

MOOCifying Courses: Delivery of a MOOC to Enhance University Course Activities

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Abstract: Since 2012 MOOCs have been heralded as a new way of learning outside of formal university programs of study and there has been much speculation regarding their impact. While MOOCs have provided millions of global learners with access to courses, they failed to deliver the types of learning experiences and completion requirements that were hoped for. One potential iteration of MOOCs might be to blend them with existing courses offered in universities supporting links and connections between study and the outside world. This MOOCification of full-fee courses may provide another next step in the delivery of real and authentic learning. Using an empirical case study design, this project explored the MOOCification of an undergraduate pre-service education course at an Australian university. The study presents evidence that blending MOOCs with classroom-based or online learning does provide higher education learners with personalized active learning opportunities. Further research on scaffolded support enabling learners to capitalize on additional aspects of networked learning in MOOCs is needed.

Keywords: MOOCs, eLearning.

Introduction

Online learning is not evolving organically. Instead, online learning is being driven by multi-national, billion-dollar technology companies who stand to make immense profit should there be a global move from traditional methods of teaching and learning to online learning. (Davies, 2012, p. 3)

Davies (2012) suggests that traditional purveyors of higher education, such as universities, may soon face new competition for their share of the student market. Already, the emergence of MOOCs has seen a rise in the number of companies stepping into the post-formal schooling space (Butin, 2012; Nicoara, 2013). Companies such as Udacity, edX and Coursera offer MOOC-type study alternatives, and, globally, more companies are entering the online learning provider marketplace. MOOC-type is the best fit description of these offerings, as they are already having to adapt into something quite different from MOOCs that initially emerged in 2009. In response higher education has not been quiet or complacent as many universities have launched courses into this MOOC space. Harvard and MIT were two of the first institutions heavily involved in MOOCs (Butin, 2012), but today many universities have explored what MOOCs could provide. Other institutions, such as Stanford, have focussed on providing Open Education Resources (OERs) via online platforms such as Apple's iTunes. With increasing global demand for high education opportunities, increasing adoption of OERs, and the cost of building campuses, MOOCs and MOOC-type learning will become a permanent



part of the higher education landscape. The research presented in this article describes an adaptation of MOOCs that can provide value to the research being done in this evolving area of online learning.

It is not only the fear of losing market share that should alarm higher education, it is the type of learning that students are enthusiastically taking up and expecting to participate in, which is very different from the offerings that they experience within formal programs of study (Davies, 2012; Nicoara, 2013). Whilst their digital fluency is a much-debated aspect, it is clear that they expect their learning experiences to be different from the traditional approaches favoured by higher education in the past. The response from higher education to the expansion of alternative providers and to MOOCs has been twofold. Higher education has either joined the MOOC explosion and built or participated in this space. Alternatively, they have chosen to adopt a wait-and-see approach. A third alternative, which is presented in this paper, is to MOOCify the existing courses they offer, resulting in new kinds of support for their students.

It is clear that the online learning space is changing and we have entered an era where flexible delivery is paramount (Bartlett, 2013). Should higher education providers be concerned – and more importantly should they enter this space? There are many imperatives: the fear of losing market share, the expectations of students, provision of new kinds of student support, the desire to control discipline areas or specialties, to maintain their expertise in particular fields and, perhaps most importantly, to avoid being left behind. As a field, higher education has been an early adopter of online learning technologies and as global society impacts on student cohorts, more enrolments will be online and face-to-face cohorts will continue to shrink.

Another aspect of MOOCs is that there are considerable benefits they bring to the open education movement globally. George Siemens (2015) states that when considering future scenarios for MOOCs, the global demand for higher education access, coupled with the digitization of education, are what they allow. This is evident in other research that points out opportunities for MOOCs to provide access to higher education. Some of the crucial opportunities which MOOCs can potentially fill for the open education movement include:

- Addressing the need for more universities, (Chao-chen Chen, 2013; Tang & Char-Chellman, 2016)
- Supporting literacy in developing Asian countries, (Chao-chen Chen, 2013)
- Supporting lifelong learning and development of a more informed world view, (Tang & Char-Chellman, 2016)
- Lowering the cost of access to higher education (Tang & Char-Chellman, 2016)
- Opening up and significantly increasing access to higher education (Woldegiyorgis, & Carvalho, 2015).

Many of these open access opportunities will require new ways of providing credentialing of MOOC offerings. One example of this already beginning to happen is the OERu project (Schreurs, Van den Beemt, Prinsen, De Laat, Witthaus, & Conole, 2014). According to the OERu website “OERu connects learners around the world with defined pathways to education, created by recognised educators and assessed by renowned global institutions. The learning is free and credentialing is very affordable” (<https://oeru.org>). The open education dimension of MOOCs seen through an international education

lens suggests that credentialing, and perhaps innovative offerings of MOOCs co-delivered with existing higher education courses, may provide some solutions for global open education.

In an attempt to maintain domestic enrolments, some higher education providers have adopted blended face-to-face and online approaches to delivering content. These allow students more flexibility in their mode of study, freeing up time required to be spent on campus and making use of digital technologies to deliver their content via mobile platforms. The question that relates to MOOCs and these new approaches stems from the original MOOCs delivered in 2008 (Rodrigues, 2013), and that is “how can modern MOOCs and formal university courses be combined?” Our attempt to explore this question is evident in the goals of the study:

1. To describe how a MOOC could be embedded within a course to enhance learning outcomes.
2. To understand student perceptions of 'MOOCified' courses
3. To determine if MOOCs can enhance learning experiences for both online and face-to-face students.

MOOCs and Higher Education

The use of MOOCs within formal programs in higher education is problematical due to their nature; they are open access programs of learning that have no fee-structure attached to them nor any formalized assessment that can be used to demonstrate the attainment of learning outcomes or to generate grades. Many institutions have grappled with these aspects, as the delivery platforms themselves are robust alternatives to LMSs and have the additional advantage of enabling connections between the content and the students, as well as with the broader outside field. Their potential to make authentic connections, to provide contexts beyond higher education, are very appealing, and it is this specific aspect that has often been identified as in high demand by student evaluation surveys. A further attractive characteristic of MOOCs are their self-directed any time, anywhere nature; participants can work their way through the materials and content in their own time, without the need for step-by-step instruction or support. The participant is encouraged by the structure and the non-mandatory approach to be proactive in the learning process (Nicoara, 2013). This is very powerful and has been shown to support a positive relationship in motivation and engagement (Hartnett, George, & Dron, 2011).

A further incentive is the ability of MOOCs to provide personalized learning experiences with collaboration and networking. The act of engaging, using and participating in a MOOC is very personal, it is not reliant upon cooperation or the behaviour of others, however, the design of a MOOC can enable participants to connect and collaborate with others. The asynchronous nature of the experience allows for this to occur, whilst opportunities for synchronous activity, which does not represent all of the activity that occurs in this space, allows for those who wish to make real-time connections to do so, while not being a requirement or essential act for participation. It has moved away from scheduled, compulsory attendance or participation that is typical of undergraduate LMS-based online learning. This flexible participation might be the difference that has been shown to result in higher levels of engagement and success in online learning (Means, Toyama, Murphy, Bakia, & Jones, 2009). Regardless, the issue of academic recognition for fully online program deliveries such as MOOCs persists in being a significant hurdle (Jimenez-Romero, Johnson & De Castro, 2012;

Ladyshewsky & Soontiens, 2013; Nicoara, 2013;) and one that at this point prevents the accreditation of activities conducted in these types of spaces. While some MOOC providers are testing innovative exam proctoring, blended programming, and student identify verification, MOOCs are not currently accepted as full credits for university degrees. What the future holds in terms of this credentialing of MOOCs will be interesting for online education researchers regardless of the final outcome.

