



Examining student characteristics, goals, and engagement in Massive Open Online Courses



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ABSTRACT

Massive Open Online Courses (MOOCs) have emerged with much popularity in the last five years, yet many questions remain about whom MOOCs best serve and what constitutes learner success. Completion rates, a common metric of student success, remain low, averaging less than 8%, and may be a misleading measure of success unless learner intentions are considered. This research addresses the relationships among learner characteristics and goals for enrolling in MOOCs, and the impacts on student persistence and completion in varying disciplines. We examined learner self-reported goals for taking a MOOC, characteristics, and rate of completion of 15,655 participants in eight MOOC courses. Results revealed that while age was positively associated with MOOC participation, motivation differed across course disciplines. The relationship between learner goals and engagement differed between those enrolled in Humanities/Liberal Arts (HLA) and STEM courses. Most notably, while taking the course due to personal interest or usefulness to a participant's career held a positive relationship with engagement in HLA courses, the endorsement of these same goals was predictive of less engagement in STEM courses. Our findings indicate that learner goals impact engagement and success, and that there are differences in engagement and goals between course disciplines. Suggestions for future MOOC research and potential course improvement to better align with learner goals are also provided.

1. Introduction

As a result of our knowledge about online learning and the open access education movement, online courses offered for free and to anyone with an internet connection have become a popular arena for large-scale education (see Yuan & Powell, 2013). Massive open online courses, or MOOCs, began when George Siemens and Stephen Downes created what they termed a “connectivist MOOC” or “cMOOC”, where learning occurred within a network. Students used technology to make connections with the content and other learners to create and construct knowledge. MOOCs gained more attention in 2011 when Stanford professors opened enrollment to their Artificial Intelligence course and got approximately 160,000 enrolled students. This was the first of the “xMOOCs”, which function similarly to higher education flipped classroom experiences where an instructor delivers content to students through recorded lectures or interactive activities and student learning is assessed through quizzing (see Terras & Ramsay, 2015 for further reading on this). Since that time, millions of people have registered for hundreds of MOOCs delivered primarily through the edX,

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Coursera, and Udacity platforms.

In essence, MOOCs were created with the idea that people across the globe could obtain access to high quality topics in professional fields and higher education, regardless of their country of residence, educational background, and socioeconomic status as long as they have access to the internet. This introduction marked the beginning of a debate among education researchers and practitioners around the appropriateness of the Web to be a vehicle for quality education in a class of thousands (Mahraj, 2012). Since that time, much of the fervor has died down, but the opportunity for useful and innovative educational assessment remains. The affordances (as well as constraints) of this platform combined with the variety of learners from different backgrounds, cultures, and lived experiences creates an exciting opportunity for researchers to learn more about the impact of goals on course engagement, which we argue is an indicator of student persistence or perseverance with a task despite challenges that arise.

1.1. Measuring success in MOOCs

The subject of learning via MOOCs has been one of the most hotly debated topics recently in higher education, with proponents suggesting that MOOCs could render traditional brick-and-mortar universities obsolete and opponents maintaining that high attrition rates and limited quality measures make MOOCs an ineffective learning platform (Watters, 2013). Much of this may be related to how success is measured in online environments, and particularly specialized online environments like MOOCs. Success in MOOCs has generally been measured in one of two ways: as either the completion of a required amount of material or the receipt of a certificate of completion (e.g. Trumbore, 2014). Some researchers suggest that the low completion rates associated with MOOCs are not worrisome for a number of reasons, one being that students enter MOOCs with different intentions other than course completion (Koller, Ng, Do, & Chen, 2013). Others suggest that intention to continue in MOOC courses is impacted by individual expectation-confirmation factors such as perceived reputation and perceived openness (Alraimi, Zo, & Ciganek, 2015). In other words, the intention to continue with a MOOC may be influenced by the perceived reputation of the school hosting the course, which is an expectation-confirmation factor.

MOOC learners are highly diverse individuals with multiple reasons for pursuing their learning in open online courses. Many MOOC students may be browsing to find something they like (Kolowich, 2013), and some students view MOOCs as a “leisure activity”, much like watching television or reading a book (Watters, 2013). Not only do MOOC students differ in their reasons for registering for MOOCs, but without any restrictions to registration they also vary greatly in prior knowledge of the subject area, age, education level, and country of residence (Breslow et al., 2013). MOOC students differ from those in traditional courses so much that some researchers have suggested that typical online learning metrics and educational terminology cannot be applied to both environments (DeBoer, Ho, Stump, & Breslow, 2014; Jordan, 2014; Seaton, Bergner, Chuang, Mitros, & Pritchard, 2014).

Recent MOOC research has begun to focus less on completion rates and more on learner participation and engagement patterns to better define MOOC student success (Breslow et al., 2013; Coffrin, Corrin, de Barba, & Kennedy, 2014; DeBoer et al., 2014). The metrics used by different MOOC completion studies vary widely, in terms of what constitutes completion or MOOC learner engagement. DeBoer et al. (2014) explored various definitions for success in the first edX MOOC, “Circuits and Electronics”, such as the grades students earned on all assignments and assessments in the course, obtaining a course certificate, and persistence throughout the duration of the course. Using these metrics, 4.5% of student enrolled in the course “passed”, causing researchers to re-think what success in a MOOC means.

Using data gathered from that same course, DeBoer et al. (2014) categorized participants who enrolled in the course but failed to complete as “shoppers” if they attended 5 days or fewer, “dabblers” if they attended between 6 and 15 days, and “auditors” if they attended 16 or more days. The researchers inferred from their actions that students can have goals for achievement that are different than those set out by a course instructor. Coffrin et al. (2014) used advanced learning analytics techniques to analyze course engagement patterns and success on assessments within the first two to three weeks of MOOCs to identify students who had both the prior knowledge and intention to actively participate and persist in the course. In each of these studies, the researchers did not gather data about participants' goals for enrolling in the MOOCs, but point out that these intentions impact student behaviors in the course.

1.2. Measuring motivation in MOOCs

In addition to measuring completion rates, other researchers have gathered data about student motives for enrolling in MOOCs. In a review of recent MOOC studies, Hew and Cheung (2014) report that students sign up for MOOCs to learn more about a new topic or to increase their knowledge in a certain area, to earn a certificate, or because they are curious about MOOCs. Kizilcec and Schneider (2015) found, in addition to the reasons listed above, that students enrolled in MOOCs to meet others interested in the same topic, to improve English skills, and to learn knowledge and/or skills to advance in schooling or in a career. They found differences in learner motivation across courses, and that each motivation predicted key behavioral outcomes for learners.

Few studies have looked at retention rates with an eye toward better understanding the learner goals and demographic characteristic that predict behavioral completion of MOOCs beyond single-course case studies (e.g., Hone & El Said, 2016). In the current study, we built upon previous research and examine student motivation and behavior in MOOCs from various fields of study and across multiple courses. Although “motivation” and “goals” are not synonymous, we measure goals as a way of assessing motivation, or learner motives for enrolling in and continued participation in MOOCs. In this way, we examine the reasons students take part in a MOOC, also referred to as learner goals. One area of study that has been neglected is how to define engagement in a course that is, for the most part, lacking accountability or even the requirement of completing course activities. Additionally, although these courses have credentialing possibilities, they are not comparable to the expense and dedication required to complete a college degree, and as

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