Behind the Scenes of an Independent MOOC: Instructional Design Problems and Solutions

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Designing and implementing a MOOC poses new challenges to instructional designers, even though their knowledge of instructional design processes and pedagogical techniques still applies. This paper documents the design process used for an independent professional development MOOC, focusing on design challenges and solutions in five areas: scalability, flexibility, interaction, media, and assessment. Two key elements of success included creating a facilitation plan with clear roles for all members of the instructional team and supporting both learners who desired a guided learning path with rewards for meeting learning outcomes and learners who sought an open space for networking and sharing related to the course topic.

Keywords: facilitation, instructional design, MOOC, online learning, open learning

Introduction

For many learners, their first Massive Open Online Course (MOOC) experience is a novel one. However, instructional designers have long created scalable learning materials and activities, designed for open learners, and developed online courses. None of the course elements – massive, open, or online – is truly new (McAndrew & Scanlon, 2013). For instructional designers, MOOC design draws upon the familiar, with one twist: a convergence of all three of these learning conditions.

This paper discusses issues related to the instructional design and implementation of an independent MOOC – one created and offered without official institutional or corporate support. The five topics covered are: (a) scalability, (b) flexibility, (c) interaction, (d) media, and (e) assessment options. Each is discussed in terms of the challenges the design team faced and the solutions that were ultimately selected. These design choices reflect emerging practices culled from a review of the literature and existing MOOCs as well as guidance from learning theory and instructional systems design.

Instructional Context

This independent MOOC, titled *Social Media for Active Learning,* was designed and offered by a faculty member and 15 graduate students in the Instructional Systems and Learning Technologies (ISLT) Program at Florida State University (FSU) during the Spring 2014 semester. Although the MOOC was produced and offered by FSU affiliates, it was not part of an official institutional effort to develop and offer MOOCs. The faculty member leading the effort had previously conducted a SWOT analysis, and she determined that the MOOC was a viable project to undertake (Dennen & Chauhan, 2013), even though we did not have a budget inline with those cited for MOOC development and delivery (Hollands & Tirthali, 2014). We believed that we could rely on free tools and peer engagement, as recommended by Kellogg, Booth, and Oliver (2014) to support our MOOC. The MOOC was hosted on Blackboard CourseSites, and additional course interaction occurred using free tools such as gmail, Twitter, Facebook, and Storify. The purpose of the MOOC was twofold. First, as one might expect, the MOOC provided participants with an opportunity to learn about the course topic. Second, for the FSU graduate students, it provided a practicum-oriented learning experience. The target learner audience for this MOOC was

instructional designers and educators of all levels. This audience was presumed to already have a university degree and to be seeking professional development via the MOOC. However, the MOOC was available to anyone who had Internet access and wished to enroll. Participants could earn badges for completing each of the four one-week modules, and a certificate of completion for completing all four modules.

The MOOC was designed by a team of 16 people. The authors served as lead designers. The first author has more than 20 years of instructional design experience, and the second author is a doctoral candidate with strong instructional design skills and a wealth of online teaching and learning experience. A few months prior to engaging in design and development, they created a design plan. This plan covered the basic course structure and content, and included a style guide, templates, and a design and development schedule. This initial design plan that they created allowed for a 6-week module design and development process, including a quality assurance check. The plan specified which media would be used and the learning and assessment components for each module. The required components for each module were video lectures, a webinar, readings and resources, discussion activities, a self-graded quiz, and a final project.

The remaining team members, who were graduate students in ISLT, worked in four design teams. Several team members had professional experience with online course design for traditional learning contexts. Each design team worked to develop content and assessments one of the modules, posting their work to a development site. Each team member also performed a quality assurance check for another design team. The last steps prior to loading a module in the actual course were the recording and of video lectures by the first author and a final quality assurance check.

While the design teams worked on their modules, the lead designers worked on creating the course syllabus and badge system. The lead designers also created a facilitation plan with the assistance of interested team members. The facilitation plan specified the different facilitation tasks (e.g., technical support, greeter, and grader). The plan was flexible and scalable, accounting for how the MOOC might be facilitated based on different numbers of active participants. For example, interaction and feedback expectations varied based on different projected enrollments. When the MOOC began, the design teams disbanded and facilitation teams formed, with each person belonging to two or three different facilitation tasks.