The Changing Nature of the Higher Education Landscape

Policy documents from Australia, the UK, Europe and the USA are practically unanimous that as the key feature and facilitator of developments in the 'new knowledge economy' education must be 'constantly' reformed to meet the demands of the 'rapidly changing global economy' (Bartlett, 2013, p. 3)

As articulated by Bartlett (2013) there is a growing sense that the knowledge-based society in which we are currently situated is influencing not only the content that higher education delivers but also the mode within which it is delivered. New developments in digital technologies need to be included and incorporated, not only due to learner expectations but also to ensure they are equipped with the broadest range of digital experiences and skills. The use of a Learning Management System (LMS) may no longer be enough, practitioners in higher education need to incorporate not only discipline-specific technologies, but broader, more popular modes of delivering content. The term MOOCs was first used by Stephen Downes and George Siemens in 2008, and it was heralded as a transformative technology that would change how learning was delivered. This is possible, yet we are situated in an era described as the "third platform" of technology evolution, one that has seen the rise of cloud computing, social networking and mobile connectivity. The digital age has resulted in the most dramatic amount of change in learning (Bartlett, 2013) due to the changes in technology-based tools or devices, the Internet, the modes of delivery and the volume of information accessible outside of formal programs of learning. How education has been traditionally delivered and consumed has changed, and this is can understood by reviewing the four "V's" described by Butin (2012):

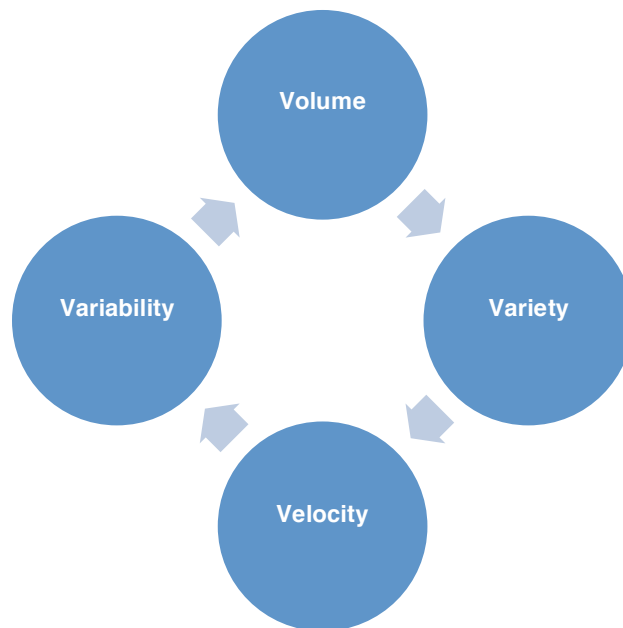


Figure 1: The four V's of the Internet (based on Butin, 2012)

These four aspects can be used as a framework to view the delivery of content in the higher education context. Higher education is competing with a huge amount of information on the Internet (volume), as it is no longer the only source of advanced or higher levels of learning. More institutions are offering their programs online, hence competition has increased (variability). Institutions are now competing with a larger volume of other providers. This leads to the variety present on the Internet, and the modes of learning within the online space have also changed. Online programs delivered by LMSs are still commonplace but alternative offerings via purpose-built websites that are more flexible, collaborative and engaging are entering this space. Finally, learning is no longer limited to attending a physical class, hence the accessibility of learning is the fact that it is available at anytime and anyplace. This flexibility is irresistible and increasingly being demanded by the current cohort of students. The variability in modes of delivery, level of engagement, and level of skills required has made online offerings much more appealing to a discriminating student. Clearly the learning space has changed. Martin Davies (2012) explored this changing landscape and identified eight potential benefits:

- *Online learning has democratised higher education.* If you have access to an Internet connection, then you have access to education.
- *It has allowed demand to equal supply.* No longer do you run the risk of failing to secure a place in a program even if you satisfy the entry requirements.
- *Try before you buy.* Potential students can now try a subject or discipline area before committing to a program.
- *Pause, repeat, rewind.* Online delivery enables mastery learning. Content can be repeated as many times as the learners requires in order to achieve mastery.
- *Personalized learning.* Personal connections with instructors is enabled as the learner is digitally connected to them, which enables faster, more personalized responses.
- *Learn where you want, when you want.*
- *Learning analytics.* Digital platforms enable vast amounts of data about how people use and engage with data content, which allows us to understand online learning behaviours in more detail.
- *Decoupling.* Typically higher education programs are associated with formal accreditation processes, by separating learning from accreditation it becomes 'decoupled'. Other providers can step into the space.
- *It's cheap (or free).* Rather than enroll in expensive full-time study, online courses are cheaper or often free.

The cMOOC Design

The goal and underlying design of the MOOC and platform that forms the basis of this study was to implement a connectivist-style or cMOOC pedagogy. The reason for this was that the university students enrolled in the parallel course already had access to the university LMS and a cMOOC space would allow for much more personal choice and selection. The title of the cMOOC in this study was "Participating in the Digital Age" or the PDA MOOC. The primary goal was to engage students in online activities that supported learning on a series of topics relevant to their credentialed course content. Exposure to students that are "external to the credentialed course", supporting peer to peer

interactions between online and campus based students, and exposure to group curation and sharing activities were key elements of the cMOOC activities.

Dave Cormier, the researcher who coined the term MOOC, provides a definition of cMOOCs:

...four types of activities: aggregate, remix, repurpose and feed forward. Therefore the intention of cMOOCs is to harness the power of social and participatory media to enable participants to communicate and collaborate through a variety of channels; for example Twitter, blogs, wikis, etc. and the use of hashtags and curation tools (such as Pinterest or Scoop.it) to filter and aggregate. The focus is on personalisation, but also collective intelligence (Lévy 1997). Each participate [sic] forges their own learning path through the materials; picking and mixing which content, activities and communications are meaningful for them. (Conole, 2014, p. 70)

The potential for personalization, crowd-sourced interaction and support, and open-endedness of the exploration provides a much-needed exploration of how cMOOCs might be able to support for-credit university courses (Gasevic, Kovanovic, Joksimovic, & Siemens, 2014). The design team identified the social software platform as one that could support the type of interactions, which could occur in a group space.

The PDA MOOC was the first MOOC designed to support a university course while providing access for other interested online learners. This type of joint for credit - open access delivery has been reported by other researchers, (Cormier & Siemens, 2010) but differs in that the platform used for the PDA MOOC was designed for self-regulated social media within a large online “group” space. Curtin University’s first year education course titled, “Living and Learning in the Digital Age” (LLDA), a 13-week course delivered in both campus and fully online modes, utilized the PDA MOOC in a parallel delivery. The goals of the MOOC were to provide conceptual understandings and opportunities to participate in tasks exemplifying the topic. This provided an experiential learning space about the very topics being presented in both the PDA MOOC and LLDA courses. The parallel delivery with LLDA provided students with an innovation that supported active learning as a further way to engage in the topics that were relevant to the LLDA credit course.

Pedagogy and Factors of the PDA MOOC Implementation

Distance education has the significant challenge of transactional distance (Moore, 1997) that is present between the teacher and the learner that must be addressed. In face-to-face classrooms teachers have the ability to observe students and use real-time visual communication skills, such as reading body language, to support and guide learners. In print-based distance education programs learner support was designed into the course materials as best as possible. This design approach often left the student support mainly on the students’ own shoulders. Now with distance education’s ability to deliver via eLearning, delivering materials in online spaces, transactional distance certainly has the potential to be greatly reduced. Teacher-designed supports in many forms – social media, custom-video, email, Skype – are all tools which can be employed to decrease transactional distance. However despite the potential, these approaches do not scale to provide direct teacher-student interactions where there are very large numbers of students. For MOOCs, then, another manner in which learner support can be provided is by designing for *support by other learners* or *peer-to-peer support*.

