

Northwestern University MOOCs

Strategic Analysis

September 2014

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Overview

Introduction

In February 2013, Northwestern University partnered with Coursera to deliver Massive Open Online Courses (MOOCs) as part of its diversified online learning strategy. The strategy focused on several different modes of online and blended learning in order to explore and learn from new and burgeoning modes of pedagogy and technology. The diversified strategy has included:

- Synchronous, for credit, online undergraduate courses (through Semester Online and 2U)
- MOOCs (through Coursera)
- Locally produced and delivered online courses and programs at the undergraduate and graduate levels
- Blended learning approaches used in credit-bearing on-campus courses

While continuing to offer its traditional online programs developed and offered through the schools, Northwestern also explored new developments that afforded an opportunity to increase or enhance learning. On campus it continued to encourage blended learning approaches. Beyond campus it closely followed the rise of MOOCs.

As new online learning opportunities emerged in the marketplace in 2011 and 2012, Northwestern considered the various services, approaches and business models available. Several MOOC providers emerged, including Coursera, EdX, Udacity, and Udemy. Northwestern assessed the merits of each of these, as well as establishing its own proprietary MOOC development and delivery model. Daphne Koller, Coursera's co-founder, met and talked with Northwestern leadership and faculty several times in 2012, including meeting with faculty at an open forum in the fall of 2012. The well-attended meeting reflected faculty's high level of potential interest in MOOCs and resonance with Coursera's mission. With additional input from the Board of Trustees, the President and Provost decided that a partnership with Coursera as the University's main MOOC platform would best support the University's goals broadly for online learning.

Northwestern's agreement with Coursera enables Northwestern to showcase its MOOCs on the Coursera platform taking advantage of Coursera's widely-recognized name brand and marketing efforts. It has also enabled the University to learn from and partner with a wide range of peer institutions also utilizing the Coursera platform. Northwestern must produce the MOOCs; Coursera then supports uploading the content and delivering the MOOC. To date, Northwestern has been very pleased with the support provided by Coursera staff and the ongoing partnership that has developed between the two institutions. The agreement with Coursera does not preclude Northwestern from offering MOOCs on other platforms or building partnerships with MOOC or other online learning providers.

To help guide the University's diversified strategy for online learning, the Provost appointed the Faculty Distance Learning Workgroup (FDLW) in 2012 in part to advise on the MOOC program broadly. The FDLW has met with faculty in a variety of venues to update them on current online and blended learning initiatives and to listen to faculty's concerns and ideas.

Upon launching the MOOC initiative, the Provost described Northwestern's partnership with Coursera as an experiment and initially outlined seven broad goals for MOOCs at Northwestern:

- Allow faculty and the University to explore new pedagogical and course delivery methods;
- Promote and support innovative efforts by faculty to develop and deliver online courses;
- Provide access to meaningful learning opportunities, without geographical or financial restrictions, to non-traditional students, current students and alumni, and those who currently have limited access to higher education;
- Evaluate learning outcomes from new modes of education;
- Expand the visibility and impact of Northwestern and its faculty;
- Showcase what is special about Northwestern's faculty, research and curriculum;
- Help shape the evolution of higher education.

These goals have guided the development and investment in the early MOOCs. Given Northwestern's experience to date and the changing landscape of online education and MOOCs specifically, it is appropriate to assess Northwestern's overall strategy for MOOCs, benefits gained and implications for next steps. This analysis examines the University's investment broadly defined, returns on that investment and how this should shape the future of Northwestern's MOOC program in the context of online and blended learning.

MOOC Development Model

Northwestern successfully launched its first cohort of six MOOCs during the 2013-2014 academic year and is in the process of developing a second cohort of five MOOCs in AY 2014-2015, in addition to rerunning many of the cohort 1 MOOCs.

In order to support MOOC development, the Office of the Provost created a cross-unit team combining expertise from across the University. This Coordinated Service Center (CSC) has provided the primary support for development as well as recommendations to the Provost on strategy, policy and processes governing the MOOCs. The CSC is led by the Associate Provost for Academic Initiatives in partnership with the Vice President for Information Technology/CIO. Additionally, an operational group was formed to support the day-to-day development of MOOCs. Members of the CSC and the Operations group are shown in Table 1.

Coordinated Service Center

Name	Affiliation
Susie Calkins	Searle Center for Advancing Learning and Teaching
Jake Julia, Chair	Office of the Provost
Marianna Kepka	Office of the Provost
Jen Koh	NUIT/Office of the Provost
Sean Reynolds	NUIT
Joel Shapiro	SPS
Claire Stewart	Library
Bob Taylor	NUIT

Operations Members

Name	Affiliation
Brian Boardman	Legal
Caitlin Frano	SPS
Amy Hall	SPS
Bill Parod	NUIT
Claire Stewart	Library
Harlan Wallach	NUIT

Table 1. Members of the CSC and the Operations group

Faculty engagement in MOOC design and development was solicited through a request for proposals from the Provost. In the first year, the request was issued informally at a faculty open forum about online learning and Coursera. The six faculty members who came forward and remained interested constituted the first cohort of MOOCs. In the second year, given the broader recognition of MOOCs across campus, the Provost sent out an email to all faculty requesting proposals. Proposals went through a formal review process developed by the Faculty Distance Learning Workgroup (FDLW), which included review by the FDLW, the CSC and the Provost. Five proposals were received, approved and funded to form the second cohort.

Each MOOC faculty member or team worked with the CSC to develop the MOOC. Additionally, the faculty met collectively with the cohort and CSC on a monthly basis to share experiences and best practices and weigh in on policy matters where appropriate. In some cases, faculty received additional support from their departments or schools in the form of funding, course relief, TA support/funding, and marketing resources. A full list of cohort 1 and cohort 2 MOOCs, including enrollments where available, is shown in Table 2. Signature track enrollments denote those participants who paid a modest fee for a verified certificate of completion. All other participants enrolled in the course free of charge. Brief descriptions of each of the MOOCs are included in Appendix 1.

MOOC	Lead Instructors	Total Learners Enrolled	Signature Track Enrolled
Cohort 1: 2013-2014			
Everything is the Same: Modeling Engineered Systems	Todd Murphey	20,660	67
Understanding Media by Understanding Google	Owen Youngman	55,391	273
Content Strategy for Professionals: Engaging Audiences for Your Organization	John Lavine Candy Lee	49,715	1,557
Law and the Entrepreneur	Esther Barron Stephen Reed	36,108	229
How Green Is That Product? An Introduction to Life Cycle Environmental Assessment	Eric Masanet	22,771	273
Fundamentals of Digital Image and Video Processing	Aggelos Katsaggelos	60,564	211
	Total	245,209	2,610
Cohort 2: 2014-2015			
Teaching the Violin and Viola: Creating a Healthy Foundation	Stacia Spencer	2,134*	
Power Onboarding	William J. White	1,987*	
Content Strategy Version 2.0	John Lavine Candy Lee		
Scaling Operations: Linking Strategy and Execution	Gad Allon Jan Van Mieghem		
Game On: Mapping a Pathway to Your Career in Health Care	Melissa A. Simon		

Table 2. Cohort 1 and Cohort 2 MOOCs (listed in order of launch).

*as of 8.21.14

From the beginning, one of the goals of the CSC was to ensure that support for MOOC development was flexible and faculty driven. It was recognized that there is no “one way” to build a MOOC and that the CSC and the University would be enriched by a variety of approaches. In the first cohort the approaches to the MOOCs were as varied as the disciplines themselves. Some MOOCs relied very heavily on highly produced video. Others centered around MOOC participant engagement, both online and in person, using discussion forums as well as extensive peer and self assessment. One MOOC was entirely developed by the faculty member with minimal oversight and input from the CSC. At the conclusion of the first year it was recognized that each MOOC was successful, based on the goals laid out by the Provost, notwithstanding very different methods of developing and delivering the MOOC. A broad assessment framework, discussed below, was created to systematically measure the impact and success of each of the MOOCs.

