# 2

## SEEKING CONNECTIVIST FREEDOM AND INSTRUCTIVIST SAFETY IN A MOOC

### (EN BUSCA DE LA LIBRE CONECTIVIDAD Y DE LA SEGURIDAD INSTRUCTIVA EN UN MOOC)

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## ABSTRACT

Many MOOCs rely on instructivist pedagogies, in which teaching follows a top-down transmission model. Whether they follow a behaviourist, cognitivist or constructivist path, teachers guide or dictate activities as well as provide information that learners use in learning. In most cases, learners are not treated as sources of knowledge but as recipients or, at best, constructors of it. This is a waste of the vast pools of skills and knowledge that inevitably exist in any large collection of learners and is diametrically opposed to the principles behind earlier but now less commonplace connectivist MOOCs (cMoocs). Such cMOOCs, at least in principle, benefit from scale – they gain value the more people there are engaged in them because, though they coalesce around shared events and resources that resemble the instructivist patterns of publication, learners generate and design their own learning paths, discussing, debating, sharing their learning in rich networks and clusters of networks. As part of a strategy to explore different approaches to MOOC delivery, we developed a site using the Elgg social media framework in order to attempt to gain benefits of social sharing to support learning. Participating in the Digital Age, a six-week Australian MOOC (PDA MOOC), self-referentially was concerned with learning to be a digital citizen while using participatory tools to do so. In this paper we report on the theoretical foundations of the design, its technical implementation, and the benefits and disadvantages of the approach when the course was run.

**KEY WORDS**

Social networks; distance education; cooperative learning; learner engagement; educational media; learning theories.

## RESUMEN

Muchos MOOCs confían en pedagogías instructivas, en las que la enseñanza sigue un modelo de transmisión unidireccional. Bien siguen un modelo conductista, cognitivista o constructivista, bien una guía de estudio o propuestas de actividades, que facilitan la información que los alumnos utilizan en el aprendizaje. En la mayoría de estas propuestas, los alumnos no son tratados como fuentes de conocimiento sino como receptores o, en el mejor de los casos, como constructores de la misma. Esto es una pérdida de las grandes habilidades y conocimientos presentes inevitablemente en cualquier gran grupo de alumnos y se opone diametralmente a los principios conectivistas de los MOOCs (cMoocs). Tales cMOOCs, al menos en principio, adquieren valor cuanta más gente se dedican a ellos, aunque se unan en torno a proyectos y recursos compartidos que siguen los patrones instruccionales de publicación, los estudiantes generan y diseñan sus propios itinerarios de aprendizaje, discutiendo, debatiendo, compartiendo su aprendizaje en valiosas redes y grupos de redes. Como parte de una estrategia para explorar diferentes enfoques para los MOOC, desarrollamos una página web como marco de la red social Elgg con el fin de obtener resultados de intercambio social como apoyo al aprendizaje. Ante esta realidad y con la era digital como punto de partida, propusimos durante 6 semanas un curso MOOC (PDA MOOC), referido al aprendizaje de cómo aprender a ser un ciudadano digital con el uso de herramientas participativas. En este artículo presentamos los fundamentos teóricos de su diseño, su implementación, y los beneficios y desventajas de esta propuesta.

## PALABRAS CLAVE

Redes sociales; educación a distancia; aprendizaje cooperativo; compromiso del estudiante; recursos educativos; teorías del aprendizaje.

## INTRODUCTION

The cost of a higher education in North America public institutions rose between 2002 and 2012 by some 40 percent (US Department of Education, 2013). Coupled with a global downturn in the economy and an every increasing need for higher education to gain employment, students are challenged with finding school funding at an increasing rate. For disadvantaged students, this cost increase often makes higher education opportunities sim-

ply unreachable. Globally access to higher education in any form is also financially out of reach for many people, particularly those in developing countries. And as developing countries, with large populations, understand the need to provide higher education in order to compete on world markets, their universities are not able to meet enrolment demands. The Internet, ICT and open online learning access has been seen as one way to meet these needs. In 2009, Altback, Reislberg, and Rumbley made this point stating that «[t]he need to serve larger and more diverse populations of students, in different ways and over a much longer period of their lives, is exerting tremendous pressures on higher education systems and institutions the world over.» (p. 168)

It is within this context that MOOCs were identified as a potential solution for the challenges of increased higher education enrolment needs and rising costs of higher education.

MOOC media hype exploded in 2012 as the New York Times declared 2012 the Year of the MOOC (Pappano, 2012). Despite their rise to educational popularity, MOOCs have been around since 2008, beginning with George Siemens and Stephen Downes (Rodriguez, 2012; Siemens, 2012) first cMOOC. The delivery of massive open online courses has expanded globally as students are taking advantage of these free open online learning opportunities and the anytime anywhere access to education. Higher education has embraced online learning in a big way opening up the global education market as a consequence of the digital disruption of university education (Johnson, Adams & Cummins, 2012; Lewin, 2012; Roscoria, 2012; Welsh, & Dragusin, 2013). For example in the U. S. student enrolment in credentialed online learning rose dramatically between 2002 and 2010 (Allan & Seaman, 2011) with over 6 million students taking an online course in 2010. And again in the US, higher education has seen a 10 % increase each year in online course enrolments and this trend is expected to continue as institutions move their offerings online. For-profit institutions are the most likely to have online learning as a key component of their educational delivery plan (Allan & Seaman, 2011). MOOCs are becoming a regular staple in the global higher education offerings, and are being seen as and effective way to provide online professional development.

