

Leveraging MOOCs to bring entrepreneurship and innovation to everyone on campus

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Leveraging a MOOC to bring entrepreneurship and innovation to everyone on campus

Introduction

With a rise in college students taking online courses, and an increasing number of students interested in entrepreneurship and innovation courses, this intersection creates an emerging demand for online entrepreneurship and innovation courses. In parallel, with the recent proliferation of massive open online courses (MOOC), universities worldwide are exploring how to leverage these offerings to enhance student education at their home universities. Simultaneously, select universities are interested in expanding their students' exposure to entrepreneurship and innovation.

This paper examines steps taken by the University of Maryland to develop and translate their entrepreneurship and innovation MOOC titled "Developing Innovative Ideas for New Companies: The First Step in Entrepreneurship" to a for-credit, campus-based online offering to serve thousands of students in entrepreneurship and innovation. Leveraging the experience of teaching six MOOC sessions with over 300,000 students globally and the University's experience in entrepreneurship education, the outcome of this effort is an online course for students on campus to learn entrepreneurship and innovation on a large scale at a low cost per student.

By combining the University's experiences in entrepreneurship and innovation courses with new learning gathered from experimentation, evaluation, and student feedback from the MOOC offering, this new for-credit mini-MOOC course's strategic design and development will be detailed in this paper. Using MOOC survey results, engaging course content, and this actionable case study, educators will have insights on how to launch mini-MOOCs on entrepreneurship and innovation on their campus.

Overview of the MOOC

In January 2013, the University of Maryland launched its first MOOC with "Developing Innovative Ideas for New Companies: The First Step in Entrepreneurship" on the Coursera platform. This entrepreneurship MOOC was designed to assist aspiring entrepreneurs worldwide in developing great ideas into great companies. Using proven content, methods, and models for new venture opportunity assessment and analysis, students are taught how to identify and analyze entrepreneurial opportunities. Value propositions, customer segments, strategic alliances, and business modeling are core elements taught in the course. The initial steps to creating a business plan and raising financial capital to launch the firm are also examined.

The introductory, college freshman-level course was designed for those interested in learning about innovative idea generation and new venture creation. This course did not require a background in business or any specific area. A desire to build knowledge and capabilities were the only requirements for entry.

From MOOC to mini-MOOC

Beyond the MOOC, the University is interested in significantly expanding the number of students exposed to entrepreneurship and innovation on campus. This includes an interest in thousands of freshmen and sophomores each year enrolling in for-credit courses in entrepreneurship and innovation. Funding to support this interest is modest, and the number of faculty on campus interested and capable of teaching 100-level and 200-level courses is limited. An online course that delivers high-quality at a low cost per student is a driving factor in the transformation of the entrepreneurship MOOC into a for-credit course on campus.

Through leveraging the faculty's experiences in entrepreneurship education and online learning, and a degree of trial and error within the initial MOOC sessions, an effective model for content design and delivery is now in place. The current MOOC format and content, as detailed in this paper, is the approach used for the development of the "Discovering New Ventures," the University's first "mini-MOOC" launching spring 2014. By "mini-MOOC," the faculty aims to serve hundreds to thousands of University of Maryland students enrolling in a for-credit, online format at a low cost per student.

Mini-MOOC Objectives and Goals

The MOOC and the campus-based mini-MOOC are nearly identical in their objectives, goals, content, deliverables, and performance measures. In parallel to the MOOC titled "Developing Innovative Ideas for New Companies: The First Step in Entrepreneurship," the mini-MOOC titled "Discovering New Ventures" is designed as an introductory, college freshman-level course for those interested in learning about innovative idea generation and new venture creation. The key contrast is that the non-credit MOOC is open and free to anyone worldwide and the mini-MOOC is a tuition-based, three-credit course exclusively for University of Maryland undergraduates.

Both the MOOC and the mini-MOOC are multi-disciplinary courses to help students to learn the basic business, strategy, and leadership skills needed to launch and manage new ventures. Topics include learning how to assess the feasibility of a new venture, as well as how to apply best practices for planning, launching, and managing new companies. Students discuss a wide range of issues of importance and concern to entrepreneurs and learn to recognize opportunities, assess the skills and talents of successful entrepreneurs, and learn models and "rules of thumb" that help them navigate uncertainty. The opportunities and challenges of entrepreneurship are explored, as is the ability to use entrepreneurial skill sets in a corporate environment.

The goals of the MOOC and the mini-MOOC are:

- To understand what it means to be an entrepreneur and a leader.
- To explore the motivations and characteristics that drive entrepreneurs.
- To be able to identify and evaluate opportunities for new ventures.
- To know how to gather resources to convert opportunities into new ventures.