Investment

Investment is defined broadly here and includes time; funding; and intellectual, technological and school-specific investments. The intention is to broadly capture, to the extent possible, all the efforts that have been expended toward the MOOC program whether central, school, individual, tangible or intangible.

Funding

Funding for the MOOCs has come from three sources: central, school, and individual faculty research accounts or grants. All MOOCs have received central funding and several have received funds from schools or the faculty's account. In cohort 1 the average MOOC at Northwestern has received approximately \$30,000 in central funds and about \$10,000 from other sources such as schools and departments. Budgets for the MOOCs generally consist of the following items:

- Learning Design/Course Design
- Course Building on the Coursera platform
- Video production
- Image use/copyright clearance
- Assessments
- TAs and Staff Support
- Various optional and miscellaneous expenses such as: marketing and engagement, animation and online and live MeetUps

Most of these budget items are provided by Northwestern departments, so the funding is reinvested back into the University (for example, Course Design is provided by the School of Professional Studies and Video production is provided by NUIT).

Time

Substantial faculty and staff time have been committed to the MOOC endeavor. While it is difficult to account for some of this time, a summary is provided here.

Collectively, the CSC, plus some of the Operations team, have met biweekly since February 2013, for a total of about 40 hours per staff member (with about 11 staff attending each meeting). Many units have provided support for the MOOC efforts without quantifying the time spent. These include the Office of the Provost, the Library, NUIT, and Office of General Counsel. The unknown number of hours these staff have devoted to MOOCs constitutes an important and significant investment on the part of the University. In some cases, dedicated CSC development support time, outside of the biweekly meetings, is captured in the budget for each MOOC. This is the case for video production (NU Information Technology), course design (School of Professional Studies), and assessment (Searle Center for Advancing Learning and Teaching).

Faculty members developing MOOCs likewise have devoted a substantial amount of time to the endeavor. Many of them report having spent much more time than they initially anticipated in the many assessments and meetings held during and in follow-up to running their MOOCs. This significant time commitment is now being communicated to cohort 2 faculty.

As mentioned above, the Faculty Distance Learning Workgroup spent a proportion of its time to support and advise the MOOC endeavor. In its first year it devoted a significant amount of discussion to developing a process for reviewing and approving MOOCs and other online courses and to advise on policies such as intellectual property and royalties for online courses. In its second year it focused on assessment of existing online programs and future directions for supporting online and blended learning. Over the past two years it has also developed a role in the selection process of the MOOCs. While the group's efforts are not solely devoted to MOOCs, MOOCs have been a central focus.

Additionally, most of the MOOCs would not have been possible without the support of TAs, teaching teams and other course-specific support. In some MOOCs, TAs were funded through the MOOC budgets. In other cases, there were staff or other faculty who also devoted time to developing and delivering the MOOC.

Finally, a substantial amount of assessment work has taken place on multiple levels. The Searle Center has worked with each of the instructors to assess the level of participant satisfaction and to begin to gauge the learning and engagement that takes place within the MOOC. It has also consulted with instructors to create a variety of in-MOOC surveys which they then used to analyze data on everything from learning to geographic distribution to the state of specific professions. At the direction of the FDLW the Searle Center also conducted focus groups of NU students who took Murphey's engineering MOOC as part of their course. Most of this time was captured in the MOOC-specific budgets. Additionally the Searle Center and the Office of the Provost have been assessing the overall MOOC program through an assessment framework, drawing on interviews and surveys with instructors and teaching staff, feedback from the CSC and Coursera staff, as well as examining a range of direct and indirect measures to assess the degree to which the Provost's stated goals concerning Coursera courses have been met (see Appendix 3).

Intellectual

In some ways, the largest investment in the MOOCs may have been intellectual, both in the design of the courses and the reflection on what it means to teach on a massive scale, both for the Coursera faculty as well as the University at large. In addition to the efforts put into designing courses that are run very differently from traditional face-to-face courses with far smaller student numbers, faculty and staff spent considerable time presenting their ideas and experiences in op-eds, newspaper and academic journal articles, presentations, talks and visits. Some op-ed pieces analyzed the data collected from the MOOC, such as Owen Youngman's [article](#) in *The Atlantic* and Eric Masanet's article in the *Journal of Industrial Ecology*. Others, including [Todd Murphey](#), wrote about the reach and potential audiences of the MOOC. All the faculty and many staff presented on topics ranging from the impact of MOOCs on higher education to the effect of hybrid courses on learning and the student experience. Audiences were just as diverse and included professional organizations in specific fields, peer institutions, Northwestern alumni, and community members. The MOOC's rise in popularity in the past two years has piqued curiosity about Northwestern's ventures on campus and in the wider community. The faculty and staff developing the first cohort of MOOCs were at the forefront of explaining and displaying Northwestern's latest intellectual product meeting the Provost's goals of expanding the visibility and impact of Northwestern and its faculty and showcasing what is special about Northwestern's faculty, research and curriculum.

Technical

Mastering a new and fast-changing educational platform required a significant amount of NUIT staff time, particularly during the first three months of engagement with the Coursera effort. Fortunately, the Coursera team in California quickly answered most questions from Northwestern that were not adequately addressed in Coursera's online documentation.

The Coursera platform, especially early on, lacked software application programming interfaces (API) that would allow Northwestern developers to interact efficiently with the Coursera platform to meet our faculty members' special interests in learning analytics, customized user experiences, improved page design, etc. Therefore, NUIT's Academic and Research Technology teams often had to master the "guts" of the Coursera database structure and presentation services in order to achieve the most benefit from this platform for our faculty. This took more time than it would have working with a more mature and open system such as Canvas.

Successfully addressing the unique educational ambitions of each of our faculty members meant that more time has been spent (by support staff and the faculty teaching teams) in negotiating a conceptual and production model for each MOOC. This has been a worthwhile investment, but one that has required more effort than if we had adopted a cookie-cutter approach to MOOC development.

School-specific

As mentioned earlier, all schools that hosted MOOCs were actively engaged in and supportive of MOOC efforts. The schools used this as an opportunity to learn more about massive courses and blended learning, as well as how they could be leveraged to further support the school's mission. The ways in which the schools supported their faculty include:

- Funding for MOOC development and deployment
- Marketing efforts
- Course relief for professors either during design or delivery of the MOOC
- Analysis
- Space
- Organizational/administrative support

Returns

Northwestern's investment in MOOCs is paying off in various ways. Benefits have been gained in the areas of pedagogy, increased external awareness, technology, revenues, and improved processes and policies.

Pedagogy

It was clear from the first few MOOCs that they are impacting teaching and learning, both online and on campus. The CSC assessment measures indicate that each of our faculty members' unique visions for online learning "at scale" has been largely realized. This experimentation has energized their thinking about what can be accomplished in this emerging form of education, and it has increased campus dialogue at Northwestern on these issues.

The MOOCs' positive impact on on-campus learning was perhaps even greater than expected. In almost every cohort 1 course, the MOOC prompted pedagogical innovation in an on-campus course, and in one

instance, a transformation of how the course was taught. Todd Murphey launched his Modeling Engineering Systems course to coincide with his on-campus Engineering Analysis II (EA2) course. He required his Northwestern students to enroll in the MOOC and counted their performance in the MOOC as a substantial portion of their Northwestern course grade. While the experimental model was initially met with student skepticism, it ended up yielding the highest CTECs the instructor, or any instructor teaching this course, had ever received. A follow-up focus group with the students enrolled in the course, as well as conversations with the instructor, indicated a higher level of student engagement and learning than in a course without the MOOC element. Other MOOCs were used to complement on-campus courses or serve as “refresher” courses for students who had previously taken the equivalent on-campus course. In one case, the Coursera platform was used to deliver successfully an existing School of Law course in a new blended online format.

