Massive Open Online Courses (MOOCs) Behind the Scenes

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Abstract: Research literature on Massive Open Online Courses (MOOCs) is still limited and tends to focus on the learner perspective. This paper reports on the experiences of ten UK-based individuals involved in designing, developing, or delivering MOOCs (learning technologists, coordinators, designers, course builders or facilitators). We focus on the following key areas: 1) reasons for offering MOOCs, 2) design, creation and delivery processes, 3) attainment and course evaluation, and 4) challenges and recommendations for the future. Findings show that MOOCs are usually collaboratively created to "follow the trend", increase student enrolments (ie, convert MOOC participants to fee-paying students), repurpose existing materials and/or address an international audience. The role of the teacher (also in the form of student moderators) centers on maintaining discussions on track. Evaluations of MOOCs mostly lack agreed indicators of success.

Since their appearance in 2008, Massive Open Online Courses (MOOCs) have been on the rise and are still featuring strongly within the higher education sector (Johnson, Adams Becker, Estrada, & Freeman, 2015; Sharples et al., 2014). MOOCs are considered massive because their technological infrastructure has the potential to support a large number of users (Stewart, 2013). They are online because they are delivered via the Internet. They are open because any person in the world with Internet access can participate free of charge, without having to meet any pre-requisites of knowledge or demographics (Anderson, 2013). They are courses because they represent coherent academic interventions with a defined set of learning outcomes (Youell, 2011, p. 4), and usually have start and end dates.

A growing number of institutions worldwide have joined the MOOC stage (for example: 72 in the learning platform Open Education, Blackboard, 2014, and 82 in FutureLearn, 2016). However, despite the global interest in MOOCs, research literature on them is limited and is mostly focused on the learners, with a significant minor focus on the institutional perspective (Liyanagunawardena, Adams, & Williams, 2013). This paper reports on the experiences of ten individuals involved, in different capacities, in the creation and delivery of MOOCs. They include learning technologists, course coordinators, learning designers, course builders and facilitators.

The MOOC Process

The rationale behind a decision to offer MOOCs can be varied. Institutional aims usually relate either to marketing or management strategies (eg, increasing visibility and reach, driving student recruitment, reducing costs or increasing revenues) or to academic purposes, such as conducting research on teaching and learning, innovating and experimenting with pedagogy, and improving educational outcomes (Allen & Seaman, 2014; Hollands & Tirthali, 2014; Sharples et al., 2014).

The process required to design, create and deliver a MOOC can be a considerable task. There is uncertainty associated with the development of a course for a wide audience who do not need to meet any knowledge pre-requisites. Designers and teachers have to anticipate (and somewhat guess) the type of learner who would participate and their needs (Arnold, Kumar, Thillosen, & Ebner, 2014; Fedewa, Grabill, Heine, Lindquist, & Royston, 2014; Ross, Sinclair, Knox, Bayne, & Macleodet, 2014). Some academics have successfully approached this challenge through collaboration, taking decisions as a group and sharing responsibilities (eg, Arnold et al., 2014).

During delivery, multiple difficulties arise. Adequately supporting a large number of students is one of them. The massiveness of MOOCs generally prevents providers from offering personalised support to learners who may be struggling with the demands of independent learning and the digital literacy skills required for successful engagement (Milligan & Littlejohn, 2014). Teaching functions are often delegated to automated processes (eg, quizzes with automated feedback) and the community of learners becomes the main source of guidance (Bayne & Ross, 2014; Rodriguez, 2012). Most MOOCs fail to promote student-content interaction that goes beyond video-watching activities or to motivate students to use the learning content as a triggering component of intellectual discussions that can develop higher order thinking skills (Dalipi, Yayilgan, Imran, & Kastrati, in press).

Even in scaled facilitation, teachers can be visible and maintain an influential position, but their traditional functions and identities require further examination (Bayne & Ross, 2014; Fedewa et al., 2014; Ross et al., 2014). There is the risk of disaggregating teacher roles into multiple ones, such as designer, developer, course builder, etc. (Siemens, 2013). Teaching at scale is complex, multifaceted, intellectually and emotionally demanding, and time consuming (Bayne & Ross, 2014; Fedewa et al., 2014; Ross et al., 2014), Yet, teachers usually describe the experience as a rewarding and fascinating one. They also report the benefit of gaining insights from students' feedback on how to enhance their pedagogy and learning materials (Evans & Myrick, 2015).

Judging whether a MOOC has been successful requires careful planning. In traditional courses, learning gain is a common indicator of effectiveness. In MOOCs, little effort has been made to ascertain whether participants gain useful knowledge (Hollands & Tirthali, 2014). Assessment of learning is usually done by automatic-graded multiple choice questions, self/peer-assessments of homework or final projects (Witthaus et al., 2016). MOOC evaluations also tend to focus on learner feedback, mostly on satisfaction and perceptions of having learned (eg, Padilla Rodriguez, Bird & Conole, 2015). This type of surveys can be problematic, since a course does not need to be entertaining or enjoyable to be meaningful (Ross et al., 2014).

Completion rates represent another potentially misleading indicator of success. In MOOCs, completion rates are usually poor, lower than the ones of traditional university courses (Siemens, 2013). They can approach 40% (and occasionally exceed it), but the current average completion rate for MOOCs is approximately 15% (Jordan, 2015). However, MOOC participants may enrol for reasons beyond completing the course. For example, they might be interested in studying only some lessons (Siemens, 2013).

In spite of the limited research into 'MOOC success', there is some evidence of MOOC benefits. For example, access to online provision has been increased in terms of geographical spread, although less so in terms of reaching

people with few learning opportunities (Hollands & Tirthali, 2014). MOOCs also represent a lifelong learning option, a transition step to formal education and a student recruitment strategy (Padilla Rodriguez et al., 2015). They provide an opportunity for companies around the world to improve the qualifications of their workers and to identify desired profiles in their recruitment process (Dalipi et al., in press).

This paper contributes to the general understanding of MOOCs by reporting on a qualitative study aimed at providing an informed insight into the design, creation, delivery, and evaluation processes of MOOCs.

Methodology

Participants

A convenience sample of ten individuals involved in the coordination, design, development, delivery and evaluation of MOOCs participated in this study. They belong to four different universities in the United Kingdom. Table 1 summarises their roles.

ID	Institution	Role
1	University 1	Course builder, facilitator
2	University 2	MOOC coordinator, designer, facilitator
3	University 2	Designer, facilitator
4	University 2	MOOC coordinator, designer
5	University 2	Learning technologist
6	University 2	Designer, facilitator
7	University 3	Learning technologist
8	University 3	Designer, course builder, facilitator
9	University 3	MOOC coordinator, designer, course builder, facilitator
10	University 4	MOOC coordinator

Table 1: Study participants and their roles

Instrument

A semi-structured interview guide helped obtain information on four main topics:

1. Reasons for offering MOOCs
2. Design, creation and delivery
3. Attainment and course evaluation
4. Challenges and recommendations for the future

A pre-determined set of open questions was established for each topic. The interviewer was free to follow up on any interesting answers.

Procedure

Participants were initially contacted via email. Interviews of approximately one hour were conducted face to face, except one which happened via telephone. The interviews were audio recorded. Participants were identified with a generic ID (eg, P1, P2). Coding relied on inductive thematic analysis. Answers were analysed to find salient and common patterns within each of the topics of interest.

Findings and Discussion

Results were categorised according to the area they relate to: 1) reasons for offering MOOCs, 2) design, creation and delivery, 3) attainment and course evaluation, and 4) challenges and recommendations.

