The Columbia University Online Learning Opportunity

University Senate Online Learning Task Force
December 2, 2013

Sharyn O’Halloran
George Blumenthal Professor of Political Economy
Professor of International and Public Affairs
Chair, Executive Committee of the University Senate

Presentation to Senate Plenary
Executive Summary

Online learning is not new: higher education has a history of delivering content online.

Massively Open Online Courses (MOOCs) are a game changer, but are complements and not substitutes to the traditional residential model.

- Makes traditional content available at low fixed cost and virtually no marginal cost;
- Provides opportunity for brand expansion and, potentially, revenue generation; and
- Expands reach to a large and growing audience of life-long learners, e.g. alumni.

Columbia’s online initiatives could benefit from economies of scale and coordination.

- Support and decision-making are currently distributed, and sometimes duplicative
  - e.g., CUIT, CCNMTL, Provost’s office, individual schools, Continuing Education, etc.
- Need to prioritize resource allocation to meet the following opportunities:
  - Enhance pedagogy for traditional students, our primary focus;
  - Broaden Columbia’s audience (e.g., alumni) through various technology platforms.

For Columbia to best position itself to benefit from this new technology:

- Unify, where appropriate, administrative and logistical functions under Provost’s purview;
- Rationalize, consolidate, and invest in activities related to faculty teaching, e.g., digital RA
  - Equip classrooms for lecture capture and open studios for high quality content production;
  - Create Center for Teaching Excellence to support traditional classroom pedagogy and train faculty and graduate students to incorporate new technology into the classroom
- Link online/distance learning with expansion of the Global Centers.
Online learning is not new

<table>
<thead>
<tr>
<th>Ad Hoc (Online Courses and Programs)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fully Online Programs</td>
<td></td>
</tr>
<tr>
<td>Examples: University of Phoenix, Rio Salado</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>School-as-a-Service</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Examples: 2tor, Academia Partnerships, Pearson</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Educational Partnerships</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Examples: Cisco Networking Academy</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Competency-Based Education</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Examples: WGU, StraighterLine, SNHU</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blended / Hybrid &amp; Flipped Classroom</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Connectivist MOOC</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Example: CCKOS</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stanford, xMOOC</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Example: MITx, edX, Coursera</td>
<td></td>
</tr>
</tbody>
</table>

- Higher education has a long history of using distance/online technology to deliver content.
- Columbia is a thought leader: CVN, Continuing Ed, CCNMTL, and efforts like Fathom
- MOOCs are the newest entrants in the field of online learning
MOOCs, especially those offered by elite peer institutions, are changing the game

Emerging model:
- Massively Open Online Courses (MOOC)
- Free content and grading; $30 for certificate of completion

Since September 2011:
- Stanford offers dozens of classes to 1.6 million students
- Two spinoffs extending to teachers elsewhere: Coursera and edX
- edX offers a single MIT class to 155,000 students: 6.002 Circuits & Electronics
- Harvard offers some of its most popular classes including Justice and CS50
- Georgia Tech is partnering with Udacity to offer a M.S. in CompSci for $7,000

Proprietary sector is consolidating; MOOCs and Standard Learning Management Systems (LMS) are converging:
- Blackboard has acquired market competition, but its overall market share is down from 2005 as new players enter the market.
- MOOC-erization of traditional classrooms
  - Canvas – LMS open source platform makes standard courses a MOOC
  - Coursera is partnering with Antioch University to provide course management

Source: coursera.org and edxonline.org
Current major platforms share similar technological capabilities but have very different business models