Since 2012 MOOCs have attracted several million enrolments around the world and spawning a flurry of MOOC platforms and providers. Some of the largest providers of MOOCs are based in the U. S. such as Coursera, EdX, Udacity. Other MOOC providers include FutureLearn in the UK, Open2Study in Australia, and Iversity in Europe. Many MOOC providers are also individual Universities; looking to promote their brand, highlight some area of research expertise or access new educational markets (Bond, 2013;

Fox, 2013). For online and distance education researchers, MOOCs are providing an unprecedented opportunity to move the field of online education forward as new funding and experiments are often part of the MOOC deliveries (Christensen et al., 2013; Daniel, 2012). Several MOOC providers have spent time and effort to work towards gaining some type of accreditation for their offerings, with one provider —Udacity— partnering with a University to deliver a Masters in Computing (Lewin, 2013)

A variety of institutional drivers for developing MOOCs have been identified. One that has been identified by Australian universities —expanding their brand internationally— was described by The Australian Newspaper (May 22, 2013):

«In Australia, universities are already highly dependent on rankings-obsessed international students choosing their institution. Those universities that choose to stay out of the MOOC game, often because of the high up-front costs with little direct return on investment, could thus find themselves at two disadvantages in the ever more competitive global market.» (May 22, 2013)

Some Australian universities are taking different approach to MOOCs utilizing the open materials developed to support face-to-face flipped classroom deliveries of the courses (Norton, 2013). Regardless of institutional motivations, MOOCs are the source of an experimentation and research bubble with online learning in higher education.

The growth of MOOCs since Dave Cormier invented the term in 2008 has galvanized a great deal of activity and debate. The earliest MOOCs to bear the name followed a connectivist pedagogy, relying largely on learners sharing, debating and exploring what others on the MOOC were doing, building networks of people and their reified knowledge. Later MOOCs tended to follow a more instructivist pattern, with video lectures, set readings and objective tests to help people to gauge their progress. Siemens (2012) describes these patterns as cMOOCs and xMOOCs respectively. Since 2012 the MOOC hype has been tempered (Zhang, 2013) as findings about the value (Odom, 2013), pitfalls (Baggaley, 2014), and student retention issues (Mackness, Mak & Wiliams, 2010) have been studied.

Like many other Universities, Curtin University in Perth, Australia, wished to investigate the opportunities opened up and threats posed by MOOCs. It made the decision in 2013 to explore a three-pronged approach to dipping its toes in the MOOC water. One course used Open2Study, a dedicated Australian MOOC platform, following a fairly typical MOOC talking-heads-and-quiz instructivist strategy (Ostashewski, 2013). A second

used Blackboard, following a traditional e-learning instructivist approach tempered with constructivist elements and relatively open learning and assessment strategies (Ostashewski, Thorpe & Gibson, 2013). In this paper we report on the third course in this exploration, a cMOOC based on a social media environment, Curtin Learning Commons (http://www.curtincommons.com), designed to leverage the knowledge of its participants as well as to enable them to gain from the benefits of social sharing.


## THE BENEFITS OF SHARING THE LEARNING LOAD

Learning is an inherently social activity (Rogoff, 1990; Salomon & Perkins, 1998; Wenger, 1998) and there are many reasons that it makes sense to learn with others, of which we list a few of the more important:

- Quantity of knowledge: more people, on the whole, know more things than just one person.

- Diversity of knowledge: different people know different things. Like the proverbial blind men and the elephant, each has his or her own perspective and can often see only part of a problem, issue, or concept. Even when we share a common knowledge of facts, different perspectives can enrich our own, and elaborate the knowledge of all. Disagreement is good: through reflective critique we can better integrate, structure and assimilate our own knowledge, as well as come to a better shared understanding.

- Motivation: doing things with and for others is a major pillar of intrinsic motivation (Deci & Ryan, 1985; Kohn, 1999). If we believe that others depend on us, or value our contributions, or simply notice what we are doing, we tend to be far more motivated than when we do not. This in turn leads to spending greater time and effort, which is probably the most important factor that determines success in learning (Stallings, 1980).

- Teachback: there are few better ways to learn than to teach. Learning with others means that we constantly have to explain our own thinking, to help others see things as we do (Pask, 1976).

- Altruism: we are hard-wired to help one another (Wilson, 2012). Learning with others provides us with opportunities to exercise that innate need.

Though many MOOC providers pay lip-service to the social nature of learning through the inclusion of forums and their ilk, most xMOOCs involve quite limited social interaction and, for the majority of their participants, it is quite possible to succeed without ever having to engage with another human being. While some participants engage in forums, typically in a fairly impersonal problem-solving way, most do not, unless forced to do so in an almost asocial fashion that almost certainly reduces motivation to actively engage of their own free will (Kohn, 1999). Some make use of peer assessment but, on the whole, this is after most of the learning has occurred and, though it may contribute towards consolidating and framing the concepts learned, it is a far cry from the close-knit processes that bind groups of learners together in more typical classrooms. Indeed, quite apart from the lack of support for social behaviours in the design of most MOOCs, given that almost all others on a MOOC will be strangers, this is unsurprising. It is often intimidating to engage, to reveal one's weaknesses and confusion to a crowd of strangers (Dron & Anderson, 2014a). Given the large numbers of people who are involved in a typical MOOC, it nonetheless seems very inefficient and wasteful not to take advantage of the fact that they are there. This is, however, difficult to achieve effectively.

