

# 200,000 SERVED: EXPERIENCES FROM A MOOC ON ENTREPRENEURSHIP AND INNOVATION

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## ABSTRACT

With the proliferation of massive open online courses (MOOC) in recent years, many universities worldwide are trying to better understand the how and why of these MOOCs. 200,000 Served: Experiences from a MOOC on Entrepreneurship and Innovation is an ongoing exploration of the development, delivery, and evaluation of an online entrepreneurship course on one of the fastest growing MOOC sites, Coursera. The paper focuses on the University-based implementation of an entrepreneurship and innovation MOOC, who the students are, and how to maximize effectiveness. Real survey results, demographic information, and actual course content illustrates the inside view of this MOOC. The integration of the MOOC know-how and content into the University's for-credit courses will also be discussed, as will the potential for MOOCs to improve the accessibility and affordability of higher education.

## Introduction

With the proliferation of massive open online courses (MOOC) in recent years, many universities worldwide are trying to better understand the how and why of these MOOCs. This paper focus on an ongoing exploration of the development, delivery, and evaluation of "Developing Innovative Ideas for New Companies: The First Step in Entrepreneurship," an online entrepreneurship course on one of the fastest growing MOOC sites, Coursera. The paper focuses on the University-based implementation of an entrepreneurship and innovation MOOC, who the students are, and how to maximize effectiveness. Real survey results, demographic information, and actual course content illustrates the inside view of this MOOC. The integration of the MOOC know-how and content into the University's for-credit courses will also be discussed, as will the potential for MOOCs to improve the accessibility and affordability of higher education.

## Audience

The University of Maryland's first MOOC launched in January 2013 with "Developing Innovative Ideas for New Companies: The First Step in Entrepreneurship." As of February 2014, this Coursera offering has educated over 300,000 students from around the globe through three 6-week sessions of the course starting January, May and September 2013. Incoming student experiences for the course represent a mix of novice and intermediate learners, including business owners, according to aggregate data from the opening course survey. The average breakdown of student experiences coming into the course are that for nearly half this is their first entrepreneurship course (47%), while other have written a business plan (17%) and/ or started their own business (17%); categories are not mutually exclusive, students could check all that applied. Incoming student intentions for the course presented a wide array of objectives and applications for the course knowledge. Nearly half of the students plan to start a business in



the future (46%), others are actively starting a business (15%), or interested in improving an existing business (12%).

### Course Overview

The “Developing Innovative Ideas for New Companies: The First Step in Entrepreneurship” course assists aspiring entrepreneurs in developing great ideas into great companies. With strong economies presenting rich opportunities for new venture creation, and challenging economic times presenting the necessity for many to make their own job, the need to develop the skills to develop and act on innovative business opportunities is increasingly vital.

Using proven content, methods, and models for new venture opportunity assessment and analysis, students will learn 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 examined as well.

This introductory course is designed for those interested in learning about innovative idea generation and new venture creation, and does not require a background in business or any specific area. A desire to build knowledge and capabilities were the only requirements

for entry.

### Course Creation

The creation of the “Developing Innovative Ideas for New Companies: The First Step in Entrepreneurship” course can be divided into the stages of development, delivery, and evaluation. The development and design of the course was inspired by a pre-existing entrepreneurship foundation course offered at the University of Maryland. The first step was to identify the content and deliverables. The second step was establishing the delivery through course structure and technological resources. The third step was evaluation through static opening and closing surveys, course deliverables, and ongoing feedback submitted through the discussion forums. The final step was to integrate course feedback to improve it for the next offering.

### Development

“Developing Innovative Ideas for New Companies: The First Step in Entrepreneurship” focuses on the three key areas of entrepreneurship and innovation, the opportunity analysis canvas, business modeling, and business planning. The six week course is divided into three sections, thinking entrepreneurially, seeing entrepreneurially, and acting entrepreneurially, that together lays the foundation for launching a company (Table 1 Course focus).

<b>THINKING ENTREPRENEURIALLY</b>	<b>SEEING ENTREPRENEURIALLY</b>	<b>ACTING ENTREPRENEURIALLY</b>
Entrepreneurial Mindset Entrepreneurial Motivation Entrepreneurial Behavior	Industry Conditions Industry Status Macroeconomic Changes Competition	Value Innovation Opportunity Identification

Table 1. Course focus

The six-week course addresses complex topics and challenges students through weekly assignment. Each week of the course is defined by one topic. Each topic has between five and ten video lectures of content; video lectures are typically ten to twenty-five minutes in length. Each week, there were assessment activities to provide the students with opportunities to integrate and apply learnings from that week’s content.