<table>
<thead>
<tr>
<th>Course Structure</th>
<th>Coursera</th>
<th>edX</th>
<th>Pearson</th>
<th>Udacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Content</td>
<td>Videos, Assignments, Discussion Forums</td>
<td>Videos, Assignments, Discussion Forums</td>
<td>Videos, Assignments, Discussion Forums</td>
<td>Videos, Assignments, Discussion Forums</td>
</tr>
<tr>
<td>Hosting</td>
<td>Cloud</td>
<td>Cloud</td>
<td>Cloud</td>
<td>Cloud</td>
</tr>
<tr>
<td>Voting of questions</td>
<td>Stack Overflow</td>
<td>Stack Overflow</td>
<td>N/A</td>
<td>Stack Overflow</td>
</tr>
<tr>
<td>Multiple-answer</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Multiple Choice and Computer Auto-Grading</td>
<td>✓</td>
<td>✓</td>
<td>–</td>
<td>✓</td>
</tr>
<tr>
<td>Instructor-grade</td>
<td>as override</td>
<td>as override</td>
<td>✓</td>
<td>as override</td>
</tr>
<tr>
<td>Remote vs. On-campus</td>
<td>Segmentable to different levels of on- and off-campus</td>
<td>Online; based on and in parallel to in-class</td>
<td>Designed for campus-sized class</td>
<td>Varies</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Business Model</th>
<th>Coursera</th>
<th>edX</th>
<th>Pearson</th>
<th>Udacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal developer</td>
<td>Collaboration between Coursera and University</td>
<td>Owned by MIT and Harvard, collaboration with other universities</td>
<td>Service provider to universities via software</td>
<td>Seeks to become its own university, hire its own faculty</td>
</tr>
<tr>
<td>Profit vs. Non Profit</td>
<td>For-Profit</td>
<td>Not-for-Profit</td>
<td>For-Profit</td>
<td>For-Profit</td>
</tr>
<tr>
<td>Certificate Fee</td>
<td>Nominal</td>
<td>Nominal</td>
<td>Comparable to traditional course</td>
<td>Less than traditional course but not nominal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Footprint</th>
<th>Coursera</th>
<th>edX</th>
<th>Pearson</th>
<th>Udacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Courses done and available (+starting)</td>
<td>390</td>
<td>63</td>
<td>130+</td>
<td>25</td>
</tr>
<tr>
<td>Enrollments</td>
<td>3.2 million</td>
<td>675,000</td>
<td>6.7 million</td>
<td>400,000</td>
</tr>
</tbody>
</table>
New landscape impacts Columbia’s classrooms and brand

- **Technological Assets:**
  - Will support “flipped classroom” model
    - Lecture content will be posted online
    - Classroom experience will stress practical application
  - Allows for scalable teaching
    - Flexibility and low overhead

- **Columbia needs to be in the space to:**
  - Maintain its brand
    - In good company
    - Non-cannibalizing
  - Learn how to compete in a market where content is free, including:
    - Market segmentation (degree vs. non-degree)
    - Tiered pricing
    - Residential vs. non-residential mix
Columbia compares well to Ivy-plus peers in online learning space but efforts are decentralized.

<table>
<thead>
<tr>
<th>Peer school</th>
<th>Credit-Bearing Courses</th>
<th>Non-Credit Courses</th>
<th>GUIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Traditional Residential</td>
<td>Non-HS Programs</td>
<td>100+</td>
</tr>
<tr>
<td></td>
<td>Traditional Residential w/Limited Dist</td>
<td>General Public w/o Admissions Req't</td>
<td>20 - 100</td>
</tr>
<tr>
<td></td>
<td>Dist. Students w/Limited Res</td>
<td>High School</td>
<td>1 - 20</td>
</tr>
<tr>
<td></td>
<td>Traditional Distance</td>
<td></td>
<td>No Courses</td>
</tr>
</tbody>
</table>

- Columbia
- Brown
- Cornell
- Dartmouth
- Harvard
- Penn
- Princeton
- Yale
- Chicago
- Duke
- Hopkins
- MIT
- Stanford

△ Simultaneous Broadcast
Demand for online learning among students & alumni is high

- Those who took online courses found them to be a positive experience.
- However, only a few have taken online courses, suggesting an opportunity.

Are you interested in taking online courses?

- **Alumni (N=322)**
  - Very Interested: 36%
  - Somewhat Interested: 56%
  - Not Very Interested: 2%
  - Not at all Interested: 6%

- **Students (N=6311)**
  - Very interested: 34%
  - Somewhat interested: 27%
  - Not very interested: 14%
  - Not at all interested: 25%

Have you ever taken an online course before? Was it a positive experience?