The course is segmented into six weekly modules of five and ten video lectures per week. Video lectures are typically ten to twenty-five minutes in length. There are assessment activities for each module to provide the students with opportunities to integrate and apply learnings. The assessments are due weekly. The modules and lecture topics are listed in table 1.

Table 1. Course Modules and Lecture Topics

| 1. Entrepreneurial Perspective | 2. Entrepreneurial Mindset, Motivations and Behaviors | 3. Industry Understanding |
|---|---|---|
| <ul style="list-style-type: none"> • What is entrepreneurship? • Who is an entrepreneur? • Entrepreneurship, creativity, and innovation • The world's most innovative companies • Types of innovations • Entrepreneurs and strategic decisions • The opportunity analysis canvas | <ul style="list-style-type: none"> • Entrepreneurial mindset • Entrepreneurial motivations • Entrepreneurial behaviors • Risk taking in entrepreneurial decision-making • Risk, uncertainty, and stakeholder involvement | <ul style="list-style-type: none"> • Knowledge conditions • Demand conditions • Industry lifecycle • Industry structure • Competitive advantage • Learning curve • Complementary assets • Reputation effects |
| 4. Customer Understanding | 5. Business Modeling | 6. Business Planning |
| <ul style="list-style-type: none"> • Macro changes that increase new venture opportunities • Exploring real market needs • Satisfying real market needs • Strategic positioning • Strategic planning | <ul style="list-style-type: none"> • Value innovation • Opportunity identification • Introduction to business models • The business model canvas • Partnerships • Outsourcing | <ul style="list-style-type: none"> • Defining the business plan • Authoring the business plan • Sales forecasting • Managing the sales pipeline • Developing the marketing mix • Pricing • Building financial statements • Sources of financial capital |

Lecture Creation

The creation and production of the MOOC lecture content was influenced by existing for-credit entrepreneurship and innovation courses taught on campus. An early challenge for the MOOC was determining the right type and quantity of content to record for the course. Although content from existing courses was a basis for the Coursera course, there was still a significant amount of rework to get the lectures ready for MOOC consumption. The desired lecture product was to have the slides, the lecturer, and the subtitling all visible through the presentation.

Figure 1. Sample Online Lecture Format

A sample online lecture format slide. At the top left is the 'Mtech' logo. The slide title is 'Summary' in red. The main content is a bulleted list of points. On the right side of the slide is a video of a male lecturer in a suit and glasses, with his hands clasped. At the bottom left is the University of Maryland logo. A red horizontal line is at the bottom of the slide content area.

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Summary

- To develop an innovative value curve, explore the benefits that matter most to customers
 - Emphasize what matters to them
 - Invest in exceeding customer desires
 - Eliminate or reduce less valuable factors
 - Redirect money and time into raising benefits and creating value

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Once the topics were divided into the six modules over the three-credit course schedule (fifteen weeks for fall and spring sessions), the next challenge was to determine how to break each topic down into the five to ten weekly lectures. Based on feedback from Coursera, the target was five videos a week of between eight and twelve minutes each. In practice for the first iteration of the course, there were between four and six weekly lectures of seven to fifteen minutes in length. In the third iteration, the topic progression and content has been refocused and lectures have been adjusted accordingly. Each week begins with a short lecture to introduce the topic and give an overview of the week. In this third iteration, there were between six and eleven weekly lectures ranging from one minute for an introduction lecture to nearly forty minutes for the in-depth topic. From the six week Coursera course to the fifteen week on-campus offering, there will be between six to eleven lectures per module.

The key technical adjustments that needed to be made to break the content into bite size pieces was to reformat the slides using the 16 x 9 ratio, adjust the text placement on the slides to allow for the video of the lecturer in the bottom right corner of the slide. In the second iteration of the

lectures a weekly video introduction to the topic was added. These videos were recorded on site in various entrepreneurially relevant locations on campus.