### Nets, Sets, Groups and Collectives

Author Dron and Terry Anderson have noted that social media enable different, though strongly overlapping and blending, social forms to be used for learning than the closed formal groups that are typical of classes, seminars and tutorial groups in traditional education. *Networks (or nets)*, centred on an individual and consisting of people we know or have some interest in, have for all human history been an important social form for learning. Most of us learn far more from engaging with others on an ad hoc basis than we do in formally constituted groups. The people we know and interact with help to form and connect our opinions and beliefs, tell us things that matter, model behaviours, challenge us and reinforce our knowledge. In many cases our networks are not just enablers of knowledge but embody it: we share the load of knowing, and knowing who knows what is often as important as knowing it yourself. For instance, couples tend to focus on different things, relying on the other to know things they do not, from whose birthday is coming up next to where the fuse box is situated. Beyond the networks of people we know, and often catalyzing their formation, *sets*, in which we engage relatively anonymously with mostly unknown others that share an interest in a topic and/or some other commonalities. Sets, like groups, also have a long history as a support for learning, at least since humans started gathering in large numbers than those found in archetypal families, tribes and villages. If we are interested in, say hockey or farming,

attending a gathering of people with the same interest but with whom we share no social connection and no designed curriculum, is a time-honoured way of becoming immersed in and discovering more about a skill or subject area. Beyond these social forms and arising from them are *collectives*: collections of actions of individuals that, when aggregated according to some algorithm (loosely speaking, a rule or rules), act as though they were a single individual. This can be as simple as a count of votes or as complex as mined behaviours compared using Euclidean distance or neural networks. In many cases, the individuals in the collective may be the ones that apply the algorithm. For instance, we may be informed that something is interesting by a crowd that gathers around it, most of whom joined the crowd did so at least partly because a crowd has gathered. In the same way, memes that spread through our networks are self-reinforcing entities that replicate through collective processes. We pay attention following the rule that, if many others are paying attention, it must be interesting. There are plenty of more complex and interesting self-organizing systems that make use of collectives, from termite nest building to the movements of money markets (Bonabeau et al, 1999; Watts & Strogatz, 1998)

*Groups*, of the kind that characterize traditional formal and much non-formal learning, are a different kind of social animal from nets and sets, though all groups contain and are often contained by networks and sets, as well as being describable as networks and sets. Traditional social methods of teaching are based strongly on group processes. Groups used for learning have, like all groups, leaders, norms, and rules of behaviour. They are typically scheduled and almost always guided by teachers that determine what everyone will be doing over any given time period, and who will often guide and moderate interaction. Learning groups are bound by ties of ritual: there are rites of joining and rites of leaving them, from class rosters to graduation ceremonies and much in between. It is at least as important who they exclude as who they include (Shirky, 2003). There is nearly always some kind of selection process that determines who is in and who is out. Groups tend to exist in hierarchies, especially in academia, which makes it possible for small numbers of people to work together in groups while remaining coordinated with others and being parts of larger groups. As a consequence, perhaps more importantly than anything else in the context of MOOCs, groups are premised on an assumption of mutual interdependence, each member being required to work with others in the group, to support one another (even through disagreement) and to work as a team in support of the shared purpose of learning. Groups have structures and processes that are designed, in a very literal sense, to bring about learning through carefully channelled forms of engagement. Groups demand and support commitment. Methods of learning in groups are extremely well-

evolved, with pedagogies and other processes refined over many centuries to be efficient, effective and familiar.

The typical conditions of a MOOC do not make group structures easy to implement and, without intensive use of resources (notably the time of teachers and teaching assistants), may often make them impossible to implement. There are several reasons for this. Among the biggest is commitment. Unlike those who enrol on a traditional course, there is seldom much innate commitment in those taking a MOOC. MOOCs require neither a strong interest nor prerequisites to sign up, and in fact the process is deliberately made very easy. Once a MOOC starts, individuals may find it too difficult, too easy, too boring, or too demanding. Many participants get what they came for early on and leave. The financial commitment, time commitment and social commitment made by those taking traditional courses make it a considerably bigger decision both to start in the first place and to stop if things do not work out as planned. Many formal education contexts demand that courses must be taken in order to complete a program, or are prerequisites for other courses that may matter a great deal to their participants. MOOCs seldom make such demands. Combined with this, the simple fact that MOOCs by definition involve a great many people, most strangers to one another, makes it impossible to foster collaborative, mutually supportive group dynamics unless the large numbers are split hierarchically into smaller groups where such trust can evolve. Through deliberate design and often with automated support, some MOOCs for example, the seminal DS106 (http://ds106.us), have successfully split their large cohorts into groups. The DS106 groups have achieved the benefits of small group dynamics for at least some of their participants. Other innovative platforms like NovoEd (https://novoed.com), based on the earlier VentureLab project, offer automated approaches that are relatively successful in allocating teams, but most MOOCs have either not tried or have failed. Failure is largely due to the issue of varying degrees of commitment among participants: with typical completion rates in the region of 10%, a group of ten people at the start will often end up as a group of one by the end, if that. Ingenious use of incentives and intelligent clustering, such as found in NovoEd, can reduce this problem to some extent but it is a structural limitation that cannot be completely overcome as long as MOOCs remain massive and open, which is not up for negotiation.

