The voices of autism: Using MOOC technologies to meet the needs of vulnerable communities

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While Massive Open Online Courses (MOOCs) launched with great optimism and the promise of transforming higher education, their implementation has often failed to realise this potential. Across the sector, MOOCs typically attract an audience of already-educated participants with a curiosity for learning that ranges across multiple topics and issues; many engage with multiple courses. This community often do not present with the commitment required to expend the mental effort to achieve completion, and completion rates of 5-10% are not atypical. Given such low rates of completion, it has been argued that MOOCs are simply a fad, of poor quality and low retention (Haggard, 2013).

However, relatively few MOOCs have been developed within Australia that leverage the opportunities provided by free, large-scale educational platforms to address the learning needs of specific communities. This paper reports on the development and delivery of such a MOOC, focusing on raising awareness of the lived experience of individuals with autism, designed for and with the autism community. Utilising MOOC technologies to meet the information and support needs of a specific community demonstrated participation and completion rates significantly above those reported in traditional MOOCs, and points to new directions and purposes for large, open learning environments.

Keywords: MOOC, online retention, education for social good, learning technologies

Introduction

Massive Open Online Courses (MOOCs) offered the potential to transform traditional models of higher education participation; originating from the open education movement, such courses were designed to offer free, large-scale opportunities for any learners anywhere to engage with the kinds of learning models and technologies previously reserved for those enrolled in higher education. As has been noted elsewhere (Hone & El Said, 2016), MOOCs have been immensely popular with learners, with courses typically enrolling many thousands of participants from across the globe (Ebben & Murphy, 2014). However, completion rates are considerably lower than in 'traditional' higher education courses; typically, 5-10% (Ho et al, 2015).

This paper reports on the development and delivery of a MOOC that aimed to leverage contemporary technologies to engage with a specific group of 'non-traditional' learners, who shared a common interest and need around understanding autism. These learners were non-traditional in two senses of that term; first, they were generally mature-aged, with little or no previous experience of post-compulsory study; and second, very few of the cohort had previously engaged with a MOOC in any form. By exploring the cohort, the technologies and pedagogies used to engage them, and the outcomes in terms of retention and completion, this paper highlights the potential for a reconsideration of the role and purpose of MOOCs in higher education. As such, the aim of this paper is to present this case as the starting point for a disruptive conversation about the role of MOOCs and their benefits for education for social good and to service the needs of specific, vulnerable communities.

Understanding MOOCs: Audience and retention

It is important to note that MOOCs are no longer at the 'cutting edge' of educational technologies and practices, as the literature surrounding them is already reasonably extensive. However, this existing body of work is yet to reach consensus regarding the purpose and future of MOOCs; supporters highlight the potential for positive disruption of higher education and 'ownership' of associated knowledge and practice, whereas detractors describe MOOCs as a fad of poor quality and low retention (Haggard, 2013). Indeed, as noted above, typical retention rates for MOOCs are 5-10% (Ho et al, 2015), revealing that although many thousands enrol,

considerably fewer complete. It has been noted that we are still in the early stages of understanding why this retention rate is so low, but that learner intention is a key factor in raising retention and completion rates, along with the use of engaging digital technologies and instructor presence (Hone & El Said, 2016).

With regard to learner intention, research to date presents a profile of the 'typical' MOOC participant as an individual who is already highly educated and engaged in employment. For example, Ho et al's (2015) study examined 64 traditional academic MOOC environments developed by HarvardX and MITx, and found that 68% of participants already held a Bachelor's degree or above, 43.5% were over 30 years of age, and 30% were female. Similarly, Christensen et al (2014) examined participation in 32 Coursera MOOCs and characterised learners in these as young, well-educated working adults trying to support current work or taking courses out of curiosity or interest, rather than to address a specific need. It has also been noted that MOOCs have been largely unsuccessful in engaging participants from the developing world (Hone & El Said, 2016).

Given this, it is reasonable to state that typical MOOC participants are experienced learners addressing an interest rather than a need, which may account for low rates of completion when faced with the significant mental effort and sustained time commitment required to engage with a new domain of learning. Indeed, research has indicated that commitment and intention to complete are two of the most reliable predictors of retention in MOOCs (Hone & El Said, 2016), and that most attrition occurs within the first half of a MOOC.

Given the above, we would argue that although MOOCs have to date been marginally successful as a tool for allowing a wide range of participants to explore topics that are of interest to them, the original dream of MOOCs as 'free education for all' and as a tool for social good has not yet been fully realised. In the remainder of this paper, we describe the development and delivery of a MOOC that aimed to engage with a very different group of learners, motivated by need rather than interest, and who have to date been underserved by traditional educational offerings. The results of this MOOC in terms of retention and completion offer insights into how a realignment of the purpose and audience might offer new, potentially disruptive, ways of viewing the potential and impact of MOOCs.