More generally, the MOOCs prompted reflection on student learning and an increased focus on curriculum and curricular innovation. This renewed focus on the mission of teaching has been apparent in the national dialogue about MOOCs, as well as discussion on campus. Among the FDLW, discussions throughout the year shifted from an explicit focus on MOOCs and the processes to support their development to a more holistic consideration of how MOOCs and other learning technologies can improve learning and teaching on campus. The committee ended the academic year with a desire to see increased support for the development and use of blended learning. Indeed, its year-end report to the Provost recommended that there be “greater financial and logistical support to enable the production of” online materials. Similarly faculty and chairs with whom the FDLW met throughout the year were supportive of applying MOOCs and blended learning on campus to enhance the teaching and learning experience.

External Awareness

Increasing awareness of the Northwestern brand could potentially represent a significant return on the investment in MOOCs, but is also the most difficult to measure. While there is currently no systematic way to track the impact of MOOCs on external awareness of the University, there exist some anecdotal data indicating an increase in awareness. In a couple cases, MOOC instructors received inquiries from their MOOC students about Northwestern’s professional master’s programs. It is unclear whether the MOOCs yielded any actual enrollments. However, given the tuition costs and revenue model of most of the professional master’s programs, even one full-paying graduate enrollment would likely offset the costs of production of a MOOC. There is potential to track more effectively graduate enrollment yield from MOOCs as well as to utilize MOOCs more deliberately as a way to generate graduate enrollment. With the appropriate MOOC, there could also be potential to track and increase undergraduate applications.

One specific example of leveraging the MOOC to market specific NU programs took place in the Law and Entrepreneur MOOC which placed a banner ad on its course page to advertise the new School of Law Master of Science in Law (MSL) program. The School of Law also exported the email list of MOOC participants, abiding by NU’s MOOC data sharing policies, to create a listserv for future marketing. It sent a video to the listserv advertising the MSL program garnering over 800 views and 20 clicks through to the website. There was a significant increase of traffic to the MSL website following distribution of the video. (The number of page views to the MSL site increased tenfold from an average of 100 views per day to over 1,000 the day immediately following the email distribution.)

It is clear from the enrollment data that the MOOCs are bringing Northwestern broad international exposure. Seventy- three percent of the over 112,000 enrollees in the cohort 1 MOOCs were from outside the United States representing almost every country in the world. Table 5 shows the top countries from which MOOC enrollees came. Similarly Table 6 depicts the top cities for enrollments. Early analysis of discussion boards shows that international students’ experience with the MOOCs is very positive. While direct benefits are difficult to measure in this early stage, Northwestern is certainly gaining global exposure through its MOOCs’ international learners.

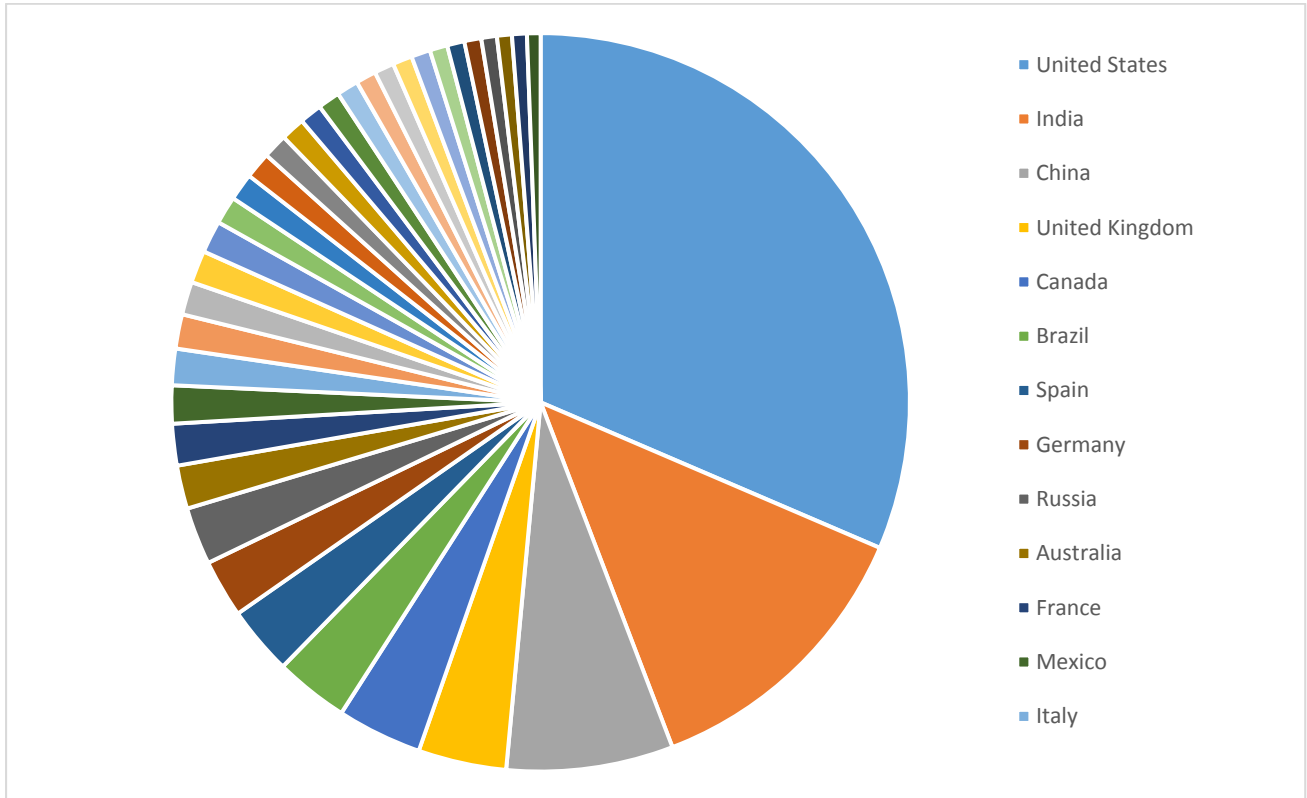


Table 3. Cohort 1 MOOC enrollments by country

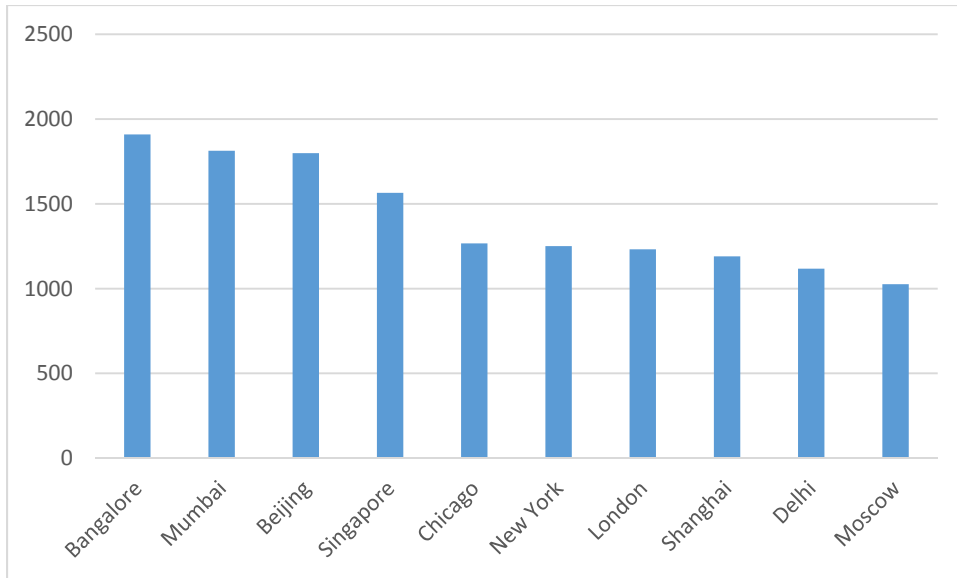


Table 4. Top 10 cities by cohort 1 MOOC enrollment

Technology

There were some notable technological gains from launching the MOOCs. NUIT’s Academic and Research Technology team provided technical support for the MOOCs and gained knowledge from using the Coursera platform and working with NU faculty and Coursera staff.