Design Challenges and Considerations

Our MOOC design team members had a wealth of prior online instructional design and teaching experiences, and some team members had designed for large-scale implementation (e.g., online corporate training). The "open" element of the MOOC was the most unfamiliar to us as designers, although some members had previously designed courses for broad learner audiences. We were confident in our ability to design and develop course content, learning activities, and assessments, but less confident about how to manage the diversity that an open course might bring. We identified our primary design problem as accommodating the potential size and openness of the MOOC, which we knew meant to some extent designing for the unknown (e.g., number of learners, learner background). Even just focusing on our target learners meant designing for a potentially quite diverse group of individuals. Our secondary problem was one inherent in all distance learning: figuring out how to minimize the transactional distance that is inherent when course participants are not co-located (Moore, 1989). With these challenges in mind, embarked on a design process that heavily considered scalability, flexibility, interaction, media, and assessment options.

Scalability

Course scalability – specifically, the ability to accommodate an unknown and potentially quite large number of learners – is a course design issue that affects how course content, activities, and assessments are selected and designed (Mackness, Waite, Roberts, & Lovegrove, 2013). In a MOOC, the term "massive" has not yet been reliably associated with a particular number of participants, and perhaps doing so is not necessary. Within a MOOC, there is the potential to have thousands of concurrent students drawing upon the same learning, technological, and human resources simultaneously, although typically a large number of learners enroll, sample the offerings, and then cease interaction during the early part of the course (Kizilcec, Piech, & Schneider, 2013).

From both content and technology perspectives, scalability generally did not concern us. For content, we relied on pre-designed materials, including video lectures and links to reading material. For technology, we relied on external hosting systems that regularly support large numbers of users. The one content and technology scalability challenge that we faced involved webinars. We were limited in the number of concurrent live users, and fortunately never exceeded that limit. However, we dealt with the potential problem by letting participants know that the live session had limited enrollment but would be archived for later playback.

Of greater concern was how far our human resources would stretch during course facilitation. Schmidt and McCormick (2013) noted that just answering email from MOOC participants can be a daunting task, and the expectation that students get attention as individuals may not be reasonable (Masanet, Chang, Yao, Briam, & Huang, 2014). We knew that as enrollments increased our ability to interact with individuals would decrease. However, we greatly valued that interaction as part of the learning process and sought ways to maximize it, no matter the enrollment. We developed a facilitation plan to help our course team efficiently interact with participants. Within this plan, everyone had a specific set of duties. We broke these duties into the following areas: email; technical support; webinar support; social media monitoring; greeting new participants; archiving and sharing course discussion and project highlights; and assessment. By having everyone specialize and focus on particular tasks, we were able to efficiently monitor and interact with participants across all aspects of the course. Additionally, we encouraged learners to network and interact with each other, lessening the need for our team to interact on the discussion forums.

Flexibility

MOOC participants are highly diverse. They are likely to range widely in terms of both course preparedness (prior knowledge and experience) and specific content area interests (Schmidt & McCormick, 2013). Additionally, MOOC learners have varied personal motivations for enrolling (Hew & Cheung, 2014) and learning preferences (El-Hmoudova, 2014). Further complicating matters, participants may come from different countries, speak different languages, and use different technologies for course access. Essentially, when offering a MOOC it is difficult to anticipate exactly who will enroll and what their needs might be.

Flexibility is important when trying to support diverse learners. This flexibility can be built into the course by providing learners with choice and interaction; addressing course content from multiple perspectives; and encouraging learners to share their goals and expertise and customize the learning experience to meet their own needs. For example, in our MOOC we anticipated that our participants would be educators, but were not sure if their primary job function would be instructional design or teaching. Our actual participants represented both job functions, and we also attracted administrators and librarians. Further, we knew we might have learners working in K-12, higher education, and corporate learning environments. To accommodate the different learning interests and needs of these individuals, we created multiple threads in each discussion forum, focusing on the module topic from a variety of angles, and encouraged learners to share how the module content related to their work. We also created module projects that allowed learners to apply the basic module concepts to their own work contexts, increasing the relevance of the learning experience.

Our learners not only represented a range of job functions and topical interests, but also had a broad range of prior experience. We encouraged our experienced participants to share their expertise and help others. Projects were designed in a manner that allowed the expert participants to flex and highlight their skills and encouraged the novice participants to simply try using the tools. We encouraged everyone to focus on progressing from their own starting point rather than to compare themselves to others.

Still, we designed a course with a particular set of learning outcomes and rewards for achieving those outcomes (e.g., badges and certificates). At the same time, we realized that our objectives could be at odds with the actual professional development needs of participants. When these situations occur, participants may focus on course achievement rather than professional needs (Milligan & Littlejohn, 2014). We hoped to overcome this challenge by overtly encouraging learners to choose their own path. They might follow along the course that we designed, but if that was not the course that they wanted or needed we still encouraged them to use our course materials and interact within the learning network if doing so would help them achieve their goals. In other words, we offered a designed experience, but did not present it as the only or even the preferred option.