Conception: Reasons for Offering MOOCs

Four key reasons seemed to drive the emergence of MOOCs within the sample of this study: 1) the pressure to join other institutions on the global MOOC stage (eg, "we felt we had to do it; others were doing it" [P7]), 2) using MOOCs as a marketing strategy to increase paid enrolments (as reported in Allen & Seaman, 2014 and Hollands & Tirthali, 2014), 3) taking advantage of existing learning materials by repurposing them (eg, converting a book or a face-to-face module into a MOOC); and 4) reaching and academically supporting an international audience. A clear, pedagogical strategy underlying the development of MOOCs is sometimes lacking (eg, "there is no strategy" [P9]). Participants used Open Education Blackboard or FutureLearn as their MOOC platforms, mostly due to convenience, as there was already a partnership between their institution and the platform.

Design, Creation and Delivery

As reported in previous research (Arnold et al., 2014), MOOC design followed mostly a team-based approach, in which a group of academics met to agree on the topics, structure and content of the course. At University 2, all participants were part of a two-day workshop focused on the development of a suitable learning design for their MOOCs.

All MOOCs seemed heavily reliant on videos, including PowerPoint presentations with audio, animations and filmed discussions between content experts. Other learning materials used include e-tivities (online activities focused on fostering interactions between learners), links, readings and multiple-choice quizzes. Only two participants reported using open educational resources (OERs) in their MOOCs. One [P4] emphasised the need to create materials from scratch so they matched the context of the MOOC. The time required to find and repurpose suitable resources might exceed the time required to create them.

Three participants, all from University 2, mentioned conducting a pilot before launching MOOCs. One [P2] organised three face-to-face sessions, where students were on campus, navigated on the MOOC and helped identify problems of clarity and other potential issues. Another [P3] considered the first launch of the MOOC a pilot and used it to gain experience on MOOC delivery. The third one [P4] had former students of the module on which the MOOC was based, contributing to and testing the design and the learning materials. The main reported reason to fail to conduct a pilot of the MOOC is not having enough time or funding.

The Marketing Department of participants' universities played an important role in promoting the MOOCs. Strategies for dissemination included sending emails to potential students (eg, alumni, staff and external interest groups), using social media, and printing informative flyers and posters. Word of mouth was also considered helpful to reach potential learners. In one of the MOOCs, the institution's new first-year students were asked to enrol in the MOOC.

During delivery, communication happened mostly in unstructured discussions. The role of the teacher remained relevant (Bayne & Ross, 2014; Fedewa et al., 2014; Ross et al., 2014). Facilitators or student ambassadors (knowledgeable students from participants' institutions who took the role of moderators) browsed the messages and helped keeping the conversations on track. An interviewee [P6] explained that sometimes MOOCs do not provide support from facilitators, assuming that "knowledge is within the community [of learners]", which is not always the case. Another participant [P8] mentioned that sometimes MOOC learners offered incorrect advice to fellow learners,

creating confusion, making it necessary to intervene and clarify. This raises questions about the value of the community of learners as a source of guidance and emphasises the role of the teacher.

Some MOOCs moved beyond the boundaries of the learning platform to include conversations on social media (eg, on Twitter via a hashtag). Tools used included Flickr (an image repository) and Google Hangouts (a videoconferencing service). Due to time and funding limitations, some participants had to find ways to make their MOOCs "self-sustainable" [P6], by automating processes and requiring little or no support from facilitators, as is the case in the MOOCs described by Milligan & Littlejohn (2014) and Rodriguez (2012).

Attainment and Course Evaluation

MOOC evaluations relied mostly on quizzes with multiple-choice questions, self-assessments and data provided by the learning platforms (eg, number of messages posted, completion rates, etc.). Some MOOCs offered non-credit bearing completion certificates. Only one interviewee [P4] was involved in a MOOC which offered academic credits (for a fee). Students on this MOOC could decide whether or not to enrol at the university (if they met admissions criteria), obtain support, complete a formal assessment and start a study programme.