- **Alumni (N=322)**
  - Yes and the experience was positive: 76%
  - Yes and the experience was not positive: 4%
  - No, I have not taken online course: 9%

- **Students (N=6311)**
  - Yes, and the experience was positive: 94%
  - Yes, and the experience was not positive: 3.6%
  - No, I have not taken online course: 1.4%
Alumni & students share similar interests in online course subject matter but differ on interest in for credit/non-credit.

- Unlike alumni, students prefer a degree program over a non-degree program.

What kind of University-sponsored Online courses would you be most interested in?

Alumni (N=263)

- 38%: Degree program, with credit
- 19%: Non-degree program, with certificate
- 38%: Non-credit
- 6%: Other

Students (N=4668)

- 52%: Degree program, with credit
- 28%: Non-degree program, with certificate
- 2%: Non-credit
- 2%: Other

What subjects of University-sponsored Online courses would you be most interested in taking?

Alumni (N=263)

- 18%: Arts and Humanities
- 13%: Business and Management
- 14%: Economics and Politics
- 5%: Foreign Languages
- 14%: Professional Development and Education
- 13%: Science and Health
- 20%: Other

Students (N=4668)

- 16%: Arts and Humanities
- 13%: Business and Management
- 16%: Economics and Politics
- 13%: Foreign Languages
- 18%: Professional Development and Education
- 2%: Science and Health
- 14%: Other
Student interest in online courses is relatively similar across degree programs

- Undergraduates are less likely to have taken online courses, even though interest in University-sponsored online courses is roughly the same across degree programs.

**Are you interested in taking online courses?**

**Have you taken a University-sponsored online course before?**

![Graph 1](image1.png)

![Graph 2](image2.png)
Students are most concerned about pedagogy and interested primarily in degree programs

- Students who expressed disinterest indicated that the most important reason for their lack of enthusiasm was **pedagogical**;  
  - They believed that the quality of online learning is inferior to traditional in-class learning (38% of responses).

- The second most important reason, i.e. that the **on-campus in-classroom experience is important** (27% of responses), echoed the first.
Supply: Faculty interest in teaching online has been lukewarm thus far

- For the past 9 years, only one-third of chief academic officers nationwide have reported that their faculty members “accept the value and legitimacy of online education.”
- In a survey of Columbia faculty, 42% indicated they would be interested in teaching some form of online course.
- 35%, the largest share of faculty respondents in a survey to Columbia faculty reported “wider range of audiences” as the primary motivation to developing online content.

What reason is most important for wanting to teach online?

- Main reasons why faculty are not interested:
  1) classroom method is viewed as the best pedagogy for their subject (44%); and
  2) need to maintain academic standards (17%).
Best practices to enhance Columbia’s position

1. **Focus efforts** on current Columbia students and affiliates

2. **Emphasize content provision** over technology development
   - i.e., we should not develop our own MOOC platform
   - Avoid lock-in to current technology

3. **Rationalize and consolidate** core functions, where feasible
   - Cover overhead costs for classroom and technology upgrade to enhance pedagogy for traditional students;
   - Facilitate faculty adoption of new technology in current courses, e.g., digital RA.

4. **Adopt transparent and clear guidelines** for areas of investment.
   - Course offerings to non-traditional students via MOOCs or third parties should highlight current strengths and reasonably cover development costs.

5. **Foster university-wide faculty governance** by incorporating existing decision making bodies.
   - e.g., include representatives from the Senate Online Learning and Education committees.
Next steps build on strengths and expand reach

- Expand capacity to develop online course content
  - Create Center for Teaching Excellence to facilitate faculty adoption of new technology and share learning across the university.
  - Build technology studios and infrastructure to support units.
  - Archive and manage content to be repurposed across courses

- Develop interim Coursera/edX pilot courses
  - Faculty can adopt a flipped-classroom model, leveraging technological capabilities to enhance pedagogy for on-campus students.
  - Schools can package content for degree students, either in purely online or hybrid programs.
  - Revenue generated should cover development costs

- Encourage link between Global Centers and various distance/online learning programs
  - Bundle online content to meet needs of Global Centers’ constituencies
  - Expands Columbia’s reach to new audiences and donor base
Proposed Timeline

- **Information and data collection**
  - Preliminary discussions with key stakeholders, including alumni, faculty, students, and administrators to form broad goals and working groups.

