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Chapter 5

OVERCOMING CHALLENGES DURING THE DEVELOPMENT OF A MASSIVE OPEN ONLINE COURSE

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ABSTRACT

Massive Open Online Course's (MOOC) have been described as a disruptive technology that will forever change higher education. But despite the attention MOOCs have been receiving, very little has been written on developing a MOOC. The MOOC development process can be fraught with challenges. This chapter illustrates the design and development process of creating a MOOC with a specific focus on challenges and solutions that arose throughout the development phase. In particular, the selection of the course delivery platform, communication between the stakeholders, instructional design of the course, copyright and intellectual property, accessibility and universal design, and the pilot study are discussed. This chapter concludes with deployment plans regarding the course.

Keywords: massive open online course, MOOC, global problem solving

INTRODUCTION

The term Massive Open Online Course (MOOC) was first coined in 2008 by Dave Cormier and Bryan Alexander (Daniel, 2012). Four years later, the *New York Times* announced 2012 as "the year of the MOOC" (Pappano, 2012). MOOCs continue to dominate conversations in higher education. The increasing interest in MOOCs is not surprising

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considering the challenges the U.S. higher education and economy face today, such as increasing college cost and decreasing college completion. Due to these challenges, institutions of higher education are (among other things) looking for creative ways to use technology that can help lower the costs while still provide a quality education to students (Baum, Kurose, & McPherson, 2013) and MOOCs appear to be one way to do this. Others find MOOCs attractive because of their potential to provide free quality education; in other words, MOOCs provide free access of knowledge to a massive audience all around the world without “significant” investment (Liyanagunawardena, Williams, & Adams, 2013). And yet still others are attracted to MOOCs ability to disrupt traditional higher education models (Watters, 2012).

Recognizing some of the potential of MOOCs, the provost at George Mason University decided to create a MOOC. We were interested in confronting global problems through dissemination of information, collaboration, and discussion with a global audience. The following chapter focuses on the challenges my colleagues and I experienced during the development of a MOOC and the strategies used to overcome these challenges.

BACKGROUND

In 2012, George Mason University (GMU) invited a select group of prestigious international institutions to join a new Global Problem Solving Consortium (GPSC). The Consortium’s objective was to offer focused initiatives that would bring their students and faculty members together to improve their knowledge of global issues (e.g., human rights, climate change, conflict resolution, and global health). One of the first initiatives of the consortium was to develop and offer a MOOC by GMU focused on confronting global challenges.

The Confronting Global Challenges MOOC was different from most MOOCs. While many MOOCs attempt to replicate an existing face-to-face or a traditional online course (Daniel, 2012), the MOOC we set forth to develop did not have any equivalency in the university academic catalog. Our course was a 4-week non-credit course that was intended to be offered every semester. The goal was to create and to maintain an international conversation among the faculty and students of the partner institutions about global challenges facing each country. The course specifically focused on four major global challenges: Climate Change, Global Health and Nutrition, Human Rights, and Conflict Resolution. Faculty and staff across GMU—including the administrators, GMU-TV, library, and the office of assistive technology—took part in the development of this MOOC. A graduate teaching assistant from the Global Affairs program was hired to assist with the development, pilot, and moderation of the course.

CHALLENGES

Selection of the Course Delivery Platform

One of the first things to consider when developing a MOOC is where to host a course that can support thousands of enrollments. There are essentially two different approaches one can take: deliver the course using one's own institution learning management system (e.g., Blackboard or Moodle)—which may require additional fees for exceeding caps on enrollments or bandwidth—or deliver the course on a third-party platform like Coursera. By the time we decided to develop our MOOC, there were already a number of universities testing different approaches to deliver MOOCs. Some of the prominent third-party platforms were Coursera, EdX, Udacity, Udemy, and Coursesites. We considered the following criteria when choosing the appropriate platform to deliver our MOOC:

1. A reliable platform that had been in the market extensively.
2. A low cost or free platform since there would not be direct and immediate economic return with this project.
3. A platform that did not have obvious profit concerns.
4. A platform that would not require extensive training to the users and faculty.
5. A platform that would be accessible to a global audience and would allow us to crowd-source when necessary.