One example includes the innovative uses of [Google MeetUps](#) in the Understanding Media MOOC to build community among the MOOC participants. The MeetUps were noticed by Google itself which is now considering using the MOOC as a case study for further MeetUp research. Another notable example includes exploration of and development of learning analytics tools that currently serve the interests of our Coursera faculty and educational researchers, but will eventually extend to our larger Canvas community. Technology gains were also reaped through the invention of the “light board” by a faculty member in engineering. While the faculty member did not develop a MOOC, his colleagues in engineering utilized the light board in their MOOCs as a way to deliver content in new and interesting ways, and in training their own NU students in delivering the content.

Engagement with the MOOCs also yielded professional development opportunities that have benefitted NUIT and the University. NUIT was able to give a series of new production challenges (in a variety of subject matter domains) to relatively junior video production staff. The staff rose to these challenges, and we have seen substantial growth in their abilities to manage creative production shoots for educational objectives with our faculty. The CSC operations teams have learned how to better communicate and work with each other, and this has generally resulted in greater capacity for the University to support a range of online and blended learning efforts by our faculty.

Finally, many NU faculty members’ sense of confidence in experimentation with blended learning and online education has increased as a result of the initial Coursera effort. The timing of this growing interest and commitment is fortuitous, especially with the introduction this year on campus of a relatively open and adaptable education platform, Canvas.

Revenue

As outlined in the Overview, the goals of engaging in MOOCs centered on the possibilities of new pedagogical approaches, external reach and technological tools. There was no expectation of significant revenues. However, as a longer-term model for MOOCs is considered, the financial sustainability of the MOOCs should be examined.

As expected, revenue from the MOOCs has been very modest. Through 2014 Q1, Northwestern received about 20% of the total revenue generated based on the revenue sharing agreement between Northwestern and Coursera. Beginning in 2014 Q2, Northwestern has received 32% of revenue based on Coursera's new revenue sharing policy announced in August 2014. Once Northwestern's central and unit costs are recovered, revenue will be shared with MOOC faculty based on Northwestern's Policy on Distribution of Coursera Royalties (see Appendix 2).

Process & Policy

Significant gains have been made over the past year in creating a set of policies and processes to govern and guide the development of MOOCs. The creation of a new, cross-unit model- the CSC- proved to be a very effective, short-term solution to support a new endeavor that combined expertise from areas spread across the campuses. Likewise, the appointment of the FDLW brought together faculty with various levels and types of experiences and viewpoints of online learning yielding rich discussions and possible directions for the Provost.

More specifically, policies were created governing royalties and intellectual property, the latter prompting significant input from faculty. While a copyright agreement has been finalized for MOOC development, the process prompted further, yet-to-be-answered questions about intellectual property policies governing digital assets broadly.

Finally, a broad assessment framework was created in an effort to track and measure the success of each MOOC as well as to gauge the impact of the MOOC program. While some goals are easier to measure than others, this framework will enable a systematic assessment of whether Northwestern's MOOC goals were achieved. In some cases, goals may have to be refined and more specific objectives developed in order to conduct the assessment. The full assessment framework can be found in Appendix 3.

Implications

As expected with any experimental endeavor, there are many implications and potential new directions for Northwestern's MOOC program.

External Environment

Needless to say, the externally-facing MOOCs occupy a quickly changing environment. The "year of the MOOC," as 2012 was dubbed, seems far behind us as more sobering research results and media reactions have come to dominate more recent discussions about MOOCs. While the initial frenzy around MOOCs has died down, so has the immediate negative backlash. This presents an opportunity to examine the Northwestern MOOC experiment in an environment that has stabilized, but still figuring out the purpose of MOOCs and how they fit into traditional higher education missions of research,

teaching and service. Furthermore, this still malleable environment allows Northwestern to continue to be a leader and shape the evolution of MOOCs and online learning.

There are also several specific developments that may impact the direction of Northwestern's MOOCs. Early research on MOOCs has consistently shown that the majority of those taking MOOCs already have a degree, raising some questions about the motivation for offering MOOCs. One of the Provost's goals was to increase access to higher education to those who currently have limited access. This may prove to be less relevant or more difficult to achieve going forward. As more MOOCs are produced, and their initial hype dies down, there tend to be fewer enrollees in each MOOC and fewer signature track completers (those that pay a modest fee for a certificate). Sebastian Thrun's Artificial Intelligence MOOC, which in many ways set off the MOOC craze, had 160,000 students with very limited marketing. Today's average Coursera MOOC has about 30,000- 40,000 enrollees. Coursera has seen the highest demands among technical courses particularly those in computer science disciplines. These trends may also affect the number and types of MOOCs Northwestern chooses to develop.

New Directions

There are several potential new directions for Northwestern to consider at this juncture. Coursera has begun offering MOOC specializations, or a series of at least three MOOCs that build on one another and include a capstone project. Early returns show incrementally higher enrollments and signature track enrollments for the specializations, but this may just be a result of offering a new product. Developing a series of courses would entail a significant investment from Northwestern. It is unclear if there is faculty interest in this type of development.

A potentially more promising option is offering MOOCs specifically and exclusively geared toward NU alumni. Northwestern's first alumni MOOC was offered this past spring in the second running of "Content Strategy for Professionals." While enrollments were lower than they would have been in an open MOOC, it provided an opportunity to engage alumni. There were 1,456 total enrollments with 44 learners on the Signature Track engaging alumni from all schools except NU-Qatar. In a post-course survey (with a 19 percent response rate), 97 percent of respondents indicated that they would be interested in future MOOC opportunities for alumni sponsored by the Northwestern Alumni Association. Future alumni MOOCs merit continued exploration.

A similar idea entails offering a MOOC geared toward local enrollments. This idea is contemplated in the upcoming "Game On: Mapping a Pathway to Your Career in Health Care" MOOC which aims to build a community for drawing healthcare professionals. Similarly, the "Modeling Engineering Systems" MOOC sought to attract local Chicago Public School system students, among other students with limited access to high school engineering courses.

As Coursera continues to refine its business model and seek revenue streams, it is exploring a new model of "On Demand" MOOCs. These are MOOCs which run continually; users can sign up at any time and immediately start the course. This is a departure from the idea of discrete cohorts in a MOOC that is offered for a specified amount of time starting and ending on predetermined dates. Currently three MOOCs on Coursera are offered in this new format, but Coursera is encouraging University partners to consider moving to this model as it rolls it out over the next year. On Demand MOOCs, which will require less involvement from the professor, will have pedagogical and organizational implications which will need to be closely considered with faculty input.

With the transition to the Canvas Learning Management System, there exists a potential opportunity to offer MOOCs on the Canvas platform, instead of Coursera, and retain a much greater portion of the revenue generated. This idea is currently being explored, but is still in its infancy. Key questions have yet to be answered, such as what are the drawbacks and costs or opportunity costs of delivering a MOOC through Canvas. However, the Canvas platform may provide a mechanism to offer MOOCs more directly to interested students. Simultaneously, potential new revenue share arrangements are being explored with Coursera.