Table 2. Development Evolution

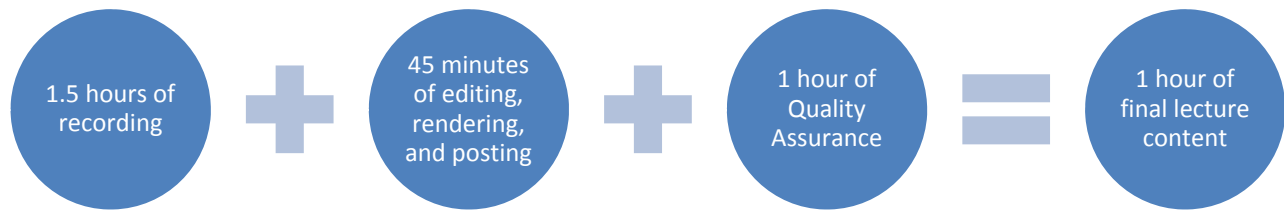
| | Session 1 Winter 2013 | Session 2 Spring 2013 | Sessions 3 and 4 Fall 2013 | On-Campus Spring 2014 |
|--|----------------------------------|----------------------------------|---------------------------------------|----------------------------------|
| Design | Headshot video | Headshot video | Classroom & green screen | Classroom & green screen |
| Number of Weeks | 6 | 6 | 6 | 15 |
| Number of lectures/ week | 4 - 6 | 4 - 7 | 6 - 11 | 3 - 6 |
| Average length of videos | 10 minutes each | 10 minutes each | 20 minutes each | 20 minutes each |
| Welcome video | • | • | • | • |
| Weekly topic introduction videos | | • | • | • |
| Instructional course navigation video | | • | • | n/a |

Once the lecture module was produced it included the lecture slides, the video of the instructor lecturing, and the closed captioning. Through the Coursera software quizzes could be placed within the video. A downloadable slide deck was also available to students. The end product was the video lecture.

The video lecture was then hosted within Canvas, the University's learning management system, where the entire course is hosted. All University of Maryland students have full access to Canvas and the resources associated with it needed to complete the course. The Canvas resources that may be utilized for this course are the ability to send announcements, posting the syllabus and lecture slides, assignments details, submission and grading, and other team collaboration tools.

Weekly lectures typically required three hours of time to produce one hour of content, figure 2 Video production equation. The instructor's previous experience with online course development, video recording and software design likely reduced the production time.

Figure 2. Video Production Level of Effort



Assignment Creation

The designs of the assessments were the most challenging part of the initial Coursera offering. The time to develop the automated assessments, while initially intensive, became more efficient over time. Each weekly assignment was created for the student to apply the week's learnings. The six weekly assignments in Coursera evolved into the six module assignments for the for-credit, campus-based course. This evolution allowed for more depth within each module while staying consistent with the assignments that represented the direct application of the topic's learning.

In the first course offering four of the six weekly assignments were automatically graded. The automated assessments typically included ten questions consisting of several true – false, multiple choice, numeric solutions, and keyword solutions. The keyword based scoring was particularly helpful in more complex assessments. Time needed to be spent determining the correct system to produce the desired scoring logic. The automated assessments generally produced reliable, objective results.

In the first offering, the other two weekly assignments were peer graded. Students would complete and submit their assignment individually and then were assigned to three other students' work to grade. Students were provided with a detailed grading rubric to complete the peer grading. The peer assessments proved to be the greatest source of discontent based on the discussion forums and emails. Poor English writing skills were a commonly cited problem by graders. There was a dramatic drop in the average grade and a very high standard deviation.

The average grade for the peer-graded assignments was a 66.5% versus an 82.5% on the auto-graded assignments. A solution to increase the effectiveness of the peer-graded assessments was not adequately found therefore in the subsequent offerings of the course all six weekly assessments were turned into automatically graded assignments. Thought was given to bringing the peer assessments back for the campus-based mini-MOOC but the idea was dismissed in favor of the improved assignments that have taken their place.

Planned assignments for the Spring 2014 mini-MOOC, and their respective percentage of the total course grade, are highlighted in figure 3.

Figure 3. Assignments

| Weekly Assignments | |
|---|-----|
| LinkedIn Profile | 5% |
| Innovation Fundamentals | 5% |
| Entrepreneurial Mindset | 5% |
| Entrepreneurial Motivations & Behaviors | 5% |
| Risk Profile | 5% |
| Industry Analysis | 5% |
| Competitive Analysis | 5% |
| Customer Analysis | 5% |
| Strategic Analysis | 5% |
| Value Curve | 5% |
| | |
| Team Projects | |
| Business Model Canvas | 15% |
| Business Plan Evaluation | 15% |
| | |
| Peer Evaluation | 10% |
| Contributions and Discussions | 10% |

The ten weekly individual assignments are a mix of true – false, multiple choice, and numeric solutions that are automatically graded. One or more short answer questions are included within each individual assignment. These are human graded.

The team projects include the “Business Model Canvas” and the “Business Plan Evaluation.” Team formation is facilitated by the faculty matching students by interests, major, skills, and ambitions. A peer evaluation will be used as one measure of assessing student success in collaborating with teammates. The “Peer Evaluation” completed at the end of the term is also an individual assignment based on the team project activities.