The assessments were to be completed by the end of the week, after the week’s video lectures have been viewed. “The Opportunity Analysis Canvas – Second Edition” by James V. Green was suggested as a companion text to augment the lectures. The list of topics and assignments are listed in table 2. For a full list of video lectures covered each week, see Appendix A. Course schedule.

<b>WEEKLY TOPICS</b>	<b>1. ENTREPRENEURIAL PERSPECTIVE</b>	<b>2. ENTREPRENEURIAL MINDSET, MOTIVATIONS AND BEHAVIORS</b>	<b>3. INDUSTRY UNDERSTANDING</b>	<b>4. CUSTOMER UNDERSTANDING</b>	<b>5. BUSINESS MODELING</b>	<b>6. BUSINESS PLANNING</b>
Assignments	Entrepreneurial Perspective	Entrepreneurial Mindset, Motivations and Behaviors	Industry Analysis	Customer Analysis	Business Model Canvas	Evaluation of a Business Plan
Format	Ten questions consisting of several true – false, multiple choice, numeric solutions, and keyword solutions.					

Table 2. Course overview

### Lecture Creation

The creation and production of the lecture content was largely developed concurrently with the first course offering. An early stage challenge 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 (See Appendix B. Sample online lecture format).

Once the topic was divided over the six weeks, 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.

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.

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. Weekly lectures required about three hours of time to produce one hour of content, figure 1 Video production equation. The instructor's previous experience with online course development, video recording and software design likely reduced the production time.

	<b>SESSION 1 JANUARY 2013</b>	<b>SESSION 2 MAY 2013</b>	<b>SESSION 3 SEPTEMBER 2013</b>
<b>DESIGN</b>	Headshot video	Headshot video	Classroom & green screen
<b>NUMBER OF LECTURES/ WEEK</b>	4 - 6	4 - 7	6 - 11
<b>AVERAGE LENGTH OF VIDEOS</b>	10 minutes each	10 minutes each	20 minutes each
<b>WELCOME VIDEO</b>	●	●	●
<b>WEEKLY TOPIC INTRODUCTION VIDEOS</b>		●	●
<b>INSTRUCTIONAL COURSE NAVIGATION VIDEO</b>		●	●
<b>FINAL THOUGHTS CLOSING VIDEO</b>			●

Table 3. Development evolution

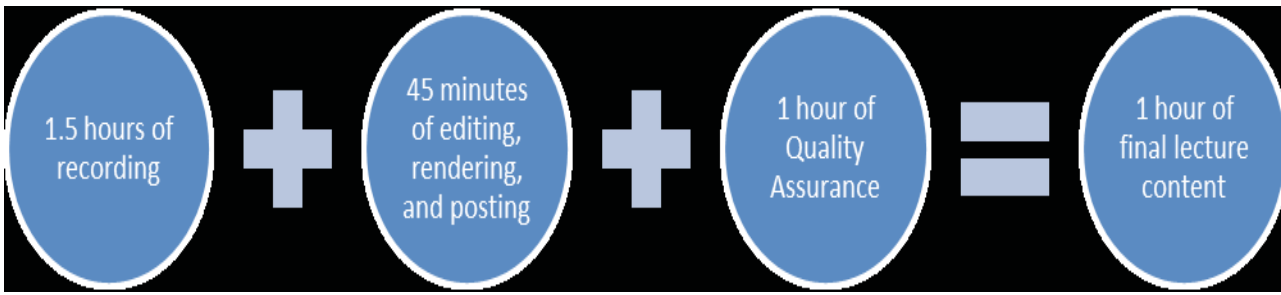


Figure 1. Video production equation

### 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. 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.

### Delivery

The greatest evolution in the course delivery was the move from a time-released schedule to a self-paced model. The initial motivation to time release modules on a weekly schedule was to move the students through the course as a cohort and benefit from learning and networking with each other through the discussion forums and peer assessments. At the time of the first offering, feedback offered at the beginning of the course was used to improve the later part of the course.

By the third offering of the course, all lectures for the entire course were live from day one. This would allow students to skip ahead to the topics that were critical to the learner immediately and to move at their own pace through the course. With thousands of students enrolled in the course, the self-paced model still allowed for a wealth of interaction in the discussion forums and students to engage in networking. There was no substantive change in the volume or quality of the discussion forums when moving from the time-released to the self-paced model.

Moving to a self-paced model also reinforced the need for all assignments to be automatically graded. Having all assignments auto-graded was also meant to accommodate a faster pace of study and further encourage

students to develop business ideas that were personal to them versus theoretical for the course. In order to facilitate connection and learning between classmates even though peers would not see each other's' assignments, the discussion boards were used more strategically for facilitation. Along with the standard discussion forums, customized discussion forums were created for students to connect entrepreneurially based on geography, industry interest, business idea, and team formation.