The MOOC

The MOOC described in this paper was developed primarily as an altruistic project by a small team of educators and researchers at a private university in Australia, and aimed to address the needs of a specific vulnerable community: individuals with autism, and their carers and support networks. It is important to note that the needs identified related primarily to raising awareness of the lived experiences of individuals with autism, to better support interactions and engagement with the wider community, and help to reinforce a message that individuals with autism are diverse, present with many strengths and challenges, and are ill-served by prominent perspectives of them as 'sufferers' defined by stereotypical traits. As such, the MOOC aimed to raise awareness by presenting the 'voices' of individuals with autism, structured around key issues, with learners scaffolded through an approach described as 'person first' to further develop their awareness of individuals with autism and the implications of these experiences for developing a more nuanced understanding of autism.

Autism Spectrum Disorder (ASD) is the most prevalent neurological condition in the world; 1 in 132 individuals are born into the condition (Baxter, Brugha, Erskine, Scheurer, Vos, & Scott, 2015). Research into the condition tends to focus on intervention and theory, with less attention given to pragmatic issues important to the autism community, such as educational intervention and developing broader coping mechanisms (Pellicano, Dinsmore & Charman, 2014). Given the statistics around prevalence and this existing research focus, more and more parents and carers are faced with the realities of caring for a child on the autism spectrum, often struggling to cope. Parents of children diagnosed with autism experience high levels of stress and the impacts can be social, emotional, and financial (Clifford & Minnes, 2013). Support needs for this community have been identified and include better information from health professionals, and a desire for social support from others in similar positions (Derguy et al, 2015), along with a need for greater social understanding as many issues arise through a lack of understanding and/or miscommunication. Similarly, individuals on the autism spectrum within the community are faced with common misconceptions regarding the condition, particularly as they engage with education and employment. There is an urgent requirement for awareness-raising within the general community, to ensure individuals with autism are better understood, and their needs considered more fully. As such, in developing a MOOC to enable learners to better understand autism, our purpose (education to achieve social improvement for a vulnerable community) and audience (those who engage directly with those on the autism spectrum, which is potentially anyone in society) differed markedly from those in more traditional MOOCs.

To address this audience and purpose, the development team utilised several key processes, focusing on enacting principles of co-design and transformative learning. Co-design was central to the process, as individuals with autism became key participants in designing the learning journey of the MOOC and also in determining the focus topics for each week and providing the stories of lived experience that learners would engage with to develop their understanding. Given the purpose of raising awareness of lived experience, the course did not focus on traditional formal 'academic' or theoretical material, but rather concentrated on key practical issues and experiences that were most important and relevant for understanding individuals with autism. The learning journey of participants within the course thus incorporated the following key pedagogies:

- **Video and audio vignettes** from individuals with autism and their immediate support networks on a variety of topics (presented as 'the voices of autism'), with learners choosing one or more subtopics based on personal interest or need;
- Authentic **scenarios** designed to enhance thinking skills, raise awareness of lived experience, and encourage learners to consider how their own understanding of autism was being reinforced, challenged, or extended;
- **Discussion forums** that provided scaffolded and structured opportunities for the development of learner presence (with participants divided into smaller groups for participation) and to apply learning to practical case studies; and
- **Weekly video summaries** by course instructors that highlighted key learnings, shared 'spotlight' discussion posts drawn from discussion board contributions, and provided extension questions for learners, keen to further extend and consolidate their understanding.

There was no assessment component incorporated within the MOOC, as the course is located outside of formal course structures (although the institution does offer postgraduate courses in this field of study). However, learners were issued with a certificate of completion at the end of the course, if they had worked through at least one subtopic and participated in one discussion each week. The intended volume of learning for the course was 8 hours; 2 hours per week. The MOOC was delivered via the *Open Education (powered by Blackboard)* platform.

The MOOC was structured around 4 weeks of learning, addressing the following key topics:
- Week 1: **Person first** (understanding the approach and challenging assumptions)
- Week 2: **Education** (lived experiences of education and challenges presented)
- Week 3: **Employment** (lived experiences of individuals transitioning to employment)
- Week 4: **Independence** (revisiting key assumptions about autism, considering how best to support individuals)

As such, the MOOC was designed specifically with the needs of the autism community in mind, around issues they had identified as most significant, and where there was greatest potential for improvement in support. Through this focus, and the use of the pedagogical components identified above, the MOOC incorporated many of the elements that have been proposed in the literature as most important for retention (Hone & El Said, 2016), including the use of engaging technologies (incorporation of multimodal scenarios and voices of individuals with autism), instructor presence (weekly summary videos), and clarity of learner purpose (opportunities for reflection and connection within discussions and scenarios). In what follows, we present the results of this MOOC in terms of retention/completion rates and learner motivations for studying, and discuss what these suggest in terms of how we might utilise MOOCs for social good.