In the PDA MOOC the instructor-designers selected cMOOC pedagogy while also designing for potential large numbers of students. The goal of supporting PDA MOOC learners by enabling them to access peer supports and personalize their learning pathways through internal (to the environment) exposure to social media tools and crowdsourced discussions were the key attributes of the Connectivist approach. According to Anderson and Dron (2012), three families of distance education pedagogies - Cognitivist-behaviourist (CB), Constructivist, and Connectivist – may each have a role in the delivery of effective distance education.

Connectivism is built on an assumption of a constructivist model of learning, with the learner at the centre, connecting and constructing knowledge in a context that includes not only external networks and groups but also his or her own histories and predilections. At a small scale, both constructivist and connectivist approaches almost always rely to a greater or lesser degree on the availability of the stuff of learning, much of which (at least, that which is successful in helping people to learn) is designed and organized on CB models. The Web sites, books, tutorial materials, videos, and so on, from which a learner may learn, all work more or less effectively according to how well they enable the learner to gain knowledge. Even when learning relies on entirely social interactions, the various parties involved may communicate knowledge more or less effectively. (p. 92)

Some of the identified challenges in the delivery of cMOOCs have been not related to the pedagogy but, rather, to the practical aspects of implementation (Kop, 2011). Using a social networking environment designed to provide the needed tools in a group space on one site, as opposed to some of the early cMOOCs, where content was distributed over many tools on the Internet (Rodriguez, 2013), has shown itself to be one way to address this challenge (Ostashewski & Reid, 2010). Providing common social media tools (Twitter, blog, discussion forums, profiles) inside the group environment of the platform simplified access to these tools supporting learners who may be new to social media.

The Study

The methodology utilized in this study was a case study design which allowed for a closer examination of one specific culture-sharing group, in this case, two cohorts of undergraduate students enrolled in a common first-year course. Data was collected via an electronic survey which was conducted over a period of four weeks during a university semester. The students were approached via email, announcements on the course Blackboard page and during face-to-face workshops. This was followed up by sharing with them the link to the electronic survey.

The survey was hosted via an online website (*Qualitrics*©) and had a participant consent mechanism built into the first page. All responses were anonymous and no personal details were collected. The survey comprised a combination of nine closed questions and two open questions organized around two topics: (a) *understanding the experiences of the learners engagement with the MOOC* and (b) *comparing the MOOC experience with previous online learning*.

There was a potential respondent pool of 345 first-year undergraduate pre-service teacher education students enrolled in either the Bachelor of Education (Primary) or the Bachelor of Education (Early Childhood Education) programs in an Australian university. This was a mixed cohort of students with 149 students enrolled in the face-to-face mode based on a university campus, and 196 enrolled in a

fully online mode. The total number of survey responses collected was 48 ($N = 48$) representing a participation rate of 14%.

Findings/Data

For purposes of clarity and organization, the findings will be presented around these two topics.

(a) Understanding the experiences of the learners' engagement with the MOOC

This section of the survey contained six closed questions designed to collect information about the actual lived experience of participating in a MOOC. The majority of participants (60.25%) stated that they enjoyed the MOOC, and most (58.25%) felt it was easy to navigate or use. Within the MOOC site a number of different tools were used across the six weeks, in order to understand if the participants enjoyed using these tools they were asked to categorize them as being either; useful, useless or neutral.

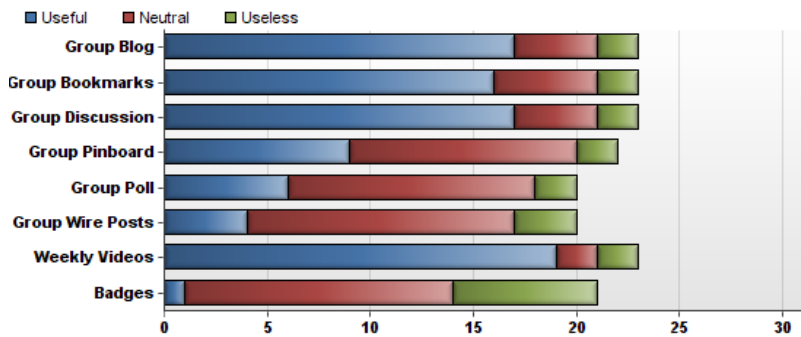


Figure 2: Perceived usefulness of MOOC tools (n = 48)

The most popular tools were the weekly videos, group discussion threads, group blogs, and group bookmarks. The next question asked respondents to select a statement that best reflected their opinion regarding their MOOC experience. The results were as follows: 60% found the experience enjoyable, 12% found the experience added nothing to the course, and 28% felt it was challenging and caused stress.

The MOOC was run for a six-week period of time, which was nested within the usual 12-week semester of study. The respondents were asked to select a statement that best reflected their opinion regarding this time length. Forty-four percent felt that six weeks was long enough, 28% felt that this length of time was too long and that less would have been an improvement, whilst 28% felt that it would have been better to run the MOOC for the length of the semester, 12 weeks. The next question sought to understand the impact of the MOOC on the learning activities of the course students were enrolled in. Thirty-two percent felt that the MOOC enhanced the learning activities and content covered by the course, whilst 40% felt it supported them, and 28% felt it detracted from them.

The MOOC, by its nature, had non-university students participating. This was an interesting aspect that needed examining, as very few options within formal university programs of study allow for

non-enrolled students to participate. Hence the respondents were asked to select a statement that best reflected their opinion regarding non-university participation.

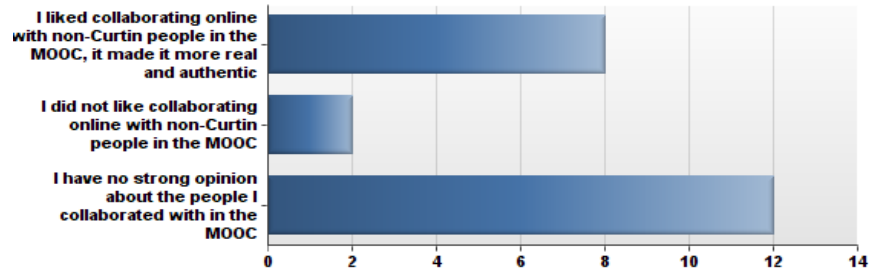


Figure 3: Reaction to non-university participants (n = 48)

The results were interesting, since 55% had no strong opinion regarding this aspect, whilst 36% felt positive about it and nine percent were negative.

The final two questions in this section were open questions. The answers that were collected were sorted and coded according to themes. The first asked generally if there was anything that to suggest that would improve the MOOC. There were eleven responses collected. The rest of the statements were constructive suggestions regarding how to improve the MOOC, for example:

- Ensuring that the content was synchronized between the MOOC and the course: *I found the weeks to be out of sync with the unit [course] weekly topics. Maybe align them with each other to make it easier*

There were many comments on the actual structure and design of the MOOC, which appeared to be an issue for those who contributed answers to this question. For example:

- *Make it a little more simple to use. It was hard to find were [sic] you needed to post tasks.*

These were quite constructive, as it was clear the navigation around the MOOC was an issue for users. There was one very negative comment:

- *Don't use it. If you do, maybe make the system slightly usable. This one was a waste of time.*

An interesting issue was raised in this question, one that reflects the concerns of higher education institutions, the difficulties of merging fee-paying students with non-fee-paying students (i.e., enrolled versus non-enrolled). One respondent stated:

- *Extra incentives for students who pay for their studies. Different certificates of completion which require completion of specific tasks or required interaction to pass the unit [course]*

A final suggestion that was worth noting, concerned the issue of time and the study load:

- *Time is a constraint as the unit [course] itself is demanding. I suggest that the tasks in the MOOC are not so time consuming.*

The final question in this section asked if there was anything else to share regarding their overall experiences with the MOOC. There were a total of 12 responses collected in this section of the survey. These were broadly grouped into positive and negative comments, with the responses evenly divided between these (50%). The positive comments focused on the tools they used; the mode of presenting content and the sense of community that emerged:

- *Studying in an online community is in my opinion one of the best ways of studying. Views and opinions can be discussed immediately and feedback from peers is available.*

The negative comments ranged from observations regarding the need for digital fluency and how to use it efficiently; the need for it to be more strongly integrated within the course content and the stress it caused;

- *I would have like to have seen stronger integration of MOOC into the unit [course] as a resource for gaining crowd information.*

(b) Comparing the MOOC experience with previous online learning

This section of the survey contained three closed questions designed to compare participating in a MOOC with previous online learning experiences. The results can be seen in Figure 4.

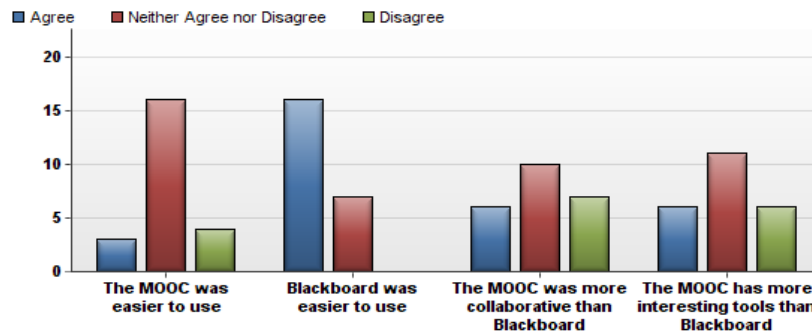


Figure 4: Comparing the MOOC platform to Blackboard (n = 48)

The final question sought to establish if the inclusion of a MOOC within a course made it more attractive to learners.

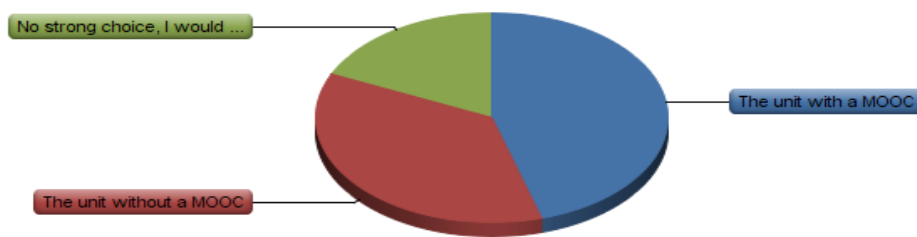


Figure 5: MOOCs and course selection (n = 48)

The majority of respondents (45%) stated that they would choose a course that had a MOOC included within it over a course with no MOOC; this was followed closely by those who stated that they would prefer a course without a MOOC (36%) and those with no strong opinion represented 18%.

Discussion

The MOOC was developed and embedded within a common first-year course offered to two cohorts of students, face-to-face and fully online. This was their first semester of study in their first year of the program; and as such they generally had no prior experiences of LMS programs such as Blackboard, and were largely members of a generational cohort much-purported to be digitally fluent. It would appear that the context was such that it would provide insight into the impact, including new approaches such as MOOCs, without being compromised by prior experiences or online habits. This was important as the impact of LMSs on students and the behaviours they acquire through studying via these platforms often represent habitual expectations and can result in culture shock when they encounter new ways of learning online. Overall, the majority of students enjoyed the MOOC experience, however a clear issue was difficulty in using it, navigating around the space, finding tools and understanding the new names commonly used tools had in this space (i.e., Group Wire Posts rather than Twitter). It was interesting to see that the most popular tools to emerge (videos, discussions threads, blogs, bookmarks) were also the ones that they would use most commonly in Blackboard. Perhaps there was some transfer across, as the cohorts were enrolled in three other courses and actively using Blackboard during this period. Whilst most enjoyed the experience, a significant number (28%) found it caused them stress and that working in the space was challenging. It was interesting to note that the length of time the MOOC was available, six weeks, appeared to be satisfactory, but some suggested that it be expanded to cover the whole semester (12 weeks) and this would allow for the experience to be more embedded in their learning.