Although the lectures and assignments were moved to be all self-paced; the announcements were set up to be time-released for each of the sessions. Based on the six-week course schedule, the announcements are released twice weekly. The first announcement was sent on Monday at 12:01 am eastern standard time as an overview of the topic, lectures and assignments covered. The second announcement was sent on Friday at noon eastern standard time to provide updates and deadline reminders. In addition, these announcements can be updated with the average class grades or other cohort specific information during the session. The mix of time-released announcements, self-paced course content, and customized discussion forums allow students to get the cohort, community feel and a personalized, user-driven learning experience.

	<b>SESSION 1 JANUARY 2013</b>	<b>SESSION 2 MAY 2013</b>	<b>SESSION 3 SEPTEMBER 2013</b>
<b>TIME-RELEASED</b>	●	●	
<b>SELF-PACED</b>			●

*Table 4. Delivery evolution*

## Evaluation

Course evaluation was an important factor in offering and improving the “Developing Innovative Ideas for New Companies: The First Step in Entrepreneurship” course. The course was evaluated specifically through the student engagement data, the course evaluation, and the opening and closing survey information. Refining the course through feedback and evaluation has helped “Developing Innovative Ideas for New Companies: The First Step in Entrepreneurship” be ranked by CourseTalk’s “Top Rated MOOCs” as the number one entrepreneurship course on Coursera and the number eight overall business course on Coursera in November 2013.

Live student engagement data is available through the Coursera platform. Engagement in general was difficult to assess as many students intended to view the lectures without submitting assignments. It was difficult to differentiate between students that intended to take the assessments and “pass” the course versus those who intended to view all the lectures without completing the assessments. Engagement data from session 3 showed that 2,762 students earned a “Statement of Accomplishment” which is consistent with the MOOC average of 2,600. This is 28.14% of the students who submitted all of the assignments in the “Developing Innovative Ideas for New Companies: The First Step in Entrepreneurship” course, Figure 2. Session 3 Student Engagement Data.

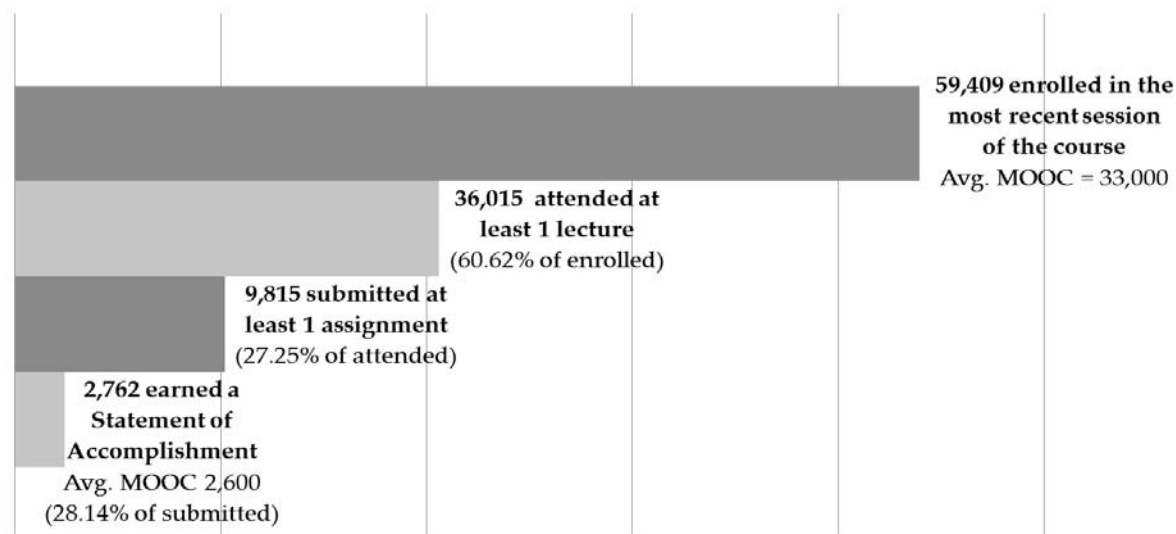


Figure 2. Session 3 student engagement data

The opening and closing surveys both had a series of questions on student demographics and intentions for course participation.

Student demographics for the course represented a broad audience. Half of the learners are industry professionals (50%), the remainder of the students were university students (29%), academics, professors, and research scientists (6%), and high school students (2%). Although the ages range from 13 to 92 years old, the highest concentrations (55%) of students were between 18 and 29 years old. Men constituted 65% and women constituted 35% of the classroom.

