that would serve almost the same function as a traditional diploma.

“We’re not planning to become a higher-education institution that offers degrees,” she said, “but we are interested in what can be done with these informal types of certification.”

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