

The who, why and what of MOOCs

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In the area of online learning *massive open online courses* have attracted much attention in recent years. In 2014, quantitative research into MOOCs is starting to appear but relatively little is known about the learner experience in these environments. This paper reports on an ongoing study involving a mixed methods approach with a multiple embedded case study design which investigates what people bring with them into MOOCs and how they self regulate their learning in these unique environments. A preliminary analysis of data collected in a survey administered to the registrants of a health sciences MOOC confirms what the recent research tells us about who signs up for MOOCs: that they are likely to be young, male, and educated. In particular, individuals enroll with learning intentions other than the traditional trajectory of 'completion'. The unique characteristics of individuals in MOOCs need be foremost in our mind if we are to better understand effective learning in massive courses.

Keywords: MOOCs, higher education, online learning, learning intentions

Background

Over the last few years massive open online courses, or MOOCs, have proliferated attracting considerable media attention over their capacity to deliver a quality learning experience. In 2014, with hundreds of MOOCs delivered, studies are starting to emerge that provide a clearer picture of what is happening in MOOCs.

A recent study of geographic data finds that participation in MOOCs is diverse with the US, India and Canada dominating enrolments and European registrants being the most successful at earning a certificate (Nesterko et al., 2013). Another study finds that MOOC registrant numbers are decreasing over time, with an average enrolment of 43,000, which is much less than early figures. Also, longer courses tend to attract more registrants whilst shorter courses tend to have higher completion rates (Jordan, 2014). Other research finds that the focus on completion rates does not take into account the range of learner goals and intentions that people bring with them into MOOCs (Kizilcec, Piech, & Schneider, 2013). Clearly the field of MOOC research is just beginning and much more is required to better understand the affordances and effectiveness of MOOCs. In particular research is needed to shed light on the individuals who sign up for these massive learning experiences.

This short paper reports on a on an ongoing study involving a mixed methods approach with a multiple embedded case study design. Within a framework of social cognitive theory, which takes into account the interplay of personal, behavioural and environmental factors that influence human behavior (Bandura, 1986), this study investigates what individuals bring with them into MOOCs and what they do in that environment. Specifically this paper discusses the results of a survey administered to MOOC registrants and compares these findings with the nascent body of MOOC literature.

Method

The site of this research is a 10-week health sciences course on the EdX platform delivered in 2014. As can be seen in the flow chart below, data collection and analysis proceeds in three stages: *Pre-MOOC*, *MOOC* and *Post-MOOC*. It should be noted that at the point of writing this paper, the research had just entered the *Post-MOOC* stage of data collection, so what is presented here is a very preliminary analysis.

