MOOCshop 2014: The 2nd Research-Oriented Workshop on Massive Open Online Courses

Steven Lonn, University of Michigan, Ann Arbor, MI, USA, slonn@umich.edu  
Christopher Brooks, University of Michigan, Ann Arbor, MI, USA, brooksch@umich.edu  
Zachary A. Pardos, University of California Berkeley, Berkeley, CA, USA, pardos@berkeley.edu  
Barry Peddy cord III, North Carolina State University, Raleigh, NC, USA, bwpeddy@gmail.com  
Emily Schneider, Stanford University, Stanford, CA, USA, elf13@stanford.edu  
Ido Roll, University of British Columbia, Vancouver, BC, Canada, ido.roll@ubc.ca  
Ashley Shaw, University of British Columbia, Vancouver, BC, Canada, ashleygshaw@gmail.com

Abstract: MOOCshop 2014 (moocshop.org) is the second iteration of the Workshop on Massive Open Online Courses, an interdisciplinary forum for researchers to address the pedagogical and technological opportunities in designing and evaluating MOOCs. Using a participatory problem-solving framework, the goal of MOOCshop 2014 is to collaboratively generate priorities for platform development, instructional strategies, and research in MOOCs, with a clear emphasize on learning. The facilitators and presenters will lead a set of activities and discussions around integrating insights from the learning sciences into the design of MOOCs, as well as how MOOCs provide opportunities for the learning sciences as a site for research.

Introduction

MOOCs are massive(ly) open online courses: structured learning experiences usually based on content from university courses that are offered online, usually free of charge, and are open to anyone wishing to register. From the first MOOC in 2008 that attracted over 2,000 participants, there are now thousands of MOOCs offered by hundreds of institutions, often attracting hundreds of thousands of learners each. MOOCs have been set to revolutionize higher education. They are touted as educational opportunities that will democratize knowledge, extend learning to those underserved by current systems, and, according to both popular media and those involved in higher education, “MOOCs – by almost every interpretation – are set to impact the business, financial, and commercial operations of Higher Education” (Haggard, 2013, p. 70). The considerable number of learners who have already taken part in MOOCs illustrate that they have become part of everyday social and cultural practices of learning, one that transcends the boundaries of traditional higher education settings. The technologies that enable MOOCs – from proprietary platforms to freely available web tools – shape the learning opportunities available for participants, as well as the possibilities for instruction and assessment. The principle question this workshop aims to explore is **how can the Learning Sciences provide insights that inform the development of technologies and pedagogical strategies in massive open online courseware?**

To explore this question, participants, panelists, and the facilitators at MOOCshop 2014 will engage in a set of brainstorming activities and discussions. Our goal is substantial: beyond the exchange of knowledge by participants, we aim to generate tangible outputs that will help set the roadmap for the platform development, instructional strategies, and research in MOOCs, with a clear emphasis on learning. We anticipate publishing the results of the discussions in this workshop as a white paper that will outline recommendations and priorities for next-generation MOOC courseware. Furthermore, this white paper will outline ways of moving forward, in order to guide future conversations. We anticipate that these activities will be followed up throughout the Learning Sciences community, and subsequently, to engage the community in researching and contributing to the design of MOOC platforms and courses. Overall, the outcome of this workshop will outline both what is known and what should inform the design of future MOOCs, as well as what is yet to be known and should inform the research agenda of the Learning Sciences community. We hope for this artifact to be a central method by which a community of researchers can come together in order to put learning in the forefront of the MOOC ecosystem.

Background

MOOCs mean different things to different audiences. From a learner’s perspective, a MOOC can be a portal to a distant institution, an unfamiliar subject, or a community of likeminded participants. It can be frustratingly impersonal or full of compelling ideas. From an administrator’s perspective, a MOOC can be a source for standardized curriculum or a threat to the practice of local instructors; or, if homegrown, it can be a piece of publicity for the institution. Similarly, the evolution of MOOCs is driven by many reasons, from reducing costs of higher education to increasing diversity and openness. However, notably, the quality of learning has been largely absent from the discussion thus far.
From a learning scientist’s perspective, a MOOCs may be pedagogically impoverished interface, an opportunity to implement and test proven strategies at scale, a call for reaching and understanding a distributed and varied community of learners, an opportunity to create impact and scale... and likely many other frames, which we will surface during the MOOCshop.

Towards developing a common ground, the MOOCshop will begin with opening remarks from the facilitators and an invited panel. Together, these remarks will provide a variety of perspectives on what a MOOC is and where opportunities for improvement might lie.

**Approach**

We approach the question of how the Learning Sciences can affect MOOC courseware through a scholarly participatory problem-solving framework. We upfront acknowledge that there are no MOOC experts (Siemens, 2013), and that the even those who have been embedded in the MOOC movement, either as researchers, instructors, or students, are still exploring the space as it constantly changes shape and dimension. Yet, at the same time, we recognize that there is substantial expertise with respect to the components of teaching and learning, a principle goal of those involved in MOOCs. This workshop arranges these experts along two activities done in serial, with the morning of the day focusing on the deconstruction of the MOOC space, and the afternoon focused on reconstructing this space from a learning science research perspective.

**Deconstruction**

The workshop begins with a panel of researchers speaking to the question of the intersection of the Learning Sciences and MOOCs that will set the stage for identifying the hindrances and obstacles to learning in current MOOC implementations. In workshop planning, one of the research panelists, Dr. Alyssa Wise (Simon Fraser University), spoke directly to the issue of innovation in MOOC platforms and the problem of consistency between connectivist-style MOOCs (so called cMOOCs, identified often by their use of decentralized heterogeneous technologies such blogs, wikis, social media, etc.) and more traditional classroom-style MOOCs (so called xMOOCs, which are typically run on a centralized platform such as Coursera, edX, or Udacity):

Recent (x)MOOC development has been heavily focused on the content (particularly video lectures, but also readings, demos, quizzes and other assignments). However the large (and diverse) student populations enrolled in such courses provides benefits of scale not only for the one-to-many distribution of learning resources, but also for the many-to-many interactions between learners (due to the presence of others with similar interests as well as those with a diversity of backgrounds and perspectives). In fact, supporting such connections between learners was a core part of the original intent and structure of (c)Moocs; yet currently most (x)MOOC student interaction spaces are “free for alls” rather than purposefully designed; It is thus not surprising that the level of use and the perceived benefit they provide varies greatly (Wise, personal communication, 2014).

This highlights an important issue in the deconstruction of the platform itself; do the Learning Sciences provide guidance with respect to collaboration and socialization in the MOOC learning environment? Does the end goal of the learners, whether it is a credential, lifelong learning, or other objective, affect the manner (and capacity) by which learners socialize? Do MOOCs somehow change the nature of the issue of socialization and communication in learning, or can we directly leverage the work done previously when studying online or blended learning systems? Wise continues, addressing this last issue head on:

Over the last several decades, learning sciences research on computer-supported collaborative learning (CSCL) has documented many pre-existing and designable factors related to group composition, collaborative process, and technological support that can be beneficial to productive online collaboration; however this work has mostly been conducted at smaller scales and often with a high degree of imposed structure (either via the technical infrastructure or via scripting). Thus there is an opportunity for MOOCs to both benefit from the accumulated knowledge of existing CSCL principles while also serving as a test bed for exploring their generalizability and scalability (Wise, personal communication, 2014).

The connection between MOOCs and the Learning Sciences is a two-way relationship. As Wise notes, while MOOC platforms can gain from the rich history of research in the computer-supported collaborative learning literature, the CSCL research space can gain rigor and generalizability from the scale of participation offered by MOOC platforms. Dr. Pierre Dillenbourg (École Polytechnique Fédérale de Lausanne), another panelist involved in helping set the tone of deconstruction at the workshop, suggests that there is an opportunity for the
Learning Sciences to reach a broader audience, especially within higher education. Speaking on the (not uncommonly heard, and generally sarcastic) statement that MOOCs are validating education as a research discipline to administrators in higher education, Dillenbourg responds:

“One” reaction is to see such a statement as an indicator that our work did not reach out enough the decision makers. MOOCs offer several opportunities to do so. The first opportunity is the fact that decision makers may now have the ears to listen to robust educational research. The second opportunity is of course the scale of MOOCs, namely the sample size of our empirical studies. The question asked during this discussion is two fold. How could Learning Sciences research be applied to development of MOOCs or at least MOOC research? Reciprocally, how could Learning Sciences exploit the interest for MOOCs in order to gain visibility and impact on society? (Dillenbourg, personal communication, 2014)

When considering how Learning Sciences can both contribute and exploit MOOC platform development, instructional strategies, and research, it is important to also consider the perspective of the learners themselves. The morning panel will therefore include Jonathan Haber who runs the Degree of Freedom experiment blog (degreeoffreedom.org), which documents his one-year attempt to take all of the courses needed to learn the equivalent of a liberal arts Bachelors Degree entirely through free, online resources. In Haber's opinion, MOOCs are already engaged in implementing educational research and are environments with strong potential to engage learners in metacognitive analysis:

The combination of engineers and entrepreneurs, educators and researchers that form the teams behind many of the MOOCs I’ve taken are part of a developing culture where educational researchers are not just listened to, but their recommendations and results are implemented and used as the basis for both real-world products and continuing research and experimentation. And this has led advances in online learning, both in the front end (where, for example, a new visual language for lecturing is developing within MOOCs) and the back end (where we have substantial data – albeit of varying quantity – that can help us better understand how students are navigating their way through a learning experience). So MOOCs are not simply gathering large numbers of data points, but are creating an environment where people interested in analyzing that data and people interested in putting that analysis to work are working side-by-side and making decisions together that are making an immediate difference (Haber, personal communication, 2014).