MOOC effectiveness was difficult to determine. Information available tended to focus on the sociodemographic profile of learners, engagement indicators (eg, clicks or page views) and students' perceptions of improvement (see Padilla Rodriguez et al., 2015). Three participants [P2, P8, P9] mentioned having lots of data available but not enough time to analyse it, which aligns with the need for a better understanding of whether MOOC participants gain useful knowledge from the course (Hollands & Tirthali, 2014; Ross et al., 2014). An interviewee simply stated: "I don't really know if the MOOC was successful or not" [P3]. Another participant [P6] explained that the MOOC was judged as a success for being innovative, before it was even launched: "It [the MOOC] is innovative, it must be great, but no one really checks". There was no indication of what innovation criteria had been applied to judge that MOOC as "innovative" (see Armellini & Padilla Rodriguez, in press). This type of response highlights the usual absence of critical, evidence-based approaches to MOOC success.

Success, however, seemed clearer in other cases, where the specific goals of creating and implementing a MOOC were defined from the beginning. One of the MOOCs was created to increase enrolments into a Master's programme. Thus, when three MOOC students converted to fee-paying students, it was considered successful [P4]. Another MOOC was aimed at increasing students' perceptions of self-efficacy and used self-assessment surveys as evaluation instruments. While the interviewee [P2] had not finished analysing the data, preliminary results were encouraging.

Challenges and Recommendations for the Future

Time management was considered one of the key challenges in MOOC development and implementation. Ensuring the suitability of the learning materials requires a major time investment [P1, P4, P8, P9]. An interviewee [P9] explained that academics take longer to create a MOOC than a regular course because they know materials are public and permanent. This worldwide exposure encourages MOOC developers to focus on the quality of their products. The experience of designing, creating and delivering a MOOC can help develop a learning design skill set ("We've learned a lot about e-learning-type teaching", P9) and foster a sense of empowerment ("if they had told us years ago that we would be able to do something like this [developing and delivering a MOOC], we wouldn't have believed it", P2).

Creating and sustaining a large and active community of learners can also be a difficult task [P3, P5]. Even if many decide to lurk or drop out, some will stay and contribute to conversations that generate knowledge. However, massiveness can also result in chaos if learners advice others incorrectly or generate confusion [P6, P8].

For future MOOCs, participants recommend planning well in advance before implementation [P1], designing the MOOC to be platform-independent (ie, not to rely on the features of a specific platform) [P7], considering internationalisation and how the MOOC works for learners from different nationalities [P7, P10], and focusing on the students' perspective, on their experiences, on how the MOOC benefits them [P1, P10].

Conclusions

This paper provides an informed insight into MOOCs. It reports on the reasons why institutions offer MOOCs and on challenges associated with design, creation, delivery and evaluation of these courses. The evidence suggests that MOOCs face numerous challenges:

- *Conception*: The emergence of MOOCs is sometimes driven by a desire to "follow the trend" or increase student enrolments, without a clear, underlying pedagogical strategy.
- *Creation*: MOOCs often fail to benefit from existing OERs.
- *Delivery*: MOOCs often delegate the role of the teacher to the community of learners. If learners share an incorrect idea, they might end up confusing others. In this study, participants described academic staff or student moderators as MOOC facilitators. They intervened when discussions were no longer on track.
- *Evaluation*: Claims of MOOC effectiveness usually lack agreed indicators of success, critical analysis or are based on a very limited evidence base. One of the MOOCs was considered a success even before it launched. Establishing clear, specific goals and indicators of success makes the evaluation of MOOCs more credible and robust.

Time was a recurrent theme in participants' answers. Time limitations prevented the implementation of MOOC pilots, active teacher participation, and analysis of evaluation data. Quality could be enhanced if MOOC coordinators, designers, course builders and facilitators, working together and iteratively, had sufficient time to make evidence-based decisions. Institutions creating and delivering MOOCs might benefit from the findings of this study by considering the identified challenges and planning how to address them.

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