Considering all of these factors, we selected Coursesites by BlackboardTM. From our perspective, there were a number of benefits of using Coursesites. First, BlackboardTM is an established Learning Management System provider and Coursesites was free to use. Second, we were concerned with third party providers desire to make a profit. For instance, Coursera's contract included language about how universities can make a profit from MOOCs (Young, 2012). Third, our university already used Blackboard so developing our MOOC (and later hosting it in Coursesites) should be seamless.

Despite these benefits, there were a few disadvantages with using Coursesites as a MOOC delivery platform. First, Coursesites was not designed for MOOCs; it was unclear whether the platform could support thousands of users. To address this concern, we planned to conduct a pilot test to evaluate how Coursesites performed with a massive audience. Second, the Coursesites Terms of Use agreement clearly stated that the total storage allowed per course was 500 MB which included the data created by the students. This storage cap prevented any heavy use of video or other large multimedia files. To address this problem, we used external video streaming servers such as Youtube and GMU servers. Third, the lack of public visibility of the courses in Coursesites made it challenging to advertise our course to potential students. Unlike other MOOC platforms, it was initially impossible in Coursesites to locate courses. To address this problem, we emailed students login instructions which included how to create an account in Coursesites and also the permanent link for the course. We should point out though that BlackboardTM later addressed the course visibility problem by creating a MOOC catalog page and improving the search capabilities in Coursesites. Lastly, similar to other MOOC platforms and LMSs in general, during the development of our MOOC Coursesites would occasionally become unavailable for short periods of time

because of scheduled system updates. It is important to note that Blackboard™ recently announced a new MOOC platform which will be free to existing Blackboard customers (Young, 2013). According to Young (2013), Coursesites will remain in operation for professors to experiment with it for their traditional courses rather than offering MOOCs. We are waiting for the release of this new Blackboard MOOC platform before deciding which direction we might go in the future.

Table 1. Stakeholders and Their Roles

Title	Role
Provost	Provided course vision and direction; provide university oversight in addition to being a course content provider
Assoc. Prov. of Dist. Ed.	Provided oversight relevant to distance education
Director of Global Consort.	Provided overall coordination among Mason contributors and consortium partners; oversaw dissemination and future course development
Director of CD&D	Provided coordination among stakeholders in this project, designed, developed, and evaluated the MOOC
Content Providers	Provided the content in form of lecture videos, resources, provided the discussion and quiz questions
GMU-TV	Developed the video lectures and delivered them via different platforms
Assistive Technologies Unit	Ensured the accessibility of the course by providing subtitles for the videos, narration scripts, and other features
Graduate Assistant	Assisted the director of CD&D during the development of the course; moderated the pilot study; worked with content providers to moderate the future sessions

Communication with the Stakeholders

After identifying the course delivery platform, communication with the stakeholders was the next challenge. Our course was the first GMU affiliated MOOC. The guest lecturers in this course had very limited experience with learning management systems and online education in general. Like any major initiative, the successful development and deployment of a MOOC depended on clear communication with all stakeholders. The author of this chapter served as the director of Course Design and Development (CD&D) for this particular MOOC. Among other things this involved coordinating the communication between various stakeholders listed in Table 1 (e.g., the provost, the associate provost of distance education, the guest lecturers in the course, GMU-TV, the office of assistive technologies, and the director of the global problem solving consortium). Early on in the project it became clear that while the stakeholders were familiar with the concept of a MOOC from popular media, they did not fully understand what a MOOC was or what developing and offering a MOOC would entail. This is not surprising. The lack of understanding regarding the definition and purpose of MOOCs is common (Daniel, 2012). Today the definition of MOOCs continues to evolve. The table below lists the stakeholders and their roles in this project.