The fact that group working will at best be a niche pattern in most MOOCs does not, however, mean that people cannot benefit from the presence of others. Rather it means MOOC developers merely have to look beyond traditional group methodologies in order to capitalize on the social advantage. MOOCs are, for the most part, more set-like than group-like. The takers of a MOOC share a virtual space simply through virtue of a shared

interest in the topic of the MOOC. They are at best a very weakly tied network and, apart from acceptance of a few terms and conditions, are not strongly rule-bound. Course Websites based on the EdX platform demand acceptance of an 'honor code' but it is easy enough to sign up without reading the code and many do. Reinforcement, such as it is, comes from the top down more than from peer pressure or a sense of obligation to fellow course-takers.

While collaboration in *Group-like* MOOCs —deliberate working together for a shared purpose— may be difficult or impossible in a *Set-like* MOOC, cooperation —working individually in ways that benefit others— is much easier than in groups, at least in principle. If people in a set can see what others in the set are doing they can, in principle, learn from them and with them and, because of the large numbers involved, a great deal of learning can spread around very quickly. In this way, sets are highly superior to groups. They support a far wider range of perspectives, allow far more knowledge to be shared, and are not as deeply hampered as traditional groups either in a tendency to group-think or in the process inefficiencies of having to coordinate their behaviours with one another. There are, however, some wicked problems that need to be solved if this is to be effective in the large crowds that inhabit MOOCs, notably in ensuring that what is shared is trustworthy and relevant: indeed, it is precisely the fact that groups provide solutions to these problems that makes them so valuable in the first place.

**Setbacks & Challenges**

*Trust*

Teachers in a traditional group setting are typically accredited and can be trusted to know both something about the topic and something about how people learn. With a small group they can provide guidance, moderate remarks and comments, and channel learning activities in productive directions. While this remains true to some extent in a more set-like MOOC, the large numbers involved make it much harder for a teacher to provide responsive guidance to individuals or even to subsets of individuals. The problem is much larger when it comes to peer support and sharing. The design of traditional learning groups is such that learners can normally trust one another to be supportive or, at least, it is possible to build relationships and identify those that are less helpful or antagonistic. In signing up for a group a learner commits to rules and behavioural norms that, as a group develops, become more firmly set. As people get to know one another they come to trust one another. Unless there are many people playing the teaching role and helping groups to form, which tends

to be economically unviable, the sheer numbers in a MOOC make it very difficult for learners to get to know one another, unless they start to form small networks or are formed into subgroups. Some individuals may become notable for their activity and prominence, but most sink into the background. For a teacher to do more than skim the surface or broadly herd people in appropriate directions is difficult. The numbers involved make it much more difficult for group norms to emerge. Sets are highly susceptible to flaming, griefing, trolling and other undesirable behaviours because there are neither strong social ties nor a strong commitment and shared purpose. The problem is exacerbated by the relative absence of social cues in most online systems. Misunderstandings can be rife. Depth of discussion is rare because it is much harder to facilitate the typical stages of group formation (Salmon, 2000; Tuckman & Jensen, 1977) when groups are large.

In the absence of a typical group structure, it is necessary to find alternative means to fill this need. Social reputation systems, such as those found in sites like eBay or Slashdot, present one such solution. Reputation can be measured implicitly (e.g. looking at sustained engagement or automatically analyzing content produced) or explicitly (e.g. through ratings, endorsements or badges). This information is fed back to others, for instance through a score, a list of endorsements or a badge, so that strangers may know to trust or distrust an individual. Deliberate automation may not always be necessary as many systems provide copious clues as to the trustworthiness of their members as an inherent part of their design. For example, simply showing an individual's activities (or lack of them) can provide useful clues about how they typically behave and how people respond to them. Other clues, such as number of followers or friends in a system, can help to gain assurance that people are at least not intentionally evil, even though it may say relatively little about their abilities to help. Friends-of-friends can be particularly useful as the fact that they are trusted by someone we implicitly trust provides greater assurance than if they are trusted by strangers, especially given the fact that we tend to cluster in affinity networks with like-minded people (Boyd, 2009). The more information that we have about a person and their activities, the easier it is to trust (or, in some cases, distrust) them. Though usually insufficient in themselves because such things can be faked, validated accounts and rich profile information can help to support a sense of trust. For instance, if an individual claims to have a PhD in the subject area under discussion, this suggests that his or her opinions may carry more weight than someone with no such experience. If that is supported by, say, a URL linking to an academic website or a feed of relevant blog posts, there are even stronger grounds for accepting the veracity of the claim. If the individual can demonstrate that they are actually the person who produced these (e.g. through a login verified via their academic site or less formally

by a recognizable style of writing) then the grounds are stronger still. With sufficient clues that offer consistent information, we can triangulate and aggregate both automatically collected and personally viewable information to make a fair judgement of the value of what individuals might share.