To illustrate a sample assignment for this paper, students develop a “Business Model Canvas” based on a business idea that their team believes to be an exciting new venture opportunity. This can be a brand new idea, or an existing idea or business that they are developing. Students are to provide a comprehensive discussion of how they would design each element within the Business Model Canvas. It is suggested that students respond in one succinct paragraph for each of the nine blocks, table 3. Business Model Canvas assignment prompts.

Table 3. Business Model Canvas Assignment Prompts

| | |
|-------------------------------------|---|
| Phases of the business model canvas | Prompt for each question of the assignment. |
| Value Proposition | What is the Value Proposition that your company or organization offers to solve customer problems and satisfy their needs? Your response should address value proposition items to include a distinct mix of elements catering to a customer segment's needs. Values may be quantitative, such as price or speed of service, or qualitative, such as design or customer experience. |
| Customer Segments | What are the Customer Segments that your company or organization serves? Your response should address customer segment items to include the needs and wants of customers, distribution channels, types of relationships, different profitabilities, and the customers' willingness to pay. |
| Channels | What Channels does your company or organization utilize for communication, distribution, and sales? Your response should address some or all of the five distinct channel phases which include awareness, evaluation, purchase, delivery, and after sales |
| Customer Relationships | What are the Customer Relationships that your company or organization plans to establish with its customer segments? Your response should address customer relationships that may include customer acquisition, customer retention, and upselling. |
| Revenue Streams | What are the Revenue Streams that your company or organization will generate? Your response should address at least one of the following transaction revenues resulting from one-time customer payments or recurring revenues resulting from ongoing payments. |
| Key Partnerships | What are the Key Partnerships that your company or organization utilizes? Your response should describe the company or organization's network of suppliers and partners. Examples of partnerships include strategic alliances, co-opetition, joint ventures, and buyer-supplier relationships. |
| Key Resources | What Key Resources are required to make the business model work? Your response should address key resources that can be physical, financial, intellectual, and/or human. |
| Key Activities | What are the Key Activities your company or organization must perform? Your response should describe the most important activities a company must perform to operate successfully. Key activities will differ depending on type of business. These activities may be outsourced or completed within the organization. |
| Cost Structure | What is the Cost Structure of your company or organization? Your response should describe all costs incurred to operate the business model. Two types of cost structures are cost-driven and value-driven; many business models fall somewhere in between these two models. |

The business plan evaluation is the capstone deliverable for the course. An effective tool for developing skills for writing a business plan is to evaluate an existing business plan. Students are asked to select a business plan from http://www.bplans.com/sample_business_plans.php of interest to them or related to a new business idea that they may pursue. There are over 500 business plan samples available. Students are then to assess the business plan based on the course lectures and complete a detailed evaluation, table 4. Business plan evaluation.

Table 4. Business Plan Evaluation Assignment Prompts

| | |
|----|--|
| 1 | From http://www.bplans.com/sample_business_plans.php , what is the name of the business plan that you chose to evaluate? |
| 2 | What is the URL for your chosen plan? |
| 3 | Please evaluate the completeness of the company summary. Your evaluation of the company summary should discuss the mission and describe the types of products or services offered by the company. |
| 4 | Please evaluate the product description. The features and functions of the product should be clearly described. A discussion of the differentiating factors from competitors as well as prices should be included. |
| 5 | Please evaluate the market segmentation. Define the target market segments in detail to include a numeric market size and a discussion of market trends. |
| 6 | Please evaluate the industry analysis. Discuss the current state of the industry and assess the future of the industry using quantifiable terms. |
| 7 | Please evaluate the marketing strategy. Discuss the distribution strategy and describe the marketing programs. Include the position statement, if any. Assess if the pricing strategy is logical. |
| 8 | Please evaluate the sales strategy. Assess how the sales strategy aligns with the target market segments. Include any sales goals and timelines. |
| 9 | Please evaluate the management summary. Assess if the management team is well constituted and if there are any management team gaps. Discuss the personnel plan. |
| 10 | Please evaluate the financial plan. Discuss the key expenses, expected sources of funding, and the revenues plans and forecasts. Define the amount of funding needed to launch the company. |
| 11 | If you were an investor, would you invest in this plan? Why or why not? Your response should be logical and clearly express your point of view. |

Faculty and Staff

The course will be led by one faculty member. The faculty member who designed the course and recorded all of the lecture videos will be the instructor for the course.

Undergraduate teaching assistants (TAs) will be hired based on the number of students in the course. Since the course is designed to have a significant number of assignments to be automatically graded, the ratio for students to TAs is reduced from a typical course. The intention for the inaugural run of the course is to have 100 students to each TA.

Course Delivery Plan

“Discovering New Ventures” will be offered in the spring of 2014 completely online in an asynchronous model. The online lecture videos will be posted weekly on Mondays during the term; this will be set up prior to the start of the course to automatically release weekly on the preset dates. The motivation to set up the course to release weekly versus showing all of the content on the first day of class is three-fold. First, although the content is already prepared, posting new content weekly will enhance the discussion around the week’s topics. Second, the students will move through the course as a cohort and be able to more easily work together. Third, this model enables teams to form and work together at the same pace versus working through different topics. On Mondays during the term, weekly email communication will be sent to all students to orient them to the topics of the week and highlight the upcoming deliverables and due dates. Each week’s module is organized to fully cover the topic through lecture, guest speakers, readings, and deliverables, see figure 4.

Figure 4. Sample Module on Canvas

The screenshot displays the Canvas LMS interface for the course ENES140-0101: Discovering New Ventures-Spring 2014. The top navigation bar includes the University of Maryland logo, course navigation tabs (Courses, Assignments, Grades, Calendar), and user options (As: Test Student, Logout, Help). The course title is A. JAMES CLARK SCHOOL OF ENGINEERING. The left sidebar shows a navigation menu with options like Home, Syllabus, Announcements, Modules, Assignments, Grades, Discussions, and People. The main content area shows the course title and a list of course modules. The first module is 'Week 1. Introduction' with a list of items: View: Course Overview (2:31), View: What is entrepreneurship? (17:38), Read: "Entrepreneurship: A Working Definition" by Thomas R. Eisenmann. (Harvard Business Review), View: Who is an entrepreneur? (31:12), Read: "A Student's Guide to Startups" by Paul Graham. (Y Combinator), Guest Speaker: Ludwick Marshane (5:13), and Assignment: LinkedIn Profile (Feb 2, 5 pts). The second module is '2. Creativity and Innovation' (Feb 3 at 12am) with items: View: Entrepreneurship, creativity & Innovation (20:37), Read: "12 Lessons In Creativity From The Greatest Super Bowl Ad Ever" (Forbes, 2014), View: The world's most innovative companies (17:45), Read: "The Most Innovative Companies of 2013" (BCG, 2013), View: Types of innovations (35:47), Guest Speaker: Elizabeth Gilbert - Your Elusive Creative Genius (19:29), and Assignment: Innovation Fundamentals (Feb 9, 5 pts). The right sidebar shows 'Coming Up' with an assignment 'Assignment: Competitive Analysis' (Sunday) and 'Recent Feedback' with 'Nothing for now'.

Course Evaluation Plan

Evaluation will occur in multiple ways, to include the University course evaluations and individual entrepreneurial mindset surveys. The University of Maryland assesses all courses at their conclusion with surveys evaluating the course content, format, and instructor effectiveness and responsiveness. An entrepreneurial mindset survey will be administered at the beginning and end of the course.

The course aims to enroll hundreds of students in its first offering, and thousands of students in the near term. The inaugural Spring 2014 session has enrolled 396 students, surpassing the initial target of 200 students.

A high diversity of students enrolling in the course in terms major is also of interest. Initial enrollments indicate that this high diversity of majors will be achieved. In decreasing order they are Letters and Science (28%), Behavioral and Social Sciences (20%), Computer, Mathematical and Natural Sciences (18%), Business (10%), Arts and Humanities (6%), Engineering (6%), Public Health (5%), Undergraduate Studies (2 students/ <1%), Agriculture and Natural Resources (1%), Journalism (1%), and Education (1 student/ <1%).

It is also hoped that the majority of students enrolling in the course are freshmen and sophomores. Early exposure to entrepreneurship and innovation is expected to increase their entrepreneurial activities on campus throughout their undergraduate career. The majority of the students enrolling on campus are between 18 and 20 years of age (73%) with the next largest group being between 21 and 23 years old (23%) followed by 24 years of age and older (3%) and under 18 years old (<1%). The majority of the students are sophomores (52%) followed by seniors (21%) then juniors (19%) and freshmen (7%).

Conclusion

Educating over 300,000 students globally through Coursera in 2013 presented a unique opportunity for the University to champion entrepreneurship and innovation worldwide. The next step was to leverage these experiences to enhance the undergraduate experience in entrepreneurship and innovation. The goal was to develop a mini-MOOC capable of delivering a for-credit, campus-based online course to serve thousands of students. The hope is to have created a new online learning model to affordably deliver a high-quality entrepreneurship and innovation education on a for-credit basis.