Engagement in MOOCs by pre-prepared versus just-in-time learners

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Abstract

There exists a tension in the design of MOOCs (massive open online courses) that must fulfil the expectations of a facilitated online course, whilst simultaneously delivering the immediate learning benefits of self-paced online resources. Online courses with fixed dates allow for focused educational support, providing direct access to the expertise of course authors and mentoring teams within a defined time period. Many MOOCs grounded in social-constructivist pedagogies are designed to be delivered as facilitated courses, but also designed to exist afterwards drawing upon only peer-support or as self-paced, open educational resources.

The flexibility of enrolment period and course design allows for learners to address their own intended learning goals (De Boer, et al., 2014). However, a question remains as to how learners are best equipped to bridge these two forms of course operation, which is dependent upon, and often unknowingly imposed, at the point in time they enrol. Directly addressing the theme of the skills learners need and develop in experiencing open learning, an exploration of learner engagement based upon when a learner joins a MOOC may inform more tailored support messages and guidance as to how to engage with the course content, educators and other participants. This study compares the learner behaviour between learners who enrolled prior to the course start date, with those who enrolled during the supported period or after the course.

This paper presents an initial analysis of the learner behaviour from five different MOOCs, designed to support school teachers’ continuing professional development (CPD). Learner engagement is described quantitatively, represented by progression through the course, the number of comments per learner and the number of comments which are direct replies to other learners. Preliminary results from two MOOC instances show that of those learners who are active in the course, those who enrol prior to a course start date are likely to access more course content, contribute more and reply to other learners more compared to learners who join during or after the supported course period. However, it remains that a higher percentage of learners who enrol after the course start date will engage in the course in one form or another, just not at the same level as those who enrol prior to start date. This echoes previous suggestions by Ferguson and Clow (2015) that learners who start the course concurrently, and abide by a weekly structure, may “discourage participation by late arrivals.”

It is anticipated that delegates will engage with the questions posed by this analysis and begin to consider appropriate methods for recruitment and tailoring of learner support based on course enrolment date.
Presentation narrative

When we put a course or any open resource together, we want our learners to progress through it. We may say that we’re happy for them to dip in and out, but actually, we’ve crafted a course to help develop a particular skill or build new knowledge and understanding. There’s a structure, a logical flow to the narrative and a sequence of tasks to help a learner meet the objectives we’ve defined.

How do we judge whether the course is working or not? Quite often, we refer to a graph of aggregate data (Figure 1). More often than not this shows learners progressing through a course and the retention/attrition rate. Retention is one of those metrics that is easy to measure, and gives us that sense of how learners are progressing through a course, but retention statistics are not as clear cut as you might imagine.

DeBoer et al. (2014) challenge the use of metrics applied typical distance or even face-to-face courses also being applied to MOOCs. They introduce the idea of “informed commitment to complete” (DeBoer et al., 2014:77) as a more useful concept than simply the inflated enrolment figures which actually describe a ‘commitment to start’. Commitment to start, the act of enrolment, still doesn’t lead to engagement as accessing even the first step of the course is not to be taken for granted. So DeBoer et al. proposed that we look at other ways to measure the point at which an individual engages with a course, for example watching the first video, posting to a discussion. Then, we use that as the base line from which retention is then determined. For the purposes of my work here, I’ve made the decision to classify those who access any one part of a course as my learners. To make it easier to compare courses, graphs are presented as a proportion of learners against the pages (steps) of a course represented at a percentage rather than discrete pages. In graphs of course progress, even at the first step, we don’t have 100% of learners, as some (albeit a small number) dive in to later pages.

![Retention on a MOOC](image)

*Figure 1. A typical retention curve of a MOOC*

The decision to visit a part of a course or not is down to the individual motivations of learners. Again, DeBoer et al. (2014) made the astute point that because of the open nature of MOOCs, learners have the opportunity to address their own educational needs. For example, Watt and Barak (2018), in a study of one MOOC, made that observation that participants from industry or profession are likely to enrol on courses for professional gain, rather than completion or certification. Perhaps,
addressing a specific skills gap or to keep up to date with knowledge. For me this juggling of different motivations is particularly pertinent when developing online professional development. On MOOCs then, we may have learners with learning goals that might not align with other students or even the educator’s learning design.

