Scaling engagement in MOOCs 4D: Redress for Bloom's 2-sigma challenge

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Abstract

This short paper and presentation reviews a design implementation for scaled inquiry-based learning. A MOOC design resting on the community of inquiry (CoI) theoretical framework and the historical work of Bloom and Wahlberg was tested in a large, open, online course. Over multiple implementations, results indicate higher engagement and completion rates beyond what normally occurs in MOOCs. These results may be attributed to enhanced opportunities for engagement. Beyond a test of MOOC design, this design is in reference to the needs of education broadly. The iron triangle of education requires the adequate combination of cost-effectiveness or affordability, accessibility, and quality. Difficult to offer in combination, this is particularly challenging when learning opportunities are scaled to networks of learners. As one example of networked learning, this MOOC design offers suggestions for high engagement in technology-enabled learning for large groups of learners.

Keywords

Online learning design, MOOC design, social learning, scaled learning, community of inquiry

Introduction

The most recent form of open and distance learning has caused a significant stir: Massive Open Online Courses, or MOOCs. MOOCs are large open online courses, often offered without cost, to learners from around the world. As such, they provide learning opportunities and access to knowledge and experts previously out of reach for many. Some suggest that the advent of the MOOC initiative is the most significant innovative event in higher education to occur in decades. In reference to education access, MOOCs are an improvement to access but may compromise education quality; the evolution of MOOC design has involved not only increasing consideration of access but concern for the learner experience, satisfaction, and learning outcomes.

As a point of reference for MOOC development, Open Universities have been offering accessible post-secondary education to large groups of students for decades. MOOCs take open, accessible learning delivery a step further, allowing free no cost access to any interested participant who joins a course. However, this scaled version of online learning does not uniformly carry all the requirements of a sound, measured online learning experience with appropriate and necessary outcomes. This paper reviews a MOOC design sensitive to long-standing issues of scaled education, where limited one-to-one student instructor engagement is remedied with learning opportunities known to improve learning outcomes (Walberg, 1984).

Background

The Community of Inquiry is a theoretical framework that embodies Dewey's experiential learning, Vygotsky's social learning, and early notions of Anderson's equivalency theory (Garrison, Anderson, & Archer, 2000). We used the overlap of teaching, social, and cognitive presences to create a meaningful learning space that encouraged deep, personal learning. Teaching presence represents the design, facilitation, and direct instruction of the course. Social presence depends on teaching presence to foster open communication, group cohesion, and personal expression. Cognitive presence rests on the elements of social presence as a sound foundation and is additionally supported by teaching presence opportunities to respond to triggering events, explore complex ideas and applications, integrate new cognitive schema with previous experiences and ideas, and come to temporary but meaningful conclusions about what is right in the world.

In addition, MOOC design activities consider the seminal work of Bloom (1984) regarding mastery learning and the impact of one-to-one instruction, applied to group instruction with attention to remedies (Walberg, 1984).

The resulting design is what we call an inquiry-based MOOC, or iMOOC (Cleveland-Innes, Ostashewski & Wilton, 2017)). The iMOOC, in brief, includes the three CoI elements situated in a personal context. Firstly, Teaching Presence for an iMOOC is divided into three activities. The first activity is labelled ‘instruction.’ Here there is no opportunity for student response but a video lecture (also made available through transcripts and audio files) provides both an introduction to course content and, most importantly, a view to the learning activities available to participants. In other words, participants are encouraged to engage in activities that Walberg (1984) suggests remedy the loss experienced without one-to-one instruction, including peer teaching, active participation, and asking questions. Activities that foster social and cognitive presence are also encouraged. Students are guided thought the weekly activities using a suggested set of learner tasks: read, respond, review, explore, and assess your learning.

The second Teaching Presence activity is labelled ‘inspiration.’ This learning support is offered by an experienced online instructor who plays the role of Inspirer; communicating through text-based announcements and short-videos, the Inspirer opens and closes each week of the course, bringing learners along through the content being presented. This communication provides encouragement, direction, and inspiration at the start of each week and validation and closure at the end of each week. The Inspirer also interacts with learners in the discussion forums each week as further support for the “live instructor” element of the iMOOC model.

The third type of Teaching Presence is offered through roving facilitators who provide ‘information’ as needed. A facilitator for every 250 participants is available online to answer questions about technology, learning processes, and encourage students to respond to each other’s questions, comments, and discussion forum posts. One of the facilitators significant tasks during the course is that of connecting learners to each other, in a sense, guiding their networking across the community of inquiry that is established as part of the course. In this sense the course facilitators are supporters of networked learning, where this kind of learning can be understood as having significant supportive value for MOOC participants. The definition of networked learning supporting this characterization is one where the communication and information technology network created inside the MOOC space is “used to promote connections: between one learner and other learners, between learners and tutors; between a learning community and its learning resources.” (Jones, Asensio, & Goodyear, 2000). The networked learning that is a result of the course design is integral to learners contextualizing content presented in the course. Further, the networking support in the iMOOC allows learners that have similar issues and challenges to connect directly with each other. MOOCs certainly have the capacity to create peer-peer networking and support opportunities: however this is often lost without intentional and explicit support from facilitators aiding learners across potentially thousands of forum posts.

Results

The learner engagement pattern demonstrated by recent participation data from TELMOOC4 shows an engagement pattern that is shallower than the typical weekly decline seen in MOOC interaction and engagement (Clow, 2012). In addition, completion rates in TELMOOC4 are significantly higher than what is normally reported in MOOC data (Anderson, 2013; Khalil & Ebner, 2014).

Conclusions

Underneath all practical applications, we rely very much on theory and especially Presti (2013), who guides us through the depths of interaction theory; this work on social ontology explains interactive processes themselves and their role in creating a shared social reality. Other people and the social environment, virtual or not, constitute underlying social and cognitive understanding and give rise to meaning and deep learning. Preliminary data from the TELMOOC experience suggests that the early work of Bloom (1984) and Walberg (1984) may provide design direction for scaling high engagement learning activities in large, technology-enabled courses. These design directions, once confirmed, may be further scaled through adaptive responses to information from learning analytics. Students may then be additionally guided by algorithms to learning activities that will improve learner engagement and outcomes (Scandura & Kovak, 2017). We suggest this may work where engagement with other humans via continued social and cognitive interaction, even if informal and self-directed, remains a significant part of the experience.

References

Anderson, T. (2013). Promise and/or peril: MOOCs and open and distance education. Commonwealth of learning, 3, 1-9.

Bloom, B. S. (1984). The 2-sigma problem: The search for methods of group instruction as effective as one-to-one tutoring. Educational Researcher, 13(6), 4-16.

Cleveland-Innes, M., Ostashewski, N., & Wilton, D. (2017) iMOOCs and learning to learn online. Community of Inquiry Blog Post. Retrieved from: http://www.thecommunityofinquiry.org/project5.

Clow, D. (2013, April). MOOCs and the funnel of participation. In Proceedings of the third international conference on learning analytics and knowledge (pp. 185-189). ACM.

Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. American Journal of distance education, 15(1), 7-23.

Jones, C., Asensio, M., & Goodyear, P. (2000). Networked learning in higher education: practitioners' perspectives. *The Association for Learning Technology Journal*, *8*(2), 18 -28.

Khalil, H., & Ebner, M. (2014, June). MOOCs completion rates and possible methods to improve retention-A literature review. In EdMedia+ Innovate Learning (pp. 1305-1313). Association for the Advancement of Computing in Education (AACE).

Presti, P. L. (2013). Social ontology and social cognition. Abstracta, 7(1).

Scandura, J.M., & Novak, E. (2017). AuthorIT & TutorIT: Attacking Bloom's 2-sigma problem from a different perspective. Technology, Instruction, Cognition & Learning, 10(4). .

Walberg, H.J. (1984). Improving the productivity of America's schools. *Educational Leadership*, 41 (8), 19-27