*Fear*

Although there are benefits to be gained from relative anonymity in reducing the pressure felt by the eyes of others, it is notable that, unless pressured to do so, relatively few takers of MOOCs engage in course discussions. There may be many reasons for this, not least of which might be the absence of need for it thanks to a course's design, but one of the more prominent ones is fear (Dron & Anderson, 2014c). Learners often feel uncomfortable exposing their ignorance to others, even within a 'safe' group setting. Moreover, there are always sufficient numbers of people who do engage to provide coverage of many of the topics that people might have contributed to, reducing the incentive to simply repeat what others have said (though MOOC discussions tend to be littered with 'me too' responses that at least provide some sense of the presence of others). This is a consequence of pedagogical design as much as the nature of the medium. However, if the design were to require participation and were designed so that duplicate postings were not a problem, the quantity of messages might soon become unwieldy and very hard to follow. This leads to the problem of relevance.

*Relevance*

Even in a MOOC of a few hundred people, the number of messages posted may quickly become overwhelming if even a few percent of them are posting regularly. In a truly massive MOOC with thousands or tens of thousands of members, this will quickly reach staggering proportions. It therefore becomes necessary to filter what is shown to any one member. Numerous approaches to this problem might be taken, among the most prominent of which are simple ranking via up/down votes, collaborative filtering (e.g. Drachsler, 2009), user modelling/adaptive navigation (e.g. Brusilovsky, 2001), or making use of an individual's social networks. Unfortunately, there are several downsides to each of these approaches.

Simple ranking almost invariably leads to an out-of-control positive feedback loop thanks to the Matthew Effect (Merton, 1968) —the rich get richer and the poor get poorer. If anyone can upvote or downvote a post, early posts invariably have a huge advantage over later ones, no matter that their quality may be lower than those posted later. Furthermore, ranking

does not, in itself, give any clues as to what criteria were used to recommend posts. Author Dron overcame both of these problems in the late 1990s/early 2000s with the CoFIND system (Dron, Mitchell & Boyne, 2003), that allowed people to rank posts according to pedagogical tags (which any user could create) that indicated the reason that something was rated, and through applying a proportionally decaying novelty weighting that gave new resources more of a chance of survival. However, the cost in cognitive load of this system was far too high and it suffered greatly from the cold start problem that pedagogical tags themselves were victims of the Matthew Effect. Some systems (for example, the StackExchange family of Q&A websites) deal with the problem by allowing the original poster to identify the best answer to his or her question. Unfortunately, the original poster may not be best placed to choose between alternative solutions, especially where he or she is a novice in the field. As a result, this approach is not suitable for much else besides simple Q&A forms of learning. It does not, for example, help when there are many appropriate answers, or where the discussion itself is important in the learning process, or where the initiating post is not itself a question.

Collaborative filters that mine similarities in interests or behaviour in order that the implicit or explicit recommendations of people with similar patterns of interest are shown to others like them, improve upon simple ranking in several ways. Such tools power things like Amazon and Netflix recommendations very effectively, often suggesting useful resources that are relevant and useful, because they are sensitive to individual needs and gain value the more people that use them. Moreover, they do not demand that the learner needs to expose him or herself to ridicule, because they make use of behaviours rather than demanding public exposure. However, in a learning context, they have one major weakness: to learn is to change. Collaborative filters are predicated on the assumption that tastes in movies, books or music changes fairly slowly. Even for relatively stable tastes this can vary according to context (in different moods we might prefer different movies, for example), so more sophisticated examples of the genre consider other factors in their recommendations such as time of day or recent selections in order to better tune the results. The problem with apply this to learning is that, once we have learned something, we seldom have a need to learn it again and this means that, because all learners start from a different place, have different needs, and react differently to learning, it is not easy to predict from previous interests what future needs will be. At the very least, instead of just examining things learners have already viewed we must consider what they viewed next. This is problematic because, by definition, learners are not likely to be well-placed to select the next most appropriate thing that would help them. If they knew that then they would already be somewhat proficient. There are great risks of the blind leading the blind.

Adaptive hypermedia typically builds a user model that, in combination with metadata about content, can be used to recommend different paths to different learners. Unfortunately, when content is learner-generated, such metadata will not normally be very rich, if indeed it exists at all. While effective approaches have been found to at least improve the paths taken by learners through an open corpus (Brusilovsky et al, 2004; Dron et al., 2003), this is based on the assumption that such a corpus is relatively static. Learner-generated content is by definition ever-growing and constantly filled with novelty, rendering such approaches to be of limited value.

Social networks can provide a crude approximation of what we might find interesting or useful, based on the assumption that we friend or follow those that we find interesting or useful. However, building such networks in the first place puts new learners at a strong disadvantage as they start with none. Building networks is especially difficult given that MOOCs tend to be populated largely by strangers. This means that people will tend to connect with those who are already popular and, consequently, these too suffer from the Matthew Effect, with popular nodes in networks remaining disproportionately influential. Moreover, the fact that we have connected with someone for whatever reason does not necessarily imply that his or her posts are reliable or trustworthy. We may, for example, connect with them because we like them or find their style enjoyable, rather than because they might help us to learn.

All methods of filtering suffer from one overwhelming weakness: that many posts will hence remain unseen or, at best, seen by a few. Thus, the value of contributing to those whose contributions are filtered out will be greatly diminished and it may be highly demotivating that their own contributions have no value to anyone else. Moreover, they may lead to filter bubbles (Pariser, 2011) in which learners only see things that resemble those they or others have liked before, which may not be the things they most need in order to learn.

With these challenges in mind, we designed Curtin Commons.

## CURTIN LEARNING COMMONS

Curtin Learning Commons (www.curtincommons.com) is an Elgg-based social media environment that utilizes over 100 plugins designed to help create a safe and lively space for users of cMOOCs that run on it. It was initially heavily based on an existing site, Athabasca Landing, that provides a social learning commons for Athabasca University and that is designed to leverage beyond-the-course learning (Dron & Anderson, 2014b). The Land-

ing is built as a social learning space and has many rich customizations that are meant to support each of the social forms (sets, nets and groups), as well as to make use of collective processes to allow the crowd to guide the crowd. It is, however, a general purpose site to support beyond-the-course learning that we have described as a walled garden with windows: though it is used in some deliberate teaching, much of its value is intended to come from the fact that people visibly share with others outside a course context. Also, it does not allow anyone in who is not already a member of the Athabasca University community apart from a few invited guests. Though designed for learning, it is not specifically designed to host courses. Author Ostashewski and a colleague designed and delivered one of the first MOOCs, Social Media Tools and Supporting Your Professional Learning (AUSMT), using a Landing group (Ostashewski & Reid, 2012) which made specific use of a Landing's group space allocated as the course interface. Based on earlier cMOOC designs, Ostashewski and Reid utilized student expertise and sharing within the group to support the learning activities, which themselves were about social media and learning. Results of the AUSMT course indicated that this type of learning design resulted in students: learning about social media use, leaning how to improve professional material sourcing, and learning what the social media landscape consists of while retaining the feel of a controlled learning environment.

In building Curtin Commons we wished to retain some of the Athabasca Landings distinctive features:

*Learner control:* though used to provide teacher-led courses that follow a set process, Curtin Commons deliberately does not embody teacher roles in its architecture. Anyone and everyone has (almost) equal control over the space, is able to post freely, and is not limited in what they can do compared with anyone else. This is for two distinct reasons. The first is that a sense of control is a prerequisite of intrinsic motivation. Without the extrinsic pressure formed by the commitment and group designs of traditional courses, intrinsic motivation is central to a successful MOOC. The second is that, by allowing people to share freely, we hoped to enable the diversity of knowledge in learners on the site to shine through without constraint. We did make one notable exception to this rule, inasmuch as we prevented anyone other than teachers from creating groups (Elgg terminology for a container that helps to separate different activities, not groups in the sense we have discussed them earlier in this paper). As groups were intended as containers for courses, this was meant to avoid potential confusion should other groups appear. We also gave group owners (the teachers in this case) a couple of extra capabilities that are not native to Elgg, allowing a little more control over the appearance and functions available, and allowing them to limit who is allowed to make blog posts within a group. Further

limits to control were exercised in the deliberate editing of default top-level menus to remove options to create most forms of content, though plentiful alternative content-creation menus were provided in different places so this was meant to influence rather than strictly control behaviour. Again, this was intended to limit the scope for confusion. Much of the time we wished to keep content inside the group container in order to make it more accessible to others. Throughout the design process there was a constant tension between soft and hard, bottom-up and top-down. Our object was to seek a balance between allowing freedom and scaffolding success. If we gave too many choices we ran the risk of confusing learners. Too many choices are as bad for control as too few, because unprepared learners have insufficient knowledge to choose between them, meaning they must either arbitrarily select one or select many: neither option affords control. If we gave too few choices, on the other hand, we ran the risk of boring learners or, worse, of reducing their perceived sense of control through exercise of our own.

*Social connection:* we provided a wide range of mechanisms to support social connection, so that people could get to know and trust one another. Social networks could be cultivated and sets of people with similar interests discovered. We created profile fields with rich metadata that was relevant to the needs and interests of learners. We augmented search and tagging functions to make it easier to identify topics and themes of interest, and to get a better picture of what people were writing about on the site and to find others with shared interests more easily. We greatly enhanced the activity stream to make it simple to track who was posting what, who was active, and which topics were of most interest within a course. We pre-populated learner profiles with widgets that would show to others their activities, posts, comments and achievements. We added a friend-of-a-friend plugin to help people connect with others they might know.

*Safety:* because anyone can sign up to join the MOOC, and because it is not possible for a teacher to pay close attention to everyone, nor for group norms to emerge and be enforced, we were concerned that spammers, trolls and other malicious visitors might cause problems on the site. We used a variety of tools to limit these problems, blocking access to known spam IP addresses, using ReCaptcha to thwart bots, and enabling Elgg's default 'report this' button. We also implemented a crowd-based spam-flagging plugin, that automatically blocked users whose posts were repeatedly flagged as spam, employing a trust algorithm so that greater weight was given to the flagging provided by longer-term users of the site (who, having survived this process, could be assumed to be trustworthy). The intent in each of these cases was to make use of people, both on and off the site, to distribute the teacher role of ensuring trust and safety.

*Accessibility:* we designed the site theme to work well on a wide range of devices, with a responsive design that adapts to cellphones, tablets and fully-featured computers with equal ease. We provided a range of login methods, such as through Google+, Facebook and Twitter. We made sure that all parts of the site were as accessible as possible. Our intent was to ensure that anyone with an Internet connection could access the site as easily as possible.

*Social reward:* with some trepidation we used badges, awarded automatically for activities performed on the site, in part to help recognize achievement but, more importantly, to help build a sense of trust. Displaying a badge that indicated a level of activity acted as a sign to others that this individual was engaged and active which, on a site where we assumed most would be inactive, might be seen as a prerequisite for engagement. Our trepidation was due to the risks of providing extrinsic motivation that might therefore reduce intrinsic motivation to engage, transferring focus from the activity itself to the award that might be gained from doing it (Kohn, 1999). In the discussion section, we will describe the lessons learned and a new social badging tool that is intended to overcome these dangers.

**FEATURES**

As with most Elgg installations, the Curtin Commons site supports social networking with user profiles, personal dashboards, an activity river, groups, blogs, social bookmarking, wikis, microblogs, file sharing and discussion forums. A full list of the many plugins that were added to extend and modify this functionality would be very long, so we highlight some of the more relevant modifications:

- RSS Import

- Tabbed profiles

- Augmented activity river

- Tag menu

- Group banners

- Group permissions anywhere

- Event calendar

- Video/audio embedding

- Group wire

- Mobile theme

- User-points and badge plugins

## THE PDA COURSE

Author Ostashewski was assigned the duty of providing Curtin University with some way to explore how MOOCs might bring benefit for online students or Curtin students in general. One of the unique challenges of Curtin University is the consistent delivery of a specific course across many modalities - on campus, external location, and online – during the same week. The unique aspect is that a single course coordinator is responsible for students and consistency of delivery across all of the three modalities. In several cases these courses have an enrollments of 500 to 1500 students, in particular the common first year courses within the business or humanities faculties. Students and tutors in these courses are connected to resources using a Blackboard LMS site that hosts the course materials and include automatically recorded video lectures. This provides a high level of consistency across all the deliveries regardless of tutor or lecturer working directly with the students, however all of the course resources are institution-centric or determined by the course coordinator with little room for variation. These courses have enrolments that designate them as massive yet there is no place in the LMS that provides for student directed activities or access to other students where they might benefit from aspects of social learning. One goal was to provide students ways in which to connect with each other - particularly for those students who select fully online mode or those unable to attend all lectures on campus. This was one of the drivers for developing the Curtin Learning Commons as a platform that could be used to support university course-type activities while providing students a measure of control and access their peers to support learning.

With the learning environment in place, author Ostashewski and a colleague in Curtin University began to add the course materials: custom video segments, task lists, URLs to open external resources, and so forth. This course building process was both iterative and conversational and not just between the course authors. As content was added, author Dron provided suggestions and descriptions of ways to provide learners with alternative views to the materials and crowd posting streams within Curtin Commons.

Figure 1: Curtin Learning Commons PDA MOOC Group provides a view of how the resources, tools, and activities were set out.
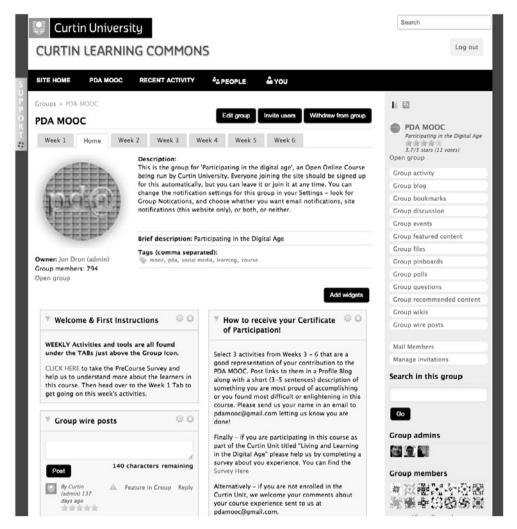


Figure 1. *Curtin Learning Commons PDA MOOC Group*

The course was designed to run for 6 weeks, long enough to cover a wide range of issues but not so long as to discourage people from joining, and was also run in conjunction with a large first year course. The course initially started in March 2014 and while initially six weeks of activity were presented to participants, the course design made it possible for learners to enrol even until a year later. In keeping with MOOC norms, participation rates were low (Clow, 2013) and activity rates dropped precipitously as the course progressed.

Key to the design of the cMOOC was the approach to instruction embedded in the PDA course, which while having some instructivist elements to guide students occasionally presented a social sharing connectivist mode for learning. The connectivist teacher approach employed in this cMOOC can be described like that of a teacher as a tour guide.