After a series of meetings with the stakeholders, a 4-week MOOC particularly focusing on four different global challenges was agreed upon. The director of CD&D created a functional prototype--inspired by another MOOC "Designing an Exemplary Course" offered in Coursesites. The design template included the course shell which had the course folders with proper names. Inside each folder, there were content items which worked as placeholders for the actual content. This template helped the stakeholders visualize the general design of the course. After the design was approved by the stakeholders the director of CD&D continued to continually update the stakeholders during the development stages of the MOOC.

The biggest challenge was to sustain a common language between all stakeholders. The foci of stakeholders differed based on their contribution to the project. For instance, administrators focused on the timeline, the media production crew focused on the quality development of the media, the assistive technologies unit focused on the accessibility of the media, and the content developers focused on delivering the content in an effective and accurate manner. Therefore, the director of CD&D served as an intermediary throughout the project to create a common language between all stakeholders.

Instructional Design of the MOOC

Considering the changing definitions and expectations regarding MOOCs, the instructional design was another challenge in this project. The goal was to design a MOOC that would be accessible to students from all of countries in the consortium. The course needed to be designed in a way so that if any of these potential international students encounter a problem during the course, they would be able to get assistance with the resources provided in the course. The course also needed to be easy to follow. Given this, the course was designed to be completed in linear fashion. Students would start with a terms of use agreement and then complete subsequent modules in order. The course modules were:

- Overview and Orientation,
- Climate Change,
- Global Health and Nutrition,
- Human Rights, and
- Conflict Resolution.

The following additional links were also provided to learners for easy access to some of the tools:

- Discussion Board,
- Class Roster,
- Quiz Results,
- Course Exit Survey,
- Get Your Completion Certificate,
- Course Contributors, and
- Course Disclaimer.

The course started with a terms of use agreement which explained the nature of the course, acceptable and unacceptable activities in the course, and the potential ways that the learner data in this course could be used. The terms of agreement also explained that the course was a noncredit course and that the course completion certificate—which students could earn after their successful completion of the course—could not be redeemed as college credit. The course completion certificate was designed to be awarded only to those who obtain satisfactory scores from all quizzes in each section and complete the course exit survey. After the terms of agreement, students continue to the Overview and Orientation module if they accepted the terms of use agreement (see Figure 1).

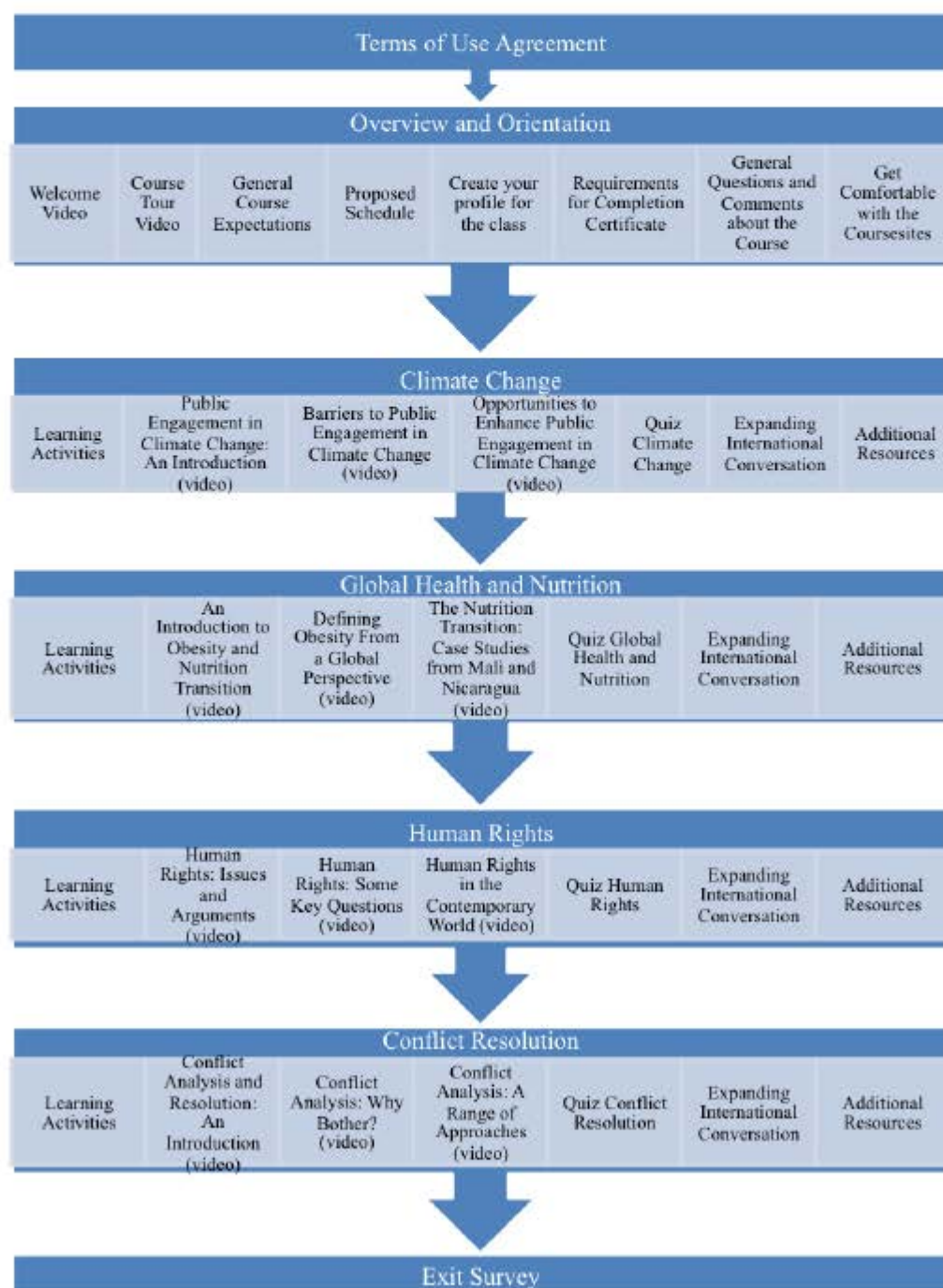


Figure 1. The overall structure of the course.

The Overview and Orientation module was designed to introduce students to GMU and the course. This module begins with a course welcome video from the GMU president Angel Cabrera; the president's introduction was particularly important for the first university-affiliated MOOC. This module also includes a course tour video demonstrating the course structure. Lastly, this module includes details on obtaining a certificate of completion, a tentative course schedule, a discussion forum for general questions and comments, and finally a link to tutorials about the LMS to assist students who need help.

In addition to the Overview and Orientation module, the course included four different global challenges topic modules as illustrated in Figure 1. Each of the four topic modules consisted of a video introduction putting the issue into global perspective, two short video presentations developing topical themes in more detail, as well as discussion questions, quizzes, and resources for further inquiry. This course was designed so that students in each one of the four topic modules, watch lecture videos, participate in discussions, complete quizzes with satisfactory scores, and visit additional resources. At the end of the course, students would then complete a course exit survey which allowed the stakeholders to assess the participants learning as well as to evaluate the course. Figure 1 illustrates the overall structure of the course. The lecture videos were particularly important to create the instructors' (subject matter experts) presence in the course. The videos were intended to be concise so that learners could easily follow. In each quiz, learners received five questions and the minimum satisfactory score was three. The quizzes presented simple questions to confirm that learners had watched the videos. Learners could take the quizzes as many times as they wished. The questions were randomly selected from a question pool in each attempt. Once they completed all quizzes and the exit survey in the course, the link for the course completion certificate became visible to the learners in the Get Your Badge module. The exit surveys were used to assess learning as well as to evaluate the course.

Overall, the course focused on critical thinking skills particularly on the analysis of current global issues from the given perspective and synthesis of this information with the learners' perspective.

Copyright and Intellectual Property

During the development of the lecture videos, we encountered another challenge regarding copyright and intellectual property. Our intention was to supplement the lecture videos with relevant images and illustrations. The challenge, though, was that videos on global problems (the topic of the course) focused on recent events and issues in addition to the historical or factual topics. Therefore, most of these visuals were located in press and commercial websites or for-profit organizations and were therefore copyright protected. While Section 107 of U.S. Copyright Law establishes fair use in non-profit teaching situations, we questioned whether fair use still applied when massive access is provided to the entire world. Butler (2012) has also pointed out that the partnerships between non-profit education institutions and for-profit MOOC developers may jeopardize the fair use of copyrighted materials in the future when MOOC partnerships start to make a profit.

We also had difficulty utilizing subscribed resources from textbook publishing companies such as Pearson. After requesting to use some illustrations on these websites, our distance education librarian informed us that it would not be possible to use these resources due to the

existing terms of use agreement. The nature of the agreements stated the subscription allowed us to use these resources only with enrolled students. Due to this problem, we utilized resources, which either belonged to the faculty or non-profit organizations (e.g., the United Nations) as well as made attempts to contact the owners of any item we used in the course—even when the resources were located on public websites.

Another issue we confronted was intellectual property. Some of the course materials were original research of GMU faculty. Due to the openness of MOOCs, we had to seek permission from each faculty to share their intellectual property and allow the course delivery platform provider and the learners in the course to use it with proper attribution.

Copyright and intellectual property issues are still being discussed today regarding MOOC development (e.g., Butler, 2012; and Schmidt, 2013). Due to existing copyright issues with MOOCs, utilizing open educational resources (OERs) seems to be a more convenient option in the future. Exciting developments are taking place, though, regarding OERs with textbook publishing companies. For instance, Pearson recently launched its OpenClass Exchange for instructors, which will include 680,000 free and open instructional materials (Schaffhauser, 2013)—thus making it easier for MOOC designers to avoid common copyright and intellectual property issues.

Accessibility and Universal Design

Students completing MOOCs often can come from all over the world and therefore speak various languages, have changing needs, varying demands, and a range of communication skills (Liyanagunawardena et al., 2013). During the design process we were confronted with the need to address a number of these challenges. The first challenge we confronted—with designing a course for a global audience—was the fact that different countries have different approaches of censoring electronic content (Leberknight, Chiang, & Wong, 2012). For instance, common sites like YouTube can be blocked in certain countries. Due to this problem, we set forth to provide as many alternative formats of the instructional materials as possible. For instance, we placed the lecture videos in different formats on a variety of different platforms (e.g., YouTubeTM, VimeoTM, and GMU servers) so that students could either watch streaming videos online or download the videos to their computers.

Another challenge we addressed was accessibility. We provided subtitles and also narratives in portable document file (pdf) format for each video we had students watch. The Office of Assistive Technologies at GMU was very involved during the entire process and supported this project from the beginning to the end. This MOOC was a noncredit course; thus, the university was not mandated by federal regulations such as American Disability Act (ADA) or Section 508. However, we believed that it was our responsibility to make the course accessible to students with special needs. Today, accessibility and universal design continue to be discussed as an issue with MOOCs (e.g., Butler, 2012).