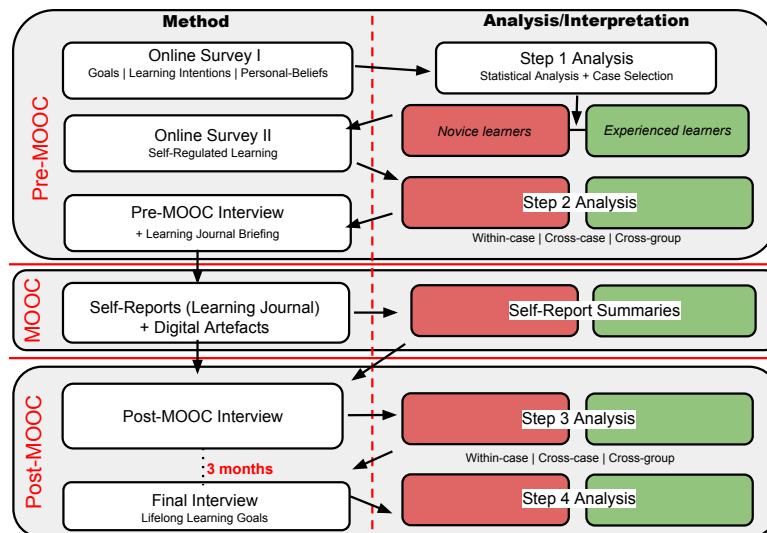


Figure 1: Flowchart of data collection and data analysis

Online Survey I collected data on registrants' goals, learning intentions and personal beliefs. Some of the findings of this analysis form the basis of this paper. This survey also served as a means of selecting the cases to be studied. According to Yin (2003) the case study research design is appropriate when seeking to understand complex social phenomena in a contemporary real-world context where the boundary between the case and the context is unclear. As learning in the context of a MOOC involves many dynamic and reciprocal internal and external factors the case study is an appropriate research design. Two design features were adopted to strengthen the integrity of the research. The choice of multiple cases increases the generalisability of findings (Miles & Huberman, 1994) and the selection of contrasting cases affords the testing of propositions deriving from the theoretical framework (Yin, 2003). For these reasons two groups of cases were selected: *experienced learners*, on the basis of the attainment of at least one post-secondary education qualification, and *novice learners*, on the absence of such a qualification. It is envisaged that such an approach will shed light on the relationships between personal characteristics and learning behaviours within MOOCs and may contribute to our understanding of individuals in these online environments.

Following this first step, the data collection methods are distinctly qualitative using instruments such as self-reports, digital artifacts and interviews to collect data with the aim of creating rich and detailed portraits of individuals who sign up for MOOCs. The self-regulated learning data collected from the cases in *Online Survey II* will be used qualitatively, as a reference point to other data collected through self-reports and interviews. The final interview will take place three months after the completion of the MOOC and will check in on each person's progress towards his or her goals. In short, this design is guided by the overarching research purpose which is to find out what individuals bring with them into MOOCs, in terms of their goals and beliefs, how they self-regulate their learning in that environment and what they achieve from such participation.

This paper will specifically report on some of the findings flowing from *Step 1 Analysis* and will answer the following questions:

1. Who signed up for this MOOC?
2. Why have they signed up?
3. What are they planning to do?

About the data

In week 8 of the MOOC, 3138 surveys had been returned. Empty and incomplete surveys were removed from the data set leaving 3104 surveys. This was a response rate of 22.4% of the total population of 13,841 enrolments at that time. Although this is a strong response rate for a voluntary survey, it is unlikely that this sample is representative of the entire MOOC population because those who responded are much more likely to be the engaged registrants rather than the disengaged ones. Therefore, inferences about the whole population from this sample are limited.

Findings and discussion

Who signed up for this MOOC?

This sample shows a dominance of male registrants with nearly six males for every four females (male: $n = 1787$, 59.4%; female: $n = 1,223$, 40.6%). This ratio is similar to general MOOC enrolments where men outnumber women (Nesterko et al., 2013) so it would be reasonable to infer that this MOOC has attracted more males than females. In terms of the age, respondents indicated that they are either in the 18-25 or 26-35 age ranges ($n = 969$, 32.1%; $n = 944$, 31.3%) which is in line with the median age (28) for registrants for other MOOC enrolments (Nesterko et al., 2014). In terms of numbers by country, the United States accounts for nearly one in four registrants for this sample ($n = 695$, 23.1%), followed then by India ($n = 291$, 9.7%), Australia ($n = 173$, 5.8%), Spain ($n = 130$, 4.3%) and Canada ($n = 117$, 3.9%). Though the study of the geographic component of MOOC registrants is difficult due to confounding variables, such as population size and the proportion of English speakers to whole population just to name two, in general the enrolment numbers for this course are not dissimilar to wider MOOC enrolment trends. A study of all HarvardX courses up to September 2013 found that the top two countries for enrolments are the US followed by India (Nesterko et al., 2013). Similarly, numbers in this MOOC follow wider trends with the top five ranking Australia, Spain and Canada in this sample also feature in the top ten for HarvardX registrants. In contrast though Australians outnumber registrants from Canada and Spain in this instance, which may be due to the geographic location of the university providing the MOOC. A local MOOC may generate more local interest.

Respondents were asked to indicate their highest level of education and the results are shown in the table below.

Table 1: Academic level achieved

Group	Academic Level	<i>n</i>	Percentage	Group Total
<i>Novice</i>	Less than high school	59	2.0%	15.2%
	High school	396	13.2%	
<i>Expert</i>	College or vocational	284	9.4%	84.8%
	Bachelors degree	1,031	34.3%	
	Masters degree	855	28.4%	
	Doctoral degree	381	12.7%	

This sample is dominated by individuals who have a post-secondary education qualification - *experts*. In fact *experts* outnumber the *novices* by more than five to one. This sample is in line with a US-based study of MOOC participants, which found that 83% of respondents already had at least one two-to four-year qualification (Emanuel, 2013). Daphne Koller, one of the founders of Coursera, stated that the majority of registrants on that platform are well educated with 42% having a Bachelors degree, 36.7% with a Masters and 5.4% with a PhD (Koller & Ng, 2013). The dominance of individuals with a high level of academic expertise in this sample then is no surprise.