MOOCs allow for a truly global classroom enhancing the student experience. One-hundred and seventy four countries have been represented over the three course offerings. Seventy-five percent of the students have been from outside of the United States of America. By continent, from greatest to smallest representation is, North America (30.13%), Europe (30.07%), Asia (20.87%), South America (10.22%), Africa (4.76%), Oceania (2.45%) and Central America (1.51%). Some of the most well represented countries are the United States of America (24.54%), India (8.58%), Brazil (5.54%) and Spain (5.21%). The least represented countries include Aruba, Bhutan, Bonaire, Guatemala,

Kazakhstan, Maldives, Monaco, Samoa, Vanuatu and the West Indies, all at 0.004% of respondents.

A university-based traditional course evaluation was added to the exit survey, Table 5. Session 3 course evaluation. The Coursera course evaluations for session 3 met or exceeded the current University of Maryland on-campus courses that are similar in content with an average score of 3.35/ 4.0.

The final question was a free response question asking for general feedback. The student testimonials were encouraging and impactful. As appropriate the feedback from the closing survey, in addition to discussion forum comments, were used to enhance the next Coursera offering.



EVALUATION MEASURE	SCORE
The instructor was well-prepared for class.	3.60
Overall, this instructor was an effective teacher.	3.51
The instructor was effective in communicating the content of the course.	3.48
Course guidelines were clearly described in the syllabus.	3.44
I learned a lot from this course.	3.33
The instructor helped create an atmosphere that kept me engaged in course content.	3.24
The course was intellectually challenging.	2.85
<b>AVERAGE</b>	3.35

Table 5. Session 3 course evaluations

"... The course taught me why it is important to have an entrepreneurial mindset, how to analyze the industry and market trends for my business venture, why a business model is an important part of the startup idea..."
"... I had no prior experience with this particular subject, but I must say that after 6 weeks, I feel like I have it all. The course was wonderful and I recommend it for anyone planning on starting a business and for those who may have already started a business without obtaining all the knowledge that is needed..."
"... I wanted to know the list of things one should keep in mind at the time of starting a new business, how do I price a product or service, how to know if my business idea would be feasible. Through this course, I learned all these and more..."
"... You've likely heard many say "most small businesses fail within the first two years." Green's analysis attempts to rectify that by teaching people to scrutinize the idea first BEFORE going into business. He teaches students to uncover real opportunities that can not only lead to greater success, but can also mitigate potential failures..."
"... The lecture videos are well organized and the quizzes are flawlessly following the stream of the lectures, and the lecturer gives a step by step process which will help you think of new ideas/projects and in applying in real life situation..."
"...Not only did he have great content he also gave detailed examples so that making the connection to theory would be easily applicable to your future or current business..."

Table 6. Student testimonials

With the 70% pass rate for students submitting all assignments, the team has a continuous commitment to enhance the assessments, design, and delivery of the course believing it should only improve students' achievement. There are a number of lessons learned from the first three iterations of the course being implemented to decrease development time, maximize course delivery effectiveness, and refine the evaluation. Not only are these lessons being applied to the future Coursera offerings, they are also being used to enhance the University's for-credit courses.



## Conclusion

For the “Developing Innovative Ideas for New Companies: The First Step in Entrepreneurship” team, the experience of educating thousands of students globally has been exciting, educational (for the course team), and rewarding. There is great potential for integration of the MOOC know-how and content into the University’s for-credit courses and potential for MOOCs to improve the accessibility and affordability of higher education.

The knowledge gained through developing, delivering, and evaluating a MOOC is already benefiting students at the University of Maryland. The collection of video lecture content and know-how is being integrated into the for-credit blended and online courses at the University of Maryland. The for-credit online courses are being enhanced through a mini-lecture approach with online assessments. The lecture content is also being utilized for flipped-classroom content in face-to-face courses whereby students view the lectures online prior to class and then spend the class time applying the knowledge gained through the lectures.

The University of Maryland now offers five online for-credit courses a year increasing the number of University entrepreneurship and innovation course offerings. In turn, it increases the number of students building entrepreneurship and innovation skills, leads to more venture creation, and is a key criterion in the University’s entrepreneurship rankings. It improves access to courses in Mtech’s Minor in Technology Entrepreneurship year-round. It generates revenues for Mtech in the winter and summer terms. Another benefit is that it provides an opportunity to serve students beyond the University of Maryland, to include other universities in the United States and by way of international partnerships.

There are many benefits to a university to offer a MOOC. It provides video lecture

content and know-how for integration into for-credit courses. The content can be used to enhance for-credit online courses through a mini-lecture approach with online assessments. The video lectures allow for the addition of flipped classroom opportunities for face-to-face courses. It enables a recruitment opportunity to attract entrepreneurial students to the University and contributes to the University of Maryland’s brand as an innovative and entrepreneurial university, and serves public interests.

## Appendix A: Course Schedule

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



## 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