In many destinations around the world a tourist can join a bus tour of the local city or surrounding area that includes stops for tourists to get out of the bus and explore. These tours typically require a bus, a driver, and a tour guide who provides details about points of interest for the benefit of the tourists. Using this analogy in describing the PDA cMOOC, the bus is the Curtin Commons site, the driver is the website administrator (in this case Author Dron), and the tour guide is the instructor (Author Ostashewski and colleague). The course space provides the tourists with a common and recognizable place to meet and be transported along during the tour. Inside the bus tourists often discuss and share their experiences with each other, resulting in tourists gaining additional understandings and experiences of the destinations they are touring. These conversations are often overheard or shared by other tourists sitting in close proximity to the discussions, resulting in dissemination of one tourist's learning being distributed socially to other tourists. On the bus tour, the tour guide has developed a rough schedule of the points and places of interest to explore as the bus moves along the tour. At various points in the tour, the bus stops and tourists are provided instructions by the tour guide on what is interesting to explore on foot, how long the tourists have at that particular stop in the tour, and the time of departure to the next stop on the bus tour. Similarly, the instructor or «educational tour guide» in the cMOOC plans out the stops, provides guidance to learners along the way, and then sends learners out to explore the topic —with the reminder to return to get back on the bus in time to continue. This pattern of travel— stop and explore —rejoin— and then travel again all under the guidance of an individual continues until the end of the tour. The analogy highlights how the role of teacher in this cMOOC is vastly different than that of a instructionist-style lecturer or knowledge disseminator. This teacher role is also different from that of a learning facilitator or guide on the side type role as learners are provided with instructions and then sent out to explore, find, and return to share and create «memories» with others on the tour bus. This description and analogy are of potential value to designers and developers of other cMOOCs in the future – as the role and tasks of tour guides provide some starting point for understanding the role that author Dron (2012) pointed out as «co-traveller» with learners.

## FUTURE DEVELOPMENTS-SOCIAL BADGING

Curtin Learning Commons includes a widget that allows for the automatic awarding of points based on user activities. This point system provided a basic badging system, however the badges we provided for activities had little or no effect one way or another. It is likely that this is because the instructors did not reveal the metrics used (different numbers of points were awarded for different activities) which both made it hard for anyone to game the system to focus on the award rather than the activity, and made the reward seem somewhat arbitrary and so of little value in the first place. This lack of value was perhaps exacerbated by the fact that few people on the course knew one another, so the social capital of having a badge would be far less than it might be in a tighter network or group. However the value of gamification of learning activities and badge systems, specifically for developing trust and encouraging mentorship-type relationships between learners, is one area that may have potential for online learning (Gibson, Ostashewski, Flintoff, Grant, & Knight, 2013).

For the second iteration of the PDA course, beginning in March 2015, we have built a social badging system. While automatic awards will still be possible, the primary mechanism for awarding badges is social: any individual can award badges to any other, and anyone can create a badge, which may be private (only awardable by its creator) or open (awardable by anyone on the site). For example a badge can be configured to be awarded by someone who has previously been awarded the same badge (the badge in question or any other badge). There are several ways this feature can be used, in particular:

- If a badge is a measure of competence, then holding an award of that badge can imply competence to award it to others. This makes the focus of attaining the badge not the badge itself but the competence, and the social capital of becoming an assessor of others can help to build confidence and social connectedness in those that hold such badges. They are not an end in themselves in so much as a means to gain social capital.

- A 'teacher' badge might be awarded so that those with a broad range of competences could then award further badges to others.

These and other social badging uses, ones not likely anticipated by the designers and instructors delivering the course, are one of our future explorations using the Curtin Learning Commons.

## CONCLUSION

The cMOOC and social networking platform presented in this paper presume that connectivism (Siemens, 2005) is a pedagogical approach that has significant potential for technology and social media supported learning in both formal and informal cases. The cMOOC model (McAuley, Stewart, Siemens & Cormier, 2010) is one embedding connectivist learning, but which has had significant problems that need to be addressed before wider adoption of the cMOOC can progress. Anderson and Dron (2012) have pointed out that in order for the potential of connectivism for learning to be capitalized on, there is a «clear need for a richer means of establishing both networked and personal learning environments that offer control when needed in both pedagogical and organizational terms.» This paper has presented both the theoretical background and the implementation practices that we feel are addressing some of the identified cMOOC problems of student confusion, complexity of tools, and a new approach to self-directed learning (Mackness, Mak & Wiliams, 2010; Mackness, Waite, Roberts & Lovegrove, 2013; Zhang, 2013; Baggaley, 2014). The PDA MOOC has been viewed as a very constructive initial step in Curtin University's exploration of engaging online learners with social sharing to support their learning.

For institutions that are looking at the cMOOC model of delivery as a potential way to engage students there are both significant benefits and risks. Connecting international learners, promotion of an institutional brand, sharing of knowledge around the world, and providing for new kinds of connected learning experiences are some of the most notable benefits. Risks are around the development of open resources, return on production costs, controls of learner engagement, assessment and tracking of learners, and scalability of learning interactions. The PDA MOOC is a potential solution for some of the issues and challenges that make the cMOOC model more palatable for supporting ongoing institutional learning delivery. Additional research detailing the student sharing and support activities and resources resulting in student learning in a cMOOC, as well as how these might be encouraged and assessed for more formalized learning are topics identified for future research.

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Since 2005 Nathaniel has been involved in a variety of instructional design, professional learning, and educational technology consultancies. During that time he has been working as an academic consultant, instructional designer, and social media researcher for several higher education institutions. These consultancies have resulted in his developing design, evaluation, and production skills in the areas of online learning, blended learning, and face-2-face learning projects. He has developed numerous courses for education, culture, business, management, construction, and information technology faculties.

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