Interaction

Moore (1989) categorizes online learning into three types of interactions: learner-content, learner-instructor, and learner-learner. Dennen (2013) adds learner-community as an additional component, recognizing that learners may have relevant interactions with individuals outside of the class. Instructional designers need to design instructional activities and determine technologies that will maximize productive learning interactions and minimize distracting or unproductive ones.

In the context of a MOOC, the potential for learner-instructor interactions can be low unless there are multiple teaching assistants (Hew & Cheung, 2014), but the potential for other interaction types can be great. A large number of participants yields many possible interaction partners, and the Internet hosts a wealth of both content networks. Although these sound like positive elements, it is possible to have too much of a good thing. Learners may feel overwhelmed by excessive information communicated by multiple people and by using multiple tools (Alario-Hoyos, Pérez-Sanagustín, Delgado-Kloos, & Munoz-Organero, 2014) and by the potential to interact with a large number of peers (Baggaley, 2014). Alario-Hoyos et al (2014) found that different learners were active on different social media platforms, which suggests that providing learners with tool choice may be a good idea as long as learners do not feel compelled to interact via every supported or suggested tool. However, providing multiple spaces does not directly guarantee that interactions occur or that they are high quality and timely (Hew & Cheung, 2014). Essentially, these findings collectively suggest that in a MOOC choice and opportunities to interact require a careful balance to support learner need and preferences while still providing a high quality, guided learning path. Thus instructional designers should carefully consider how learners may interact with the amount and type of interaction options that are designed into a MOOC, and provide clear guidance for participants who seek to follow a prescribed path.

In our MOOC, we sought that balance between a designed course experience and a freeform space for learning and networking. A variety of interaction options and forums were available, with the intent of fostering learning connections as recommended by Kop, Fournier, and Mak (2011). For individuals looking to follow a clear course path, a course syllabus, weekly announcements, and module checklists guided the way. All modules shared the same design template, and all core course activities were linked through the module home page in the Learning Management System (LMS). The LMS discussion forums, which were facilitated by the instructional team, provided structured discourse space. At the same time, learners were encouraged to use or follow other communication channels, including email and social media, to interact and share if they preferred. The instructional team aggregated these communications and linked them into the LMS to make them easy for learners to follow.

Again, the facilitation plan, which outlined how we would interact with participants, was important. Even though connectedness does not ensure meaningful interaction (Mackness, Mak, & Williams, 2010), we knew that supporting open communication channels was a precursor to meaningful interactions. In addition to simplifying the tasks of each team member, this plan allowed team members to develop connections with the learners who communicated via particular channels, and to provide a consistent response to queries in each communication channel.

Media

Our MOOC platform, Blackboard CourseSites, served as the anchor point for all course materials, but given our focus on social media and the desire to use many media types we hosted and integrated files, information, and communication from other tools. We selected CourseSites for four reasons: cost, familiarity, robustness, and accessibility. CourseSites was free to use. It was familiar to the instructional team, which had already used Blackboard extensively to support teaching and learning. We knew CourseSites could to support a large number of learners, and provided technical support to end users. We did not want to run into the same pitfalls as other MOOCs, such as the one that attempted to use Google spreadsheets, only to discover after the course began that it restricted the number of users who could edit a spreadsheet to 50 users to edit (Jaschik, 2013). Finally, we wanted to make sure our core learning content and activities would be available to all learners, regardless of location, and knew that popular western social media tools like Twitter and YouTube are blocked in China (Li, Zheng, & Wang, 2015).

During the development phase, we created a test version of the course. We then copied each module to the live course space when it was complete and had undergone a quality assurance test. Each module of the MOOC included the following elements, all linked from the module folder within CourseSites:

- Brief instructional videos created using Camtasia and hosted on YouTube. To accommodate Chinese learners, we also hosted lower-resolution versions of the videos inside CourseSites when possible.
- PDF versions of transcripts from the videos for anyone who could not access/play the video files.
- Link to a webinar conducted in Elluminate.
- Links to readings, tools, and other resources available freely on the Internet, hosted on their originating servers.
- Discussion forums, hosted by CourseSites.
- A quiz, also hosted by CourseSites.
- Links to the aggregation (e.g., Twitter hashtag) or primary page for each supported social media channel.
- Links to Storify-based archives of weekly online resources and student module projects.