- **Formulation of preliminary recommendations**
  - April 2012 to March 2013

- **Recommendations and draft report circulated for review and commentary**
  - March-May 2013

- **Revised recommendations**
  - Summer 2013

- **Delivery of final report to University Senate**
  - Fall 2013

- **Implementation**
  - 2014
Appendix: Senate Online Learning Task Force

- Senate Online Learning Task Force
  - University-wide group, including faculty, students, alumni and administrators from SCE, A&S, and Professional Schools
  - Senate approves all new online/hybrid programs
  - Wrote the Fathom report in 2002

- Focusing on three central themes:
  - Pedagogy
  - Technology
  - Audience

- Deliverable:
  - Report identifying Columbia’s key strategic opportunities and challenges in the emerging online learning space
Appendix: Roster of Online Learning Task Force

- Adam Cannon, Computer Science
- Sen. Akshay Shah, Student, SEAS
- Sen. Anjelica Kelly, Columbia Business School
- Assaf Zeevi, Columbia Business School
- Sen. Cleo Abram, Columbia College
- Sen. K. Daniel Libby, Senate Alumni Relations
- David Madigan, Statistics
- Dennis Tenen, English & Comparative Literature
- Donald Davis, Economics
- Eitan Grinspun, Computer Science
- Ellen Meier, Teachers College
- George Hripcsak, Biomedical Informatics
- Sen. Gerald Sherwin, Senate Alumni Relations
- Sen. James Applegate, Astronomy, Physics
- Kristine Billmyer, Continuing Education
- Sen. Letty Moss-Salentijn, Dental Medicine
- Maneesha Aggarwal, Information Technology
- Sen. Matthew Chou, Columbia College
- Maurice Matiz, CCNMTL
- Sen. Philip Stephenson, Journalism
- Sen. Richard Sun, Columbia College
- Sen. Selim Lika, Continuing Education
- Sen. Sharyn O’Halloran, Political Science, SIPA
- Sen. Soulaymane Kachani, Industrial Engineering
- Sree Sreenivasan, Journalism
- Marni Stein, Continuing Education
Appendix: Comparison Chart Definitions

Credit Bearing Programs:
• Traditional Residential: Students “in residence”; full or part-time students who physically attend courses at the University’s campus. These students include commuter students who attend courses.
• Traditional Residential w/Limited Distance: Traditional residential students who are temporarily away from campus, for instance study abroad, or between semesters (winter and summer break)
• Distance Students w/Limited Residency: Traditional distance students who have a short-term residency requirements (e.g. a two week intro or final project at the start or end of a semester; eMBA).
• Traditional Distance: Students who receive instruction exclusively outside of the traditional classroom setting through online, mail or other platforms.

Non-Credit/Certificate Programs (Courses that do not result in awarding of academic credit towards a degree):
• Non-HS Certificate Programs: Programs that result with the awarding of a certificate, taught at the post-secondary level with some sort of application process, even if admission is de-facto guaranteed.
• General Public w/o Admissions Requirement: Courses available online to anyone; no application necessary
• High School: Courses geared towards HS students with or without an admissions requirement

Method of Delivery:
• Synchronous: Courses that are delivered in real-time. Live interaction between instructors and students, can be both lecture-based (students all watch lecture at the same time, and professors respond to audience reaction), or seminar based (live discussion with students and preceptors)
• Asynchronous: Course materials and assignments posted online. Students are able to move at their own pace but still have general deadlines and are able to ask questions to instructors and TAs.
• Course Materials Posted Online: Lecture Videos, Slides, and Assignments posted online but there is no deadline or mechanism for the submission of course materials or ask questions.
• None: The University does not offer online course content to this audience.