The engagement and marketing opportunities for MOOCs are ripe for further exploration. These were touched on by a University-wide marketing and alumni engagement group that convened several times last year, but there remain many more possibilities. This summer the Vice President for Global Marketing and Chief Marketing Officer will participate in a forum with Coursera instructors to begin to delve further into marketing the individual MOOCs as well as leveraging the MOOCs to strengthen the Northwestern brand. For example, one possible idea for MOOCs would be to utilize them as a testing ground for potential new professional master's programs to gauge market demand for a particular discipline. The MOOC could then also be used to market the program.

While not specific only to MOOCs, the global attention on online learning has increased the dialogue on campus to a more holistic consideration of blended and online learning tools to enhance teaching and learning at Northwestern. Any future directions for the MOOCs should consider this desire to reap local pedagogical benefits for our faculty and students. As indicated, this happened organically with the first cohort of MOOCs; continuing this practice could be a more deliberate strategy going forward.

Recommendations

Given what we have learned so far from the Northwestern MOOC experiment and the changing external environment, this report lays out several recommendations and considerations for next steps.

Recommendation: Continue the MOOC program

Considerations:

- *Long-term financial sustainability of the program*

Considering that the decision to launch Northwestern MOOCs was truly to experiment with new technology and modes of pedagogy, the primary questions are whether Northwestern should continue the experiment and how. One way to inform this decision is to consider the extent to which the University has been successful in meeting each of the goals the Provost initially laid out. This assessment is currently taking place, spearheaded by the Searle Center for Advancing Learning and Teaching. Another consideration is the long-term financial sustainability of the project given low levels of revenue generated by the MOOCs and an as-of-yet undetermined business/revenue model for Coursera. Based on data collected to date, it is recommended that the University continue its investment in the MOOC program and continue to seek ways to make the program financially sustainable.

Recommendation: Develop a longer-term strategy to guide future MOOC development

Considerations:

- *Types of programs and disciplines Northwestern showcases*
- *Desire to present Weinberg disciplines through MOOCs*
- *New models for MOOC delivery through Coursera*
- *New platforms for MOOC delivery*

If the decision is made to continue the development and delivery of Northwestern MOOCs, the overall goals for the program should be reviewed and refined into a longer-term strategy that fits into the University's strategic plan. Among other elements, this strategy needs to consider the disciplines and courses that Northwestern chooses to showcase to the world via the Coursera or other platforms. One evident gap in the first two cohorts of MOOCs is the absence of any MOOCs from the Weinberg College of Arts & Sciences (WCAS). This gap should be explored further to determine whether the "MOOC experiment" broadly supports investment in teaching and learning across campus especially given that in many ways WCAS represents many of Northwestern's core academic disciplines. WCAS faculty support of increasing resources for online and blended learning is somewhat inconsistent with the absence of any WCAS MOOCs. New models for MOOC delivery through Coursera and Canvas should also be considered when developing the strategy.

Recommendation: Develop a longer-term support structure for MOOC development

Considerations:

- *Appropriately leveraging current expertise across campus*
- *Balancing support for MOOC development with support for other blended learning initiatives*
- *Continuing the CSC model to the extent that it is successful while not overly taxing its members*

A longer-term support structure for MOOC development should also be considered. While the cross-unit CSC has proven a very effective model for the "start-up" phase of the MOOC project, it likely will not be able to keep up with demand if more MOOCs are developed while existing ones are rerun. A growing emphasis and interest in blended learning underlines the need for a stable ongoing structure to guide and support future curricular developments.

Recommendation: Review the governance structure for blended learning

Considerations:

- *Assessing current structure to ensure that it meets longer-term governance needs*
- *Maximally leveraging and providing linkages between existing committees to provide oversight and guidance of future blended learning directions*
- *Balancing governance of MOOC development with governance of other blended learning initiatives*

Several groups currently exist to advise, guide and govern blended learning initiatives including, most prominently, the Provost-appointed Faculty Distance Learning Workgroup and NUIT's Governance Educational Technology Advisory Committee (ETAC). The current structure should be reviewed to ensure that it effectively and efficiently provides appropriate guidance to the Provost, Vice President for Information Technology/CIO, and other senior leaders. If it is determined that both the FDLW and ETAC

will continue to serve a governance role, then each committee's role and purview, as well as the communication between the committees, should be clearly delineated.

Recommendation: Address questions of intellectual property

Considerations:

- *Need to define intellectual property for all digital assets*
- *Importance of faculty input into intellectual property policy*

Finally, there is still work to be done to address questions of intellectual property (IP) when it comes to digital assets. An IP agreement between Coursera, the University and the faculty member has been developed and finalized after much input and revision. However, it is limited to Coursera projects. The treatment of other digital assets should be addressed in the University's overall copyright policy to protect the University and faculty member alike. Faculty input should be sought in developing the revised copyright policy.

Conclusion

Despite some recent criticism of MOOCs in the media, the conversations about MOOCs on campus remain optimistic about the potential of this new medium. Funding received for MOOC development at Northwestern was used judiciously and allowed for subsequent edits and additions to MOOCs that were run a second time. There is a general sense that it behooves the University to continue to produce MOOCs in the near future, especially as the MOOC environment changes quickly and new opportunities continue to arise. However, in this second, more mature phase of the experiment, it would be beneficial to develop more concrete goals and a clearly defined strategy to guide MOOC development going forward. A clear strategy will likely feed the positive momentum and lead to increasingly innovative developments in teaching and learning on campus.

Appendix 1: Descriptions of MOOCs

Cohort 1

Understanding Media by Understanding Google

Owen Youngman

Knight Professor of Digital Media Strategy

Medill School of Journalism, Media, Integrated Marketing Communications

Fall 2013, Spring 2014

Google Inc. is one of the key success stories of the Internet era. The company has expanded beyond its original search business through innovation and acquisition to touch the lives of nearly every person who lives life online. For example, Americans spend more than 3,400 hours per year using consumer media, the field where Google's impact is most profound, and citizens around the world must understand what the company has wrought not only to control our offline and online environments, but also to interact and engage successfully with anyone in our professional and personal lives.

Enrollees in this course learn how to understand the tactics that modern media companies, journalists, marketers, politicians, technologists, and social networks are using to reach them and affect their behavior. They learn how to adopt strategies that put them on an even footing with these entities in achieving their own communications goals. They

- think about, react to, and write about half a dozen important books about Google;
- read a sampling of newspaper and magazine reportage from Google's entire history;
- monitor news sites and specialized blogs about the company and its competitors;
- take note of their own usage of Google and other online resources; and
- learn how to anticipate the future impact of the company and its competitors on information consumption, creation, and distribution.

Everything is the Same: Modeling Engineered Systems

Todd Murphey

Associate Professor of Mechanical Engineering

Robert R. McCormick School of Engineering and Applied Science

Fall 2013, Winter 2014

Students in this class will learn modeling and analysis techniques applicable to electrical, mechanical, and chemical systems. This “systems” view, that focuses on what is common to these different physical systems, has been responsible for much of the progress in the last several decades in aeronautics, robotics, and other engineering disciplines where there are many different technologies working together.

Starting with algebraic descriptions of individual components (such as resistors), the class develops tools for modeling engineered systems. Differential equations are key ingredients, so we will spend significant time learning how to derive differential equations from component descriptions. One of the key ideas in this class is that electrical, mechanical, and chemical systems may seem very different from each other but often have very similar behavior, allowing us to draw powerful analogies between them. Case studies from several areas of engineering will be used to illustrate the modeling techniques, including examples from robotics, power networks, exoskeletons, biomechanics, system identification, and active sensing. Students will be encouraged to do hands-on experiments that demonstrate the techniques.

Topics studied will include:

- What does it mean to model a physical system?
- Newton's laws
- Mechanical components connected together
- Chemical diffusion
- Laws governing electrical behavior
- Circuits and electrical components connected together
- Analogies between physical systems
- Diffusion is everywhere

This MOOC was integrated into Todd Murphey’s on-ground Engineering Analysis 3 course. Northwestern students watched the online lectures and completed the online homework sets to prepare for their in-class discussions.