Results

There are numerous ways of calculating retention statistics, especially in a course (such as this MOOC) that does not require students to formally submit an assessment task. Table 1 shows retention for each week of the course, based upon whether the student engaged in the content for that week, extracted from analytics data through observation of whether the participant logged in during that week. Weekly retention statistics indicate that approximately 24% of participants did not engage in any material and took no further part in the course after registration. Further attrition of approximately 14% after week 1 was observed, followed by attrition of 7% and 5% in subsequent weeks. Final retention calculated by numbers logging into week 4 was 49.6%. In order to earn a certificate of completion for the 'Voices of Autism' MOOC participants were required to complete at least 1 topic, including the learning activity each week and asked to tick a check box to indicate that they had completed these sections. Analysis of this data via analytics indicated a 41.2% retention rate when using this as the retention criteria. Further, 33.2% of participants ticked all check boxes indicating completion of *all* topics within the MOOC, indicating a strong interest well above minimum requirements for completion.

Table 1: MOOC retention statistics

	Number	Percentage of total enrolments
Total students enrolled	11987	-
Students engaged in week 1	9118	76.1%
Students engaged in week 2	7423	61.9%
Students engaged in week 3	6583	54.9%
Students engaged in week 4	5945	49.6%
Completed sections for Certificate	4937	41.2%
Completed all sections	3981	33.2%

Following completion of the MOOC all participants were surveyed to explore reasons for completing the MOOC and overall satisfaction level. The survey was completed by 1249 participants (return rate of 10.4%). Unfortunately, it cannot be argued that this is a representative sample due to completion bias, however it does give some indication of why individuals participated. Figure 1 shows that a large number of participants who responded to the survey did so to get a better understanding of autism (40%), worked with people with autism (35%) or had a family member with autism (14%). Taking these responses into account, only around 10% of respondents were taking the MOOC without a specific connection to autism (i.e. general interest participants).
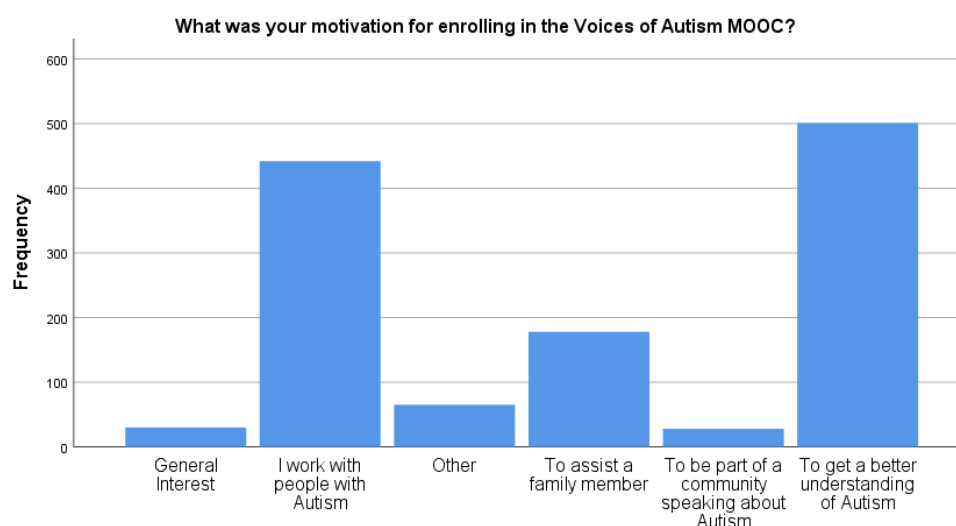
Figure 1: Survey respondents' motivation for enrolling in the MOOC

Discussion

Typical MOOCs show retention rates of between 5-10% (Ho et al, 2015), whereas the retention statistics for this MOOC show retention rates of up to 49%. Such retention rates can potentially be explained by enrolments that are driven by learner intention (Hone & El Said, 2016), as well as by the use of contemporary digital tools and pedagogies to 'drive' engagement within the MOOC. The motivation for enrolling in the MOOC data reinforces this and reflects the reasons why participants engaged with this MOOC as being due to a connection with the autism community and a practical desire to gain a better understanding of the individual. As such, this MOOC was largely successful in identifying the needs of a specific cohort of learners, and attracting these learners to the course, with approximately 90% of participants holding a connection to autism, and/or a specific interest in this topic.

More research is needed to explore the impact on perceptions and practice of participants who engage in such educational interventions and the indirect impact on the vulnerable community itself (e.g. individuals with Autism, parents, caregivers). If such research indicated the existence of even a modest positive impact, this would suggest that more scalable affordable educational interventions of this nature may be desirable to support the community across time and place.

Given the above, the results of this study go some way to validating the use of MOOC technology to support

vulnerable communities. Further, the marked increase in retention and completion when compared to more traditional MOOC audiences offers some preliminary insight into how such large-scale open courses might be repurposed. We would argue that the future impact of MOOCs may not be in attracting 'general interest' audiences, who generally do not stay to completion, but rather in leveraging this platform for social good. Such MOOCs would identify specific communities, most likely those who are presently underserved by traditional educational offerings, and target the use of digital tools and pedagogies to the learning needs of these communities.

In a sense, this is a disruptive provocation, as it shifts the focus away from MOOCs as a platform where the kinds of knowledge and practices that would normally be encountered within more formal award courses are simply 'scaled up' for a larger audience. However, such a shift in focus and practice may perhaps offer a far greater opportunity to realise the transformational potential of this important educational movement.

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