Pilot Study

A pilot study was conducted as a formative evaluation of the course. The purpose of the pilot study was to evaluate the course before launching it in Fall 2013. The pilot study

allowed us to identify and resolve problems in each country from which students will come from and make necessary modifications before we deploy the MOOC to a larger audience. For the pilot study, we asked the students to participate in one additional module after finishing the "Welcome and Orientation" module. Eight students from all partner universities of the consortium took part in the pilot study. We asked the participants to complete the Climate Change module and complete an exit survey provided in the course. The survey consisted of five open ended questions. These questions were:

1. What did you like best about the course?
2. What did you like least about the course?
3. What, if any, technical problems did you experience with this course?
4. What is / are your reason(s) for leaving this course?
5. What overall feedback do you have for this course?

Regarding the first question, the participants found the topic very engaging. They stated that the alternative ways we provided access to the materials worked well for them. They also confirmed that they were able to access course videos when the Youtube videos were not accessible in their countries. They mentioned that video lectures were very effective. They liked that they were able to pause the video and go back to a particular moment to clarify their understanding. They also stated their appreciation regarding the conciseness of the videos. They also noted that the discussions were particularly effective to learn different perspectives regarding the global issues.

Regarding the second question, they pointed out that there were not many students in the course, leaving conversation limited. They stated that the discussions might be more engaging with more students in the course. Some students mentioned that the course should include more graphs, visual aids, and crucial articles to encourage students to continue their learning. They also recommended some improvements about the design of the visuals in the videos.

Regarding the third question, the major technical problem students had was accessing lectures hosted on Youtube. Although the majority of the students mentioned no technical problems, those who had the problems due to the censorship in their countries or experienced the issues due to their web browser security settings which blocked some of the content.

Regarding the fourth question, all of the students finished the module and exited the course at the end of the course. Therefore, there was no attrition or dropout in the course.

Regarding the last question, the students reported that they enjoyed the short, concise video lectures and that they were easy to watch. They stated they were eager to continue this course when it was launched with all modules. They also mentioned that the course was easy to navigate and designed well. They found the different discussion forums in the same module very effective and a great opportunity to create a global conversation. They appreciated the expertise of the content provider about the topic.

Overall, the feedback was very positive and was directly related to all the aforementioned challenges we overcame during the development of the course. Based on the feedback, we included additional technical information into the course regarding the web browser settings and the instructions to download necessary plugins. We also made the alternative video links larger for those who could not access the YouTube videos. We shared the results of the pilot study with the stakeholders. The stakeholders were pleased with the results of the pilot study and assured the course would be a success when it is launched in the fall of 2013.

CONCLUSION

Massive Open Online Courses offer a lot of promise as well as apprehension. While some scholars argue that MOOCs will democratize education (e.g., MacGregor, 2013), others worry that MOOCs will increase the gap between those who are motivated to take these courses and those who are not (e.g., Liyanagunawardena et al., 2013). Some scholars expect MOOCs to have a big impact on the cost and access of higher education, thus forever changing the entire structure of higher education (e.g., Mazoue, 2013), while others oppose the development of MOOCs due to the developmental costs to universities (Kolowich, 2013). The future will show how MOOCs will shape higher education and what kind of solutions they will provide at the micro and macro level.

My colleagues and I set forth to develop a MOOC on confronting global challenges. We had no intentions to utilize this course to decrease costs or to increase enrollments. The purpose of the course was to create a forum to discuss global challenges and hopefully identify some solutions, which will work in different contexts. This chapter is not intended to be prescriptive. Instead, it is simply meant to share some challenges we confronted when developing our first MOOC. Depending on one's context, one may take a different approach when developing a MOOC. However, topics such as copyright, intellectual property, accessibility, and universal design are universal concerns regarding any MOOC development.

The future of our MOOC is uncertain. The MOOC will be offered for the first time in the fall of 2013. Future plans will be more defined after the initial launch of the course to a larger audience. However, the stakeholders have already begun brainstorming how the MOOC might be changed in the future (e.g., adding additional modules or even creating additional MOOCs led by other partner universities in the consortium). It is our hope that our experience developing a MOOC will help guide others who are contemplating creating their first MOOC.

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