Content Strategy for Professionals: Engaging Audiences for Your Organization

John Lavine

Professor

Director, Media Management Center

Medill School of Journalism, Media, Integrated Marketing Communications

Candy Lee

Professor

Medill School of Journalism, Media, Integrated Marketing Communications

Winter 2014, Spring 2014 (Northwestern alumni only), Spring 2015

Content Strategy is a conversation that provides thought-leadership. It starts a “conversation” with users and stakeholders inside and outside an organization. Conversations are the natural way people think about complex issues. Conversations also enable people to develop “stories,” which lead to understanding and helpful mental pictures. Content Strategy practitioners are at all levels of the best enterprises – in all departments and sectors from the top leader to the newcomer in the ranks.

In this complex information age, forward-thinking employees know that if they and their organizations are to thrive, they need to go beyond their job descriptions. They must master the most demanding communications frontier – creating engaging, strategic, honest stories and information that is valued by their most important audiences. In turn that will make their enterprise stand out.

Regardless of their area of work, position or expertise, Content Strategy practitioners know how to use words, pictures, video, and social and mobile media to interact with their most important constituents with trustable, actionable information that the audience values and will use. The strategic content they produce enhances the user’s lives and deepens their understanding and engagement with the organization.

Content Strategy is similar to the best examples of journalism, but it is done by non-journalism organizations. Content Strategy is always honest, trustable, and transparent. It tells all sides of every story it reports. Often it is also deeper and directed at topics and audiences that traditional journalism under-serves or does not reach.

This MOOC serves professionals who want to learn to create trustable, engaging and often interactive content to advance their enterprise’s future. This MOOC is for people anywhere in an organization who have content development experience and now want to significantly improve their abilities to understand audiences and develop strategic words, pictures, graphics and videos to convey their organization’s most important goals.

Law and the Entrepreneur

Esther Barron

Clinical Professor of Law
Director, Entrepreneurship Law Center
Northwestern University School of Law

Stephen Reed

Clinical Professor of Law
Assistant Director, Entrepreneurship Law Center
Co-Director, JD-MBA Program
Northwestern University School of Law

Fall 2013, Fall 2014

Are you a passionate entrepreneur with a new business idea, but feeling intimidated by the law? Or perhaps you are a lawyer or aspiring lawyer looking to break into the exciting world of start-ups? This course addresses the legal aspects of entrepreneurship, and is appropriate both for entrepreneurs and lawyers who hope to represent entrepreneurs. Entrepreneurs face many challenges as they pursue a new business idea. With the right legal tools, they can take steps that provide significant legal protections and avoid future liability.

Among other subjects, the course will cover American law on choice of entity (corporation, limited liability company, partnership, sole proprietorship), selection of a company name and trademark, protecting intellectual property of the business with patent, trade secret, trademark and copyright law, structuring agreements among owners, venture capital and other equity and debt financing arrangements, and the relationship between attorneys and entrepreneurs. In addition to discussing applicable legal rules, the course will focus on practical steps entrepreneurs and their lawyers can take to build and protect a new venture. The goal of the course will be for students to have a better understanding of practical ways they can protect a new venture and spot potential issues from a business-legal perspective.

How Green Is That Product? An Introduction to Life Cycle Environmental Assessment

Eric Masanet

Morris E. Fine Junior Professor in Materials and Manufacturing
Associate Professor of Mechanical Engineering
Associate Professor of Chemical and Biological Engineering
Robert R. McCormick School of Engineering and Applied Science

Winter 2014, Spring 2014 (Northwestern students only)

Paper or plastic? Hybrid or conventional vehicles? Which is better for the environment? To answer these questions, one must take a holistic systems view using a quantitative approach known as life cycle assessment.

Life cycle assessment (LCA) is a fundamental method for assessing the environmental impacts of products and technologies from a "cradle to grave" systems perspective. It is an essential tool for anyone who performs environmental analyses or uses the results of such analyses for decision-making.

The course will provide an introduction to LCA methods and applications. Students taking this course will emerge with a solid understanding of why an LCA systems perspective is important, basic skills for sound application of the LCA method and proper interpretation of its results, and an appreciation for the strengths and limitations of LCA in practice. The course will cover the four major steps in LCA: (1) goal definition and scope; (2) life-cycle inventory compilation; (3) life-cycle impact assessment; and (4) interpretation and management. The course will include a hands-on modeling project, which the students will perform in parallel to the lectures to reinforce learning objectives and to gain experience in LCA application.

Topics studied include:

- The basics of energy and mass flows and exchanges with the environment
- Working with unit processes and unit process inventory data
- Study design: goal definition, system boundaries, and functional units
- Compiling the data: life-cycle inventory methods (process-based and input-output methods)
- Understanding impacts: life-cycle impact analysis for land, air, water, and health
- Building a simple LCA model using spreadsheets
- Results interpretation and reporting

Fundamentals of Digital Image and Video Processing

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AT&T Research Professor of Electrical Engineering and Computer Science
Robert R. McCormick School of Engineering and Applied Science

Spring 2014

Digital images and videos are everywhere these days – in thousands of scientific, consumer, industrial, and artistic applications. Moreover they come in a wide range of the electromagnetic spectrum - from visible light and infrared to gamma rays and beyond. The ability to process image and video signals is an incredibly important skill to master for engineering and science students, software developers, and practicing scientists. Digital image and video processing continues to enable the multimedia technology revolution we are experiencing today. Some important examples of image and video processing include the removal of degradations images suffer during acquisition, and the compression and transmission of images and videos for economical storage and efficient transmission.

This course will cover the fundamentals of image and video processing. We will provide a mathematical framework to describe and analyze images and videos as two- and three-dimensional signals in the spatial, spatio-temporal, and frequency domains. In this class, not only will you learn the theory behind fundamental processing tasks including image and video enhancement, recovery, and compression, but you will also learn how to perform these key processing tasks in practice using state-of-the-art techniques and tools. We will introduce and use a wide variety of such tools such as optimization toolboxes and statistical techniques. Emphasis on the special role sparsity plays in modern image and video processing will also be given. In all cases, example images and videos pertaining to specific application domains will be utilized.

- Introduction, Image and Video Processing vs Image and Video Analysis vs Computer Vision, the electromagnetic spectrum, applications of image and video processing
- 2D and 3D signals and systems, linear and shift invariant systems (convolution)
- 2D and 3D Fourier transform, 2D and 3D discrete-Fourier transform, uniform sampling (rectangular, arbitrary geometry)
- Motion estimation and its applications
- Image and video enhancement (e.g., edge detection, noise filtering, histogram equalization, inpainting)
- Image recovery (restoration, super-resolution)
- Video recovery (restoration, super-resolution)
- Lossless compression
- Image compression techniques and standards
- Video compression techniques and standards
- Image and video analysis (e.g., 2D and 3D segmentation, anomaly detection, clustering)
- Sparsity-based advances in image and video processing

Cohort 2

Teaching the Violin and Viola: Creating a Healthy Foundation

Stacia Spencer

Senior Lecturer

Henry and Leigh Bienen School of Music

Fall 2014

Creating a Healthy Foundation represents a holistic approach to beginning violin and viola pedagogy, offering both new and seasoned string teachers a step-by-step exercise guide and repertoire that will have their music students looking and sounding terrific. Explore the fundamental principles and early stages of playing violin and viola through a series of video lectures and demonstrations, including:

- Master classes with some of the world's top string pedagogues.
- Individual lesson demonstrations of teaching violin and viola set up, left and right hand technique, and pieces from the early violin and viola repertoire.
- Group lesson demonstrations of teaching music theory, ear training, and fun activities that encourage good playing habits.
- A "field trip" to the violin shop, where we will outfit a new beginning student with a proper instrument and bow.