Finally, the morning panel also includes Dr. Pete Rorabaugh (Georgia State University), who co-edits the popular blog Hybrid Pedagogy: A Digital Journal on Teaching and Technology. With perspectives from these experts, attendees will engage in breakout activities to determine the hindrances, obstacles, and missteps taken in current MOOC environments. After themes are refined, attendees will brainstorm relevant opportunities for Learning Sciences perspectives to address those themes in small groups and then report out to the entire workshop in a broad conversation leading into lunch dialogues.

**Reconstruction**

With the morning of the workshop devoted to tearing apart the MOOC phenomena, the afternoon will focus on reconstructing these platforms from a Learning Sciences research perspective. This activity is aimed not only at introducing innovation from existing Learning Sciences work, but addressing the bidirectional sustainability of innovation in the Learning Sciences and MOOC platforms. One important facet of this discussion will be in understanding which learning science perspectives are useful for this new modality. Speaking on the motivation of learners, panelist Dr. Ryan Baker (Columbia Teachers College) had this to share:

There are several challenges towards thinking about studying MOOCs. First, MOOCs are different than traditional learning, and many of the lessons learned from/through MOOCs might not be entirely the same as other types of learning. Not only is the platform through which learning occurs different, but the motivations of users is different, with many learners seeking MOOCs in order to gain specific knowledge (rather than take an entire course) or taking courses out of idle curiosity. Second, MOOCs are not unitary to each other – they vary widely in terms of pedagogy, design, size, and course goals, with some (s)MOOCs using purely didactic approaches to communicate ideas of wide interest, and other (c)MOOCs using connectivist approaches to build research communities in highly specialized areas (Baker, personal communication, 2014).
Indeed, many factors related to MOOCs differ from traditional higher education, including cost, demographics of students, purpose, and method. Dr. Daniel Hickey (Indiana University) will augment this discussion with his experiences in “scaling up” learning:

[I] will focus on practices that initially emerged in small online graduate education courses (Hickey & Rehak, 2013). It will describe how these features were scaled up in a “Big Open Online Course” (“BOOC”) that was offered to up to 500 students over twelve weeks in Fall 2013 using Google’s Course Builder open learning platform. A range of innovations were refined and streamlined and/or automated in this effort. These included personally contextualized registration & participation, assignment to networking groups, personalized “wikifolio” open assignments, anchored peer commenting, contextualized analytics & feedback, peer endorsement & promotion, and open digital badges for completion, leadership, & advanced work (Hickey, personal communication, 2014).

Exploration of novel approaches for scaling pedagogical practice to these new environments is an explicit goal of the afternoon discussion. By grouping attendees together in small breakout sessions, we will encourage a diversity of thought around how MOOC environments may be made more flexible to different pedagogical techniques. The aim is not to generate a perfect MOOC environment, rather, to identify requirements for MOOC platforms that may lend to their success for particular situations. Situations need not be instructor or institutionally dictated, but may related to the learner population itself. Mr. Marcelo Worsley (Stanford University) will therefore ground his participation in the panel conversation on the issues of diversity and pedagogy:

The notion that delivering content through a short video is effective for reaching all students seems inherently antithetical to decades of research. MOOC platforms should therefore be developed to foster greater diversity in the teaching and learning strategies that are used in order to enable learning for the “masses” (Worsley, personal communication, 2014).

Given these perspectives, participants will collaboratively identify common themes and opportunities for short- and long-term collaboration. Further, the groups will develop concrete research questions that build on proposed and current designs. Attention will also be paid to other areas of the Learning Sciences where participants think MOOCs can provide research opportunities to extend on prior work. Finally, participants will discuss opportunities and challenges for sharing MOOC data in order to increase availability of data from a large number of courses to Learning Sciences researchers. The organizers plan to capture all of these complex elements in the white paper that will emerge from this workshop.

Summary
As explained above, the main goal of the MOOCshop is to facilitate the much needed connection two-way relationship between the Learning Sciences and MOOCs, seeking to inform the design of courses and a collaborative research agenda to study these. We approach this challenge by identifying elements and opportunities in existing MOOC courses and platforms, and subsequently re-envisioning these. We anticipate that outcomes from this workshop will shape the contribution of the Learning Sciences to the design, delivery, and science around MOOCs.

References