The involvement of non-university people within the MOOC space was an aspect that intrigued the researchers. The issue of including non-fee paying individuals within a space that included fee-paying was potentially challenging, and one respondent did identify this as an issue. Not from the perspective of unfairness or anything similar, but from the issue of having different tasks or certificates of completion to distinguish the different types of involvement. It was anticipated that student participants would make connections to elements such as exposure to a wider audience; a sense of realness or authenticity that the mixed participant cohort would bring or even access to a wider range of opinions or experiences. The failure of these aspects to be picked up or noticed might be explained by the students being largely comprised of recent high school graduates or not thinking about learning, collaboration or cooperation. This needs exploring more as much research has focused on the need for higher education to include more authentic learning opportunities, or connections to a wider community, yet when engaged in this experience, students failed to recognise these elements within their overall learning experience.

Overall, 72% felt that the experience either enhanced or supported their learning experiences. This is a strong result and directs focus to where MOOCs may have the greatest contribution. This project sought to MOOCify an existing course. This worked partially, but there was some repetition of content, confusion from participants about the focus or aim of the MOOC and how it fit within the

course itself. The MOOC space can be viewed as being an alternative to LMSs, which is problematical due to the need for teaching and learning to be conducted within specific platforms due to issues around assessment, grade centres and standardization (Jimenez-Romero, Johnson & De Castro, 2012). Alternatively, it can be used to enhance the learning of the course, specifically where social media forms some element of the content. On a basic skill level, the students exit the experience with a new set of digital experiences: they have experienced a MOOC, learnt new tools, learnt new terminology, experienced a technology that is current, and seen how it can be used in learning. These are strong positives. However, when planning to use a MOOC it is clear it cannot merely repeat content or experiences, it should extend and engage students in a deeper level of learning within the topics of the course. They are an enrichment experience and, as such, it would appear this was not achieved in this project effectively. Much of the written feedback was based around comments that focused on integrations, avoiding repetition, and being in sync with the course. This failure would explain the result that the MOOC did not make the course more enjoyable or engaging than non-MOOCified courses. However, students did find something appealing in the experience, since they stated that they would choose a course with a MOOC again.

Conclusion

This study has generated some suggestions on how MOOCs can be used to support formal online courses spaces in higher education:

1. MOOCs should run for the length of the course.
2. They should be designed to enhance and support the learning goals of the course.
3. Opportunities should be developed that extend students so that they engage in deep learning.
4. Careful instructions supported by videos should be presented to assist participants in the navigation around a MOOC and how to use the tools.
5. Opportunities for peer-to-peer support, access to non-fee paying students, benefits of group activities - as a way to enhance course activities - should be made explicit to students at the start of the course.

In addition, the PDA MOOC design provides an example of how a cMOOC can be used to MOOCify the delivery of a formal online university course.

This study provides evidence that cMOOC implementations can be scalable, provide for valuable *moocification* of university-credit courses, support peer-peer interactions via integrated social media tools and techniques, and provide for open-access personal learning experiences. Our research also supports Wang, Niiya, Mark, Reich, and Wakschauer's (2015) finding that students construct their own patterns of social media usage to meet their changing needs. The PDA MOOC shows that learning using the Internet can be made personally meaningful for both formal credit and open access learners in the same space. Moocification of a formal university course is perhaps one way in which higher education students and universities can engage with communities that are interested in the same topics for learning. Future research is needed into what types of learner-learner and learner-tool interactions are required to design learning activities that support a wider range of personal learning.

Also needed is a theoretical framework that provides an understanding of how cMOOCs may be viewed in the wider scope of *learning using the Internet*. Further research on providing support to enable learners to capitalize on additional aspects of networked learning in cMOOCs would advance this use.

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