Students will also engage in a series of discussions and reflections with colleagues and peers across the country. Upon completion of this course, string teachers will return to their studios with confidence, a new curriculum, and a renewed approach to sharing with their students the joyful experience of making beautiful music.

This course will be taught over ten weeks in conjunction with the instructor's on-ground course in Fall 2014 so that enrolled students will have access to this expanded knowledge base. This course will be especially valuable to private studio music teachers and public school teachers worldwide who are not likely to have access to string pedagogy information, music students and Northwestern alumni interested in continuing education and one-on-one advice with specific student challenges, and students who currently have limited access to higher education.

Power Onboarding

William J. White

Professor, Industrial Engineering and Management Science
Robert R. McCormick School of Engineering and Applied Science

Fall 2014

In an engaging six-session format, Power Onboarding will provide practical, easy-to-use tools to guide individuals transitioning to new jobs and new graduates entering the permanent workforce for the first time. Individuals change jobs multiple times in their careers. The average person learns on the job after they start. By reflecting, planning, achieving knowledge, and building relationships before day one new employees will have a head start in reaching proficiency in their new assignments.

When the course is complete students will have developed a custom, actionable personal onboarding plan that will set them up for success in their new role. Students' plans will contain individualized, detailed steps and actions to be achieved ninety days before starting, thirty days before day one, and what to do on the first day on the job. Ultimately, by using this plan as a guide to their activities before their first day on the job, students will arrive superbly prepared to achieve competency faster than the typical person starting a new job.

The course materials developed for this MOOC will be integrated into two on-ground courses: IEMS 342 Organizational Behavior and OPNS 925 The New General Manager.

Content Strategy Version 2.0

John Lavine

Professor

Director, Media Management Center

Medill School of Journalism, Media, Integrated Marketing Communications

Candy Lee

Professor

Medill School of Journalism, Media, Integrated Marketing Communications

Spring 2015

Regardless of their department, area of work, or expertise, Content Strategy practitioners know how to use words, pictures, video, and social and mobile media to interact with their most important constituents with trustable, actionable information that the audience values and will use. The strategic content they produce enhances the audience's lives and deepens their understanding and engagement with the organization.

In this six-week course, students will learn more about how to create credible, trustable, engaging, transparent content to advance their enterprise's future. By participating, students will have the opportunity to improve their abilities to understand audiences and develop strategic words, pictures, graphics, and videos to convey their organization's most important goals.

Each week, instructors may use a combination of lecture videos, learning questions, case studies, and best practice examples from organization leaders around the globe to teach students to investigate at least one major theme in content strategy. Content Strategy 2.0 will build on the framework established by the introductory MOOC in this series, Content Strategy 1.0, incorporating deeper investigations into topics identified as the most important by the thousands of professionals who participated in the first MOOC.

This course will be valuable to content and communications professionals around the world working in for-profit, non-profit, volunteer, and government organizations. This course will also be of interest to Northwestern alumni in companies large and small, freelancers, and lifelong learners.

Scaling Operations: Linking Strategy and Execution

Gad Allon

Professor of Managerial Economics & Decision Sciences
J. L. Kellogg School of Management

Jan Van Mieghem

Harold L. Stuart Professor of Managerial Economics
Professor of Operations Management
J. L. Kellogg School of Management

Spring 2015

In this course, using a combination of models, case discussions, and readings, students will examine how to build and evaluate the “operating system” of a business and maximize value by tailoring a firm’s operational competencies, assets, and processes to a specific business strategy. Each week, instructors will focus on a key decision in operations strategy and lead students through an in-depth study of one major case, using mini-lectures, presentations, and qualitative discussion of other examples.

The anticipated mix for the course material will be half qualitative and half quantitative. Several cases will be approached from a general manager’s standpoint, so all functional issues will be addressed. The instructors will employ a data-driven approach, using realistic data for the tools and detailed operational analysis. As a result, the strategic decisions that students learn will be grounded in an operational reality and will be directly applicable to their businesses.

By the end of the course, students will be able to formulate an operations strategy and understand the key elements and decisions involved. Students will be able to analyze key drivers and decisions for each element, evaluate them both qualitatively and financially, and develop recommendations and implementation plans.

Entrepreneurs and managers of small product companies that want to scale their businesses, Northwestern alumni looking for an update on state-of-the-art practices in operations strategy, and anyone else across the globe interested in learning more about operations and supply chain management, general management, and management consulting will want to take this eight-week course.

Game On: Mapping a Pathway to Your Career in Health Care

Melissa A. Simon MD MPH

Vice Chair of Clinical Research Department of Obstetrics and Gynecology
Associate Professor and Co-Program Leader Cancer Control and Survivorship
Northwestern University Feinberg School of Medicine

Spring 2015

This course will provide students with professional skills, resources, and support that will enable them to successfully explore, envision, and pursue their goals in a range of health care careers. Students will create an avatar for the health care profession of their choice, and throughout this six-week course, explore their interests and discover opportunities through a virtual voyage to a career in health care.

Upon successfully completing this course, students will have:

- An increased interest in, and understanding of, health care career paths and professions.
- Acquired the basic building blocks of leadership skills relevant to health care careers, including: working in a team, effective interpersonal communication, goal setting, identifying personal strengths, and embracing diversity.
- The confidence and skills to build social and professional networks for potential internships, jobs, mentors, programs, and schools for advancing one's health care career.
- The skills to apply to potential career opportunities, including: writing an effective resume/letter, setting up interviews, preparing for interviews, and having a professional online presence.
- An understanding of the financial costs associated with pursuing the health care career of their choice and the skills to identify potential resources available to assist their pursuit.

This course will be valuable to a wide-ranging audience interested in pursuing health careers, as it will provide students with an understanding of health career paths and tangible skills that would improve their opportunities for employment, internships, and entry into undergraduate, graduate, and technical programs. Teachers, counselors, and educators may also find this course useful as the materials presented, skills taught, and resources made available can enhance their own curriculum. By specifically targeting non-traditional students from diverse backgrounds through this MOOC, the instructor aims to promote health equity by bolstering the pipeline of underrepresented students pursuing careers in health care and research.

Appendix 2: Policy on Distribution of Coursera Royalties

Final- Revised Spring 2014

Under the University's contract with Coursera, in the "Coursera Monetization" option, Coursera collects revenue and pays shares to the University in two ways:

- 15% of gross revenue for each course, depending on length and "production value"
- 20% of gross profits on the full set of the University's Coursera courses.

If the "University monetization" option is selected, the percentage of the gross revenue "to be determined" is shared between Coursera and Northwestern.

The University wishes to share these prospective revenues in such a way that recognizes the University's substantial investment, faculty's large contribution of time and expertise, and schools' and departments' efforts.

Mirroring the University's Invention and Patent policy, the University would receive all revenue until its initial investment in the MOOC is recouped. Once that baseline has been covered, the formula for sharing royalties is proposed as follows:

Revenue would be divided-

- 35% Faculty Creator(s)
- 35% Central Administration
- 15% School
- 15% Department

Consistent with current Invention and Patent policy, for revenue over \$50 million, income would be divided:

- 33% Faculty Creator(s)
- 47% Central Administration
- 10% School
- 10% Department

Under the patent policy, income is divided equally if there are multiple inventors. This principle should be adopted for Coursera courses with multiple faculty creators. Under the patent policy, if the inventor has multiple school/department affiliations, in general the income goes to the school/department that administered the inventor's salary in the relevant academic year. In the case of Coursera courses, a better principle might be to award royalties to the department/school whose normal courses/curriculum the Coursera course is based on; in practical terms, the income would normally go to the department/school of the chair/dean that approved the Coursera course proposal.