To help consider further the idea of matching motivations for learning to what the course may offer, DeBoer et al. (2014) describe the ‘window shopping’ of open online courses, a characteristic possibly shown in retention graphs. However, I’m not convinced that the shopping activity is taking place across the whole course. If you filter to just those learners who view less than a quarter of the course, you see how the majority still focus on the very start of the course, and the distribution to later course content is minimal (Figure 2). Compare this to learners who access more than 75% of the course content and the distribution across steps appears more even, as you would expect.

![Figure 2. Shopping behaviours restricted to early parts of a course](image)

It’s clear there is something going on at the very start of the course that is informing learners decisions to either engage, or not. This provides an indication of where our design effort needs to be best placed. The start of the course is where the cohort begins to form, sharing through introductory posts their contexts and starting to align their professional development aims with what the course has to offer.

It wasn’t until a change in the way that the courses were advertised on FutureLearn did I start to consider the significance of course start dates and how this might impact the buy-in to a shared professional development experience. Since April-June 2017, FutureLearn altered the emphasis of the way courses appeared to those browsing on the platform, downplaying when courses that are already running, have actually started. This went hand-in-hand with the offering of access to courses after their facilitated run period in extended enrolment, making the course more available to new learners for longer. The effect is that when prospective learners enrol on a course that is yet to start, they will be starting with a number of other learners as a cohort on the start date. If learners join when a course is already available, they have more immediate access and so can address a learning need more readily. The idea of the course as an event is being challenged.
Ferguson and Clow’s (2015) useful investigation of engagement over time on a number of MOOCs provides part of the rationale. Patterns of behaviour were categorised, with one category ‘samplers’ being particularly common amongst late starters. The concern for late starters is that the course structure with its weekly pattern “may have discouraged participation by late arrivals” (Ferguson and Clow, 2015:69). Arguably this could be interpreted as the point of enrolment influencing them to be ‘samplers’ rather than completers.

To address this concern, the new FutureLearn approach is quite clever. Weeks are adjusted to whenever a learner joins the course. For example, the course could be running for four weeks already, but to the newly arrived learner it’s week 1 receiving emails appropriate to the start of the course, rather than those being sent to learners part way through. This disguises that the new learner is not part of the starting group of learners. On the one hand helps to overcome the feeling of ‘being behind’, but equally could raise questions over authenticity of the course design as the learner comes to discussions or collaborative activities late.

I wanted to explore whether there was a difference in learning experience for those who sign up in advance, compared to those who join when the course is already running or even afterwards in the unsupported extended period. Figure 3 shows how two groups visited course pages: those who enrolled before the course start date and those after the course started. This was a course with an advertised start date and more prominence to learners browsing on the FutureLearn platform. Immediately you see a difference that those who enrol after the start date drop off at a much quicker rate than those who enrol in advance of the course.

If we go back to the idea of window shopping, this seems to suggest that learners who have immediate access to the course are not browsing the whole course for relevant bits, but using those first few pages to work out whether it meets their learning needs. It could be argued then, that those who sign up in advance of the start date are more aware of what the course is about and what they want to get out of it, in that they actually make it into the course and are more likely to progress through it.
The pattern is exactly the same when you look at the new model of course promotion from FutureLearn, without the start date being advertised as widely, and instead promoting during instant access periods. The number of enrolments before the course starts is lower, but the shape of the curve is the same (Figure 4).

![Instant Access Approach](image)

*Figure 4. Course content access by enrolment groups (course promoted when running)*

Even when you adjust for the different numbers in different groups and scale accordingly, the drop off for those starting after the course start date or supported period is more significant (Figure 5).

![Instant Access Approach](image)

*Figure 5. Course content access by enrolment groups (course promoted when running; standardised scale)*

This was a pattern I found in every open course we run. Whether it was a 6 week subject specialist course for teachers or a 2 week course for volunteers going out to schools to work in STEM subjects.

Why are we then allowing instant-access, if the learners arriving late don’t see the course out? Unsurprisingly, the conversion to learner (enrolment to access) is high for the late starters (Figure 6). They have immediate access and the course offers the possibility of instant gratification addressing
their specific learning needs. We could categorise late starters as ‘just-in-time’ learners. However, as Figures 3-5 indicate, the proportion retained for the full duration of the course is lower.

![Conversion to learner](image)

*Figure 6. Conversion of enrolment to learner (visited at least one page)*

Is the cause of this greater attrition in later arrivals therefore down to the course design, that focuses more on a collaborating cohort? Or is this down to the nature of the individual learner who is more targeted in which part of the course they are going to look at, once they’ve committed beyond the first week?

Perhaps neither. The course is free and in order to get an ‘informed’ commitment to complete, there is nothing to stop late arrivals jumping into the course to sample it. My guess would be that the course title alone prompts this engagement, rather than a thorough review of the learning objectives and promotional video available outside the course content on the course listings. Perhaps it’s expected that this group of learners will have higher attrition when the first part of the course turns out to not meet their needs, as that is the point a ‘commitment to start’ is made. This is comparison to learners who make that commitment to start at enrolment prior to the start date: they’ve made the judgement the course is right for them based on the marketing and course information. The group who sign up in advance of the start date have prepared for learning, but there’s a hurdle that the course is not immediately available.

But, aside from whether late learners join before working out whether the course is the right one for them, there are other issues at play.

Swinnerton et al. (2017) reported that learners who make posts to online discussions (commenters/contributors) are more likely to have taken online courses before. In a sense they’ve bought into the way of learning in a MOOC and we can assume get learning value from the act of writing comments. If we think about those learners who are joining after the course start date, they often need to find a way into, sometimes quite extensive, discussion chains. Not only that, but they
also need to buy into the way of learning that is vicarious, drawing from the experiences shared by learners who may have posted several weeks earlier and are now long gone. Figure 7 illustrates the point showing how much more likely those who start the course together at launch date are to contribute to the course discussions, compared to later arrivals.

![Commenting learners](image)

*Figure 7. Proportion of learners who contribute by enrolment group*

Whether these late starters have prior experience of online learning or not, we’re asking them to engage with commenting, engage with the learning in a different way. Certainly the form of learning seems to demand more from the individual to be self-directed and reflective. These are both very challenging ways of learning for those not accustomed to them, and contrary to the experiences of traditional online courses and face-to-face professional development.

![Replying (social) learners](image)

*Figure 8. Proportion of learners who are engaging socially*
The point is further made when you look at how many learners post replies, in essence a metric for how social these learners are (Figure 8). Again we see a significantly pronounced difference in the likelihood that a learner will be a replier if they join before or after the start date, with those arriving late being much less likely to respond to existing posts.

One caveat that has not been factored into these illustrative charts, is the retention curve. Returning back to the notion of identifying at which point a learner is committing to complete, to properly compare the different enrolment groups, we may need to adjust the scaling to eliminate learners who only visit a small proportion of the course. That way, we are comparing more like-for-like attitudes for completion to social learning engagement metrics.

Our design challenge is therefore about how to make online CPD through MOOCs flexible, open to those with different learning needs at different times, whilst still aiming to provide support, deliver the benefits and richness of social learning, and get commitment of learners into the professional development process. As the proportion of learners who are arriving later in the course run has increased (Figure 9), this has to have an impact on the way our courses are designed and advertised.

The greater numbers of late participants also introduces a tension in how courses should or could be facilitated. Academic and professional development expertise is a key part of our online professional development through our MOOCs, and access to course educators through supported periods on the course provides this. However, sustaining facilitation throughout extended course availability is rarely practical. To provide further opportunities for interaction between learners and educators, discussion facilitation is supplemented by an end-of-course asynchronous Q&A which provides yet more cohort-specific content.

For late starters, or even those who join after the supported period is over, the learning experience is different because of what is available to them in terms of learning activity. But different is not any less valuable. From our online courses we still receive positive feedback and indications of positive change of practice by some of the learners who are joining our courses after the start date. A need is
being met and they feel supported in meeting that need through the content, other learners and the educators’ involvement with the cohort.

We incorporate a mixture of design elements to respond to the growing number of learners taking the course without educator support in the form of live facilitation in discussions:

- Clarity over supported dates and what happens after the supported period
- Conveying the value of contributing and learning from others
- Encouragement to work with others offline
- Mentor video diaries and educator Q&A
- Peer-mentors to sustain facilitation
- Self-diagnostic and reflective activities

There is still more work to be done to evaluate which of the above design components best support learners who join later and are not part of the initial group of participants. I would very much welcome insights from other MOOC and OER designers based upon your experiences and evaluation work. But, I think what stands out is the need to both support collaboration with other learners, and building the expectation and direction for learning independently and reflectively. Particularly for professional development courses. This is very much the same as would be expected within a face-to-face intervention, as both forms of learning are valuable.

One way to consider what is happening in an online course is to use the student-teacher-content interaction model. This is certainly what has informed my thinking, and to explore the level and value each form of interaction brings to the learning experience (Anderson, 2003). Miyazoe and Anderson (2013) applied the student-content-teacher interaction model to the three classic MOOC categories of x, c and s. Content being more significant in x (largely instructional) and interaction with other learners or the educator more significant in the connectivist, constructivist and social formats. It is important to note that these classifications themselves have been challenged. Bayne and Ross’s (2014) review of MOOCs in the UK come to the conclusion that there are many different types of MOOC out there, going beyond the standard classifications of x and c which are no longer helpful.

I would argue a similar idea that categorisation of MOOCs into pedagogic categories seems falsely deterministic. Instead, I suggest the pedagogy goes beyond the intended design of a MOOC as it is published. From what I have shown about the different motivations and behaviours of the course participants, I come to the conclusion that MOOCs are metamorphic.

MOOCs don’t just have one format or one mode of learning or teaching, as the design originally intended. What is happening within certain online courses, and certainly courses that have extended enrolment periods, is the very nature of the MOOC itself changes.

The levels of potential interaction between student, content and tutor vary according to when a learner joins the course, what is available to them.

Is the course facilitating team still available? Have I missed any date or time-based activities? Are these videos the only way I will learn? Are other learners making comments? Is anyone going to read my contributions?
I'm not sure whether all these questions actually go through the heads of MOOC learners, but if our courses are designed to encourage interaction in some way, then our courses not only have to be flexible for different forms of participation and different learning aims, but also flexible enough that they work in both transmissive and collaborative pedagogies.

Shifting, individualised and open to change: the pedagogy of a MOOC is open...

Notes

In my role as Online CPD Coordinator for STEM Learning at the National STEM Learning Centre, I am exploring ways to best support different learners who engage with our professional development online. Data comes from multiple iterations of online courses designed for teachers and technicians in science, technology, engineering and mathematics provided by the National STEM Learning Centre. Course are available to join on FutureLearn.

Quantitative data is just one aspect of analysis. There are other measures used such as self-audit tasks, identification of personal learning objectives and course contributions that inform and are crucial to our course evaluation process.

I’d like to acknowledge Paul Browning who first introduced me to the retention curves as a way of considering course design and hope these insights constructively build upon that initial thinking. The data presented above is selected from recent runs of courses provided by the National STEM Learning Centre and delivered on FutureLearn. In total seven courses were processed to explore comparisons between different models. Retention in shorter courses is greater, but the difference in shape of the drop-off curves between the enrolment groups is still similar.

References