Why have they signed up?

Registrants were asked to indicate their main reason for signing up and the results are shown in the table below.

Table 2: Reasons for signing up

Reason	<i>n</i>	Percentage
Continue learning throughout my life	862	28.6%
Advance my career	597	19.8%
Advance formal education	587	19.5%
Get learning opportunities not otherwise available to me	347	11.5%
I'm still at school. I'm thinking of biomedical imaging as a career	218	7.2%
Earn a certificate	75	2.5%
Better serve my community	74	2.5%
Curious about online learning	66	2.2%
Participate in an online community	9	0.3%
Other	178	5.9%

Although most respondents indicated the main reason for signing up was lifelong learning (28.6%), around four in ten indicated that the course would benefit them in terms of either their career (19.8%) or formal study (19.5%). In the ‘Other’ category (5.9%), nearly all the respondents indicated reasons related to work or study. These results are confounded somewhat by professionals who attributed their reason for enrolling as lifelong learning or the advancement of their formal education, which also have career dimensions to them. In fact if the the findings of another study which found that 70% of MOOC registrants were doing so for professional reasons and were already in employment (Emanuel, 2013) are anything to go by, the proportion of professionals in this MOOC may be larger than these data suggest. Without a doubt though, the share of individuals who are accessing learning not normally available to them is small in comparison at 11.5%.

What are they planning to do?

Respondents were asked to indicate what they intended to do and results are displayed in the table below.

Table 3: Learning Goals

Learning goal	<i>n</i>	Percentage
Everything so I get the certificate	1,273	42.3%
Everything but certificate not important	776	25.8%
All the videos and some assessment	508	16.9%
All the lectures no assessment	90	3.0%
Some of the lectures	55	1.8%
Not sure	305	10.2%

These results show that 42.3% indicated that they intended to do everything in the course in order to get a certificate. This result is lower than a Stanford University study, which found that 63% indicated this learning intention (Koller, Ng, Do, & Chen, 2013). Clearly, not all people who sign up for MOOCs do so with the intention of doing everything and earning a certificate, some have other learning intentions at the outset and others are not sure how much they plan to do (Kizilcec et al., 2013). Considering the average completion rate of 6.5%, it is also clear that there is quite a disparity between intention and outcome MOOC participants. What individuals do in MOOCs and how their thinking, actions and environments influence their engagement in this learning context is the main focus of this ongoing study.

Conclusions

This analysis confirms what the recent research tells us about the individuals who sign up for massive open online courses. The people who sign up for MOOCs are likely to be young, male, and educated. Though MOOCs are often criticised for catering to those who least need it, the proposition that MOOCs can indeed go some way to democratising education should not be dismissed outright. These data indicate that there are 347 people, in this sample alone, who are accessing a high level of learning that would not normally be available to them. This is a good thing. In any case, the continued pulling power of MOOCs, even though enrolment numbers are declining over time (Jordan, 2014) are still massive. MOOCs are not going to disappear soon.

Another central criticism of MOOCs is the low completion rate which is 6.5% (Jordan, 2014). It is clear at even this preliminary stage of this study, that not all individuals who signed up for this MOOC had the idea of earning a certificate as their goal. In fact, these findings support the idea that people sign up for MOOCs with a range of goals and learning trajectories (Kizilcec et al., 2013). It is therefore invalid to report the completion rate of a MOOC as a measure of its effectiveness. This preliminary analysis suggests that this MOOC is in line with what we know of MOOCs in terms of enrolment and registrants’ reasons for signing up and intended learning trajectories. This finding improves the generalisability of this study’s findings on the motivating factors and learning behaviours of individuals who sign up for MOOCs.

This study now proceeds using more qualitative methods and will investigate at a case level, what specific individuals do inside MOOCs. With a better understanding of the learner, we may be able to design better MOOCs that can adapt to their intentions and enhance their experience.

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