We chose to host our higher resolution videos on YouTube because it allowed them to be freely shared via social media channels as well as embedded within the MOOC. However, we were sensitive to the media needs of our Chinese participants, who could not access them on YouTube, as well as the needs of our participants with bandwidth issues or for whom English – the primary language of the MOOC – was a second language. Close captions were enabled on the YouTube version of videos and edited for accuracy. Full written transcripts of each video were provided, along with key visuals, as PDFs. We did not, however, import external resources such as readings into the CourseSite. Although internal hosting may have provided a better learner experience, it would have infringed on intellectual property rights in some instances, and we elected to be consistent with media hosting and links throughout the course.

Assessment

Assessment is a challenge as course size grows because of the labor involved in grading. Many MOOCs solve this problem by using automated grading systems (Creed-Dikeogu & Clark, 2013), which may include objective-style tests or even essays that can be automatically scored by a computer (Ebben & Murphy, 2014). In other MOOCs, peer evaluation and small group activities have been used, but not without complaints about problems such as plagiarism, and lack of informative feedback, (Ebben & Murphy, 2014; McClure, 2013). Essentially, MOOC instruction and assessment suffer parallel struggles due to size; much as interactive, collaborative instruction may seem prohibitive (Creed-Dikeogu & Clark, 2013) and lead to lecture-based instruction as the default (Mahraj, 2012), assessment options may become similarly impersonal.

In this MOOC, in order to earn the completion badge learners had to satisfactorily complete three elements. First, they had to score 80% or higher on an objective-style quiz. The purpose of this assessment was to ensure participants had baseline knowledge. All answers to the quizzes were embedded in the module's lecture videos. Second, learners had to contribute at least three relevant posts to the module discussion board. The purpose of this assessment was to encourage articulation and practice using the course terminology and concepts. Third, they had to complete and share a brief module project. Additionally, we required that participants complete a brief form to request a badge, certifying that they had completed and submitted each of the required elements. In this way, we were able to focus our grading efforts solely on the activities of the learners who were requesting badges.

We used a combination of automatic and manual grading. Quizzes were automatically graded. Discussion was manually graded, but required minimal effort. CourseSites provides a discussion grading tool that highlights how many messages a participant composed, and instructional team members simply looked to see if the message count was met and the content seemed reasonable. We took a closer look at module projects, determining if the submitted project met the full scope and stated requirements. If not, we provided feedback to the learner, allowing them to revise for another chance to earn the badge. All

learners received brief comments on their projects, which was possible given the ratio of instructional team members who engaged in assessment to learners completing the projects.

Like many other MOOCs, only a small percentage of our participants completed each module. Had our MOOC attracted more participants, or had more participants completed the module projects, the manual grading process might have been daunting. Our plan for dealing with that possibility was to allow the system to just mark projects as submitted and use that submission as the basis for awarding badges. We would then encourage learners to provide each other with feedback, as has been done in other MOOCs.

Our assessments were based more on completing activities than quality of work. Assessing quality would have required more time and effort, and would not have been feasible. This limitation means that MOOCs may not be well suited in situations where certification of learning is required, unless other models of assessment are used. Other models may come at a monetary cost to the learner, such as paying to take a certification test or to have a human grader assess a portfolio of work. However, for the majority of MOOC learners who are simply exploring a topic of personal interest and not seeking a degree, the current terms of assessment may suffice.

Conclusion

Reflecting on this MOOC as an instructional experience, we have identified what worked and what we might do differently the next time. We feel satisfied that we offered both a guided learning experience and an open learning space, providing learners with choice. Clearly defined facilitation roles were a strength of our approach, but we could refine tasks and better anticipate learner needs in some of these areas, particularly providing feedback and archiving course resources. In a second iteration of the MOOC, we would strive to support more and deeper learner interactions for experienced participants, although scalability remains a concern.

In conclusion, our experience in designing and delivering a MOOC confirmed what much of the literature we read suggested: success – defined as delivering a course in which interested learners are able to successfully complete the course – requires being well planned, yet providing options for diverse learners' needs and interests. It can be daunting to design for an unknown number of learners; efficiency and scalability are necessary considerations and design decisions should reflect not just the number of anticipated enrollees but also the anticipated number of active learners. Finally, MOOC designers must decide whether their course will be rigid and well defined or flexible and potentially tailored to meet learner interests and needs. Neither is necessarily the better approach, but each will require a different approach to design and implementation and yield a different learner experience.

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