Considerations on Monetization

The University has the right to choose the monetization model on a course-by-course basis. In most cases, the Coursera Monetization Model will be utilized. Under this model, Coursera is responsible for figuring out ways to generate revenue, marketing, collecting revenue, etc. and then pays a share to Northwestern as described above.

The alternative is the “University Monetization Model.” This model will only be used in very select cases. Under this model, NU would be responsible for generating and collecting revenue. The advantage of this model is that NU could negotiate a higher rate than 15%. The disadvantage is that we would then assume the burden of figuring out how to generate revenue, collecting that revenue, etc. For example, we would have to find external partners to whom to license course content or people willing to pay us for access to the courses. If the University Monetization Model is utilized, Coursera’s Signature Track cannot be used.

Appendix 3: Assessment/Evaluation of First Cohort of Coursera Courses at Northwestern

Northwestern’s Goals for Coursera, as articulated by the Provost:

- Allow faculty and the university to explore new pedagogical and course delivery methods;
- Promote and support innovative efforts by faculty to develop and deliver online courses;
- Provide access to meaningful learning opportunities, without geographical or financial restrictions, to non-traditional students, current students and alumni, and those who currently have limited access to higher education;
- Evaluate learning outcomes from new modes of education;
- Expand the visibility and impact of Northwestern and its faculty;
- Showcase what is special about Northwestern’s faculty, research and curriculum;
- Help shape the evolution of higher education.

Goals: Statements of broader impact.

Objectives: Statements that indicate intended or desired outcomes; should be measurable and align with goals.

Methods/Activities: Strategies, approaches, activities to achieve each objective

Assessments: Instruments and measures to determine if—and to what extent—objectives have been achieved. Assessments may be both formative (focusing on development and improvement) and/or summative in nature (focusing on impact).

Objective	Activity/method	Assessments
<p><i>Allow faculty and the university to explore new pedagogical and</i></p>	<ul style="list-style-type: none"> • Create Coordinated Service Center (CSC) to serve as central point of support for faculty <ul style="list-style-type: none"> ○ Ongoing biweekly meetings ○ Ongoing discussions about methods to support faculty exploration 	<ul style="list-style-type: none"> • Quarterly review of purpose, methods, members and scope

<p><i>course delivery methods;</i></p> <p><i>(Promote faculty skill/knowledge in teaching via MOOCs)</i></p>	<ul style="list-style-type: none"> • Offer information sessions about Coursera to broader university audience <ul style="list-style-type: none"> ○ Faculty presentations and roundtables (to share methods and ideas) 	<ul style="list-style-type: none"> • Feedback from participants on usefulness of sessions/ programs • Number of sessions • Attendance at sessions • Variety of participants by discipline at sessions • Number of new proposals
<p><i>Promote and support innovative efforts by faculty to develop and deliver online courses</i></p>	<ul style="list-style-type: none"> • Train faculty and support staff on Coursera platform and online pedagogy <ul style="list-style-type: none"> ○ Training sessions for Coursera faculty and support staff ○ Individual and team consultations for each Coursera faculty member ○ Faculty/staff experimentation with different methods and tools (basecamp) ○ Ongoing monthly meetings for Coursera faculty to share ideas with each other 	<ul style="list-style-type: none"> • Survey of TAs and support staff to gather information about their training needs • Surveys of faculty to gather feedback about effectiveness of different tools, training, etc. • Pre-Post interviews with Coursera faculty to gauge their overall experience with training and implementation • Formal debrief with faculty members by Office of the Provost to gauge faculty satisfaction with training and support
	<ul style="list-style-type: none"> • Create MOOC proposal process (e.g. determination of criteria, timeline, expectations) • Create of set of documents to be used for later Coursera cohorts, including MOOC production process, budget worksheets and templates, timelines, “Frequently Asked Questions,” “Lessons Learned,” copyright information documents • Creation of repository of course products (quizzes, peer/self-assessments, etc.) to share with others 	<ul style="list-style-type: none"> • Periodic faculty input/review of developing documents • Periodic review of MOOC proposal process by CSC and Faculty Distance Learning Workgroup for new and existing courses • Number of proposals submitted each year • Feedback from submitters on ease of submission process • Feedback from users on usefulness of documents • Feedback from faculty on ease of submission process • Feedback on repository of course products (ease of use, ease of accessibility) • Number of course proposals submitted • Pre-post faculty survey about Coursera experience

Objective	Activity/method	Assessments
<p><i>Provide access to meaningful learning opportunities, without geographical or financial restrictions, to non-traditional students, current students and alumni and those who currently have limited access to higher education</i></p>	<ul style="list-style-type: none"> • Create courses that are technologically, financially, culturally, linguistically accessible and adhere to the principles of universal design 	<ul style="list-style-type: none"> • Expert review of courses during development phase to ensure that they meet with principles of universal design • Review during planning phase of costs associated with courses • Numbers of students from different countries • Numbers of participants (enrolled, audited, completed) who did not speak English as a first language • Costs to students for each course (texts, materials certificate) • Number of students who completed signature track in each course • Number of students who accessed close captioning and real-time translation • Completion and retention rates of students from different demographic/SES groups • Survey feedback from participants in groups of interest on quality of the experience, ease of access • Survey of individuals from groups of interest who began but did not complete courses to learn reasons for non-completion

Objective	Activity/Method	Assessment
<p><i>Evaluate learning outcomes from new modes of education</i></p>	<ul style="list-style-type: none"> • Consistent use of quality learning objectives for each MOOC that are aligned with teaching methods and activities with assessments, with expert coaching and review • Expert consultation with faculty teaching MOOCs on teaching methods 	<ul style="list-style-type: none"> • Ongoing discussion/expert review of course elements (learning objectives, teaching methods/activities and assessments) between faculty and experts (e.g. SCS instructional designers, Searle staff) • Informal feedback from students in courses • Review of student discussion boards (e.g. forum threads, questions raised) • Peer review of course assignments (peer assessment)

		<ul style="list-style-type: none"> • Assessment of student work (quizzes, assignments, overall “grades” as applicable) • Itemized analytics (e.g. percentage of video views; percent correct on specific assignments) • Pre-post student survey (includes conceptual/content-related questions) • Satisfaction in student surveys/discussion boards) • Written reflections/analyses from instructors (e.g. Youngman’s newspaper articles; Masanet’s Critical account) •
	<ul style="list-style-type: none"> • Examine variation in different models (team-taught/individual faculty; hybrid) 	<ul style="list-style-type: none"> • Ongoing feedback with instructors • Student focus groups (e.g. Murphey hybrid) • Bi-weekly meetings • Discussion boards/comments • Pre-post faculty interviews • Satisfaction in student surveys/discussion boards) • Post-course debrief with each instructor • Student numbers (enrollment, retention, completion)
Objective	Method/Activity	Assessment
<i>Showcase what is special about Northwestern’s faculty, research and curriculum</i>	<ul style="list-style-type: none"> • Determine audience for each MOOC • Develop individual marketing plan for each MOOC to target specific audiences 	<ul style="list-style-type: none"> • Ongoing conversations with faculty • Pre-post demographic information (enrolled, audited, completed)
<i>Expand the visibility and impact of Northwestern and its faculty</i>	<ul style="list-style-type: none"> • Create production videos 	<ul style="list-style-type: none"> • Instructor feedback • Student feedback • Discussion threads/questions posed • Individual views/hits •
	<ul style="list-style-type: none"> • Disseminate findings & results in a variety of media outlets 	<ul style="list-style-type: none"> • Tweets and social media • Number of conference presentations and speaking

		<p>engagements on MOOC-related issues (internal and external) for each faculty member</p> <ul style="list-style-type: none">• Number of publications of MOOC-related articles in popular/scholarly journals• Increase in admissions in selected departments and or programs (eg. Medill, ISEN)• Numbers of Northwestern alumni participated in MOOC
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