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Kop, Rita; Fournier, Hélène

Chapter 27

Peer2Peer and Open Pedagogy of MOOCs to Support the Knowledge Commons

Rita Kop, Yorkville University, New Brunswick, Canada

Hélène Fournier, National Research Council Canada

Connectivist Massive Open Online Courses (cMOOCs) represent a new pedagogical approach in the network age. cMOOCs focus on knowledge creation and generation. In cMOOCs, the learners take a role in shaping their learning experiences, while facilitators focus on fostering a space for learning connections to occur. When in a cMOOC, students are empowered to make their own learning decisions. This self-reliance is the basis for a re-emergence of the promising paradigms in educational practice of informal, autonomous learning, self-directed learning, and self-managed learning within personal learning environments.

Loosely organized learning networks such as MOOCs can be placed in the category of non-formal learning where learning does not necessary lead to an academic or technical credential (Bouchard, 2014). In the earliest cMOOCs, which first emerged in 2008 and 2009, certain students received credits through the University of Manitoba, whereas others located across the world participated informally at no cost. Indeed, enrollment was open to anybody interested in the subject who had an Internet connection. Other models of participation were also arranged with one student undertaking the activities at her own pace but still being evaluated by her own institution (Fini, 2009).

Such approaches lead to the questioning of the role of formal institutions in light of the growth of MOOCs and options for engaging in informal learning. While institutions still play an important role in providing credentials for acquired knowledge, the current move towards

openness of knowledge means that their role may be changing in an era of networked knowledge where people share their expertise for free (Bouchard, 2014; Weller, 2013). Not only is a form of open scholarship developing, but informally acquired knowledge is being valued at a higher level than ever before (Irvine, Dode, & Richards, 2013). Moreover, research on self-directed learners in MOOCs and other open educational environments underscores the point that it is vital to understand the specific types of resources that learners find valuable to their changing learning needs. In addition, if learners find resources informally on the Web network on which cMOOCs are positioned, it is important to contemplate the role of the network itself.

Some researchers see structural problems with online networks that might prevent learners from having access to the best resources for their learning needs. For example, Bouchard's research revealed that "The natural tendency within the 'perfectly' democratic network is to organize itself, over time, in a hierarchical system composed of leaders and followers. The social organization of networked learning on a personal learning environment has been described as resembling the 'outside' world of government and commerce, with the difference that the currency of exchange in the network is not money or power, but reputation and popularity" (Bouchard, 2011, p. 296).

As we have observed in monitoring and evaluating several cMOOCs, the reputation and popularity of facilitators such as George Siemens, who wrote the foreword to this volume, and Stephen Downes, from the Canadian Research Council, often accounts for much of the motivation to register and attend the first few live sessions. Reputation and popularity, however, cannot counter what Graham (2006), in his work on blended learning that predated MOOCs by a couple of years, has identified as persistent barriers or challenges in self-directed environments.

The barriers he identified included the lack of feedback and support, lack of personalization, and overwhelming amounts of resources.

Research also highlights that the changes and ease of access to information and knowledge that technology provides means that information behaviour of learners is dramatically changing, as is learner or participant relationships with 'knowledgeable others' (Bouchard, 2014; Mott & Wiley, 2009; Pardo & Kloos, 2011). Why would learners, for instance, rely on university professors for access to resources and articles as they are openly and freely available to anyone with access to a computational device?

To add to the complexity, our understanding of the intricacies of the network is still limited, especially in terms of the knowledge that is vital for learners to negotiate the Web structure effectively while learning. Kop and Bouchard (2011) posited that it is the presence and involvement of knowledgeable others in an environment characterized by many technological variables and contexts that help learners make sense and be critical of the multitude of resources offered on the Web. As part of our human social nature we communicate, reflect on activities and information, and make connections with what we already know. Information and knowledge is validated in the process.

The developing online networks are promising places for such novel or generative connections and knowledge to occur as they offer possibilities to not just receive information from one information broker, or the mass media, but from a multitude of people. Social media could facilitate the transformation from an educational model structured around courses, controlled by institutions using a 'broadcasting' model in an enclosed environment, to a model that is adapted to learners' needs and owned by individuals using an aggregation model in a

personalized open learning environment that provides a fluid extension of the wider informal personal space.

Open and active learning

If technology facilitates the transfer of power from institutions to learners, this will put the onus on the learner to not be passive and wait for the transfer of knowledge from an instructor. A certain level of autonomy and activity will be required to move her learning forward.

For decades, numerous educationalists have advocated the move from a pedagogical approach to an andragogical one in education and learning (Knowles, 1970; Tough, 1971). This educational trend entailed a shift from dependency by the learner to higher levels of self-direction. It also marked a distinct shift in emphasis from subject-based learning towards problem-based learning. Finally, it involved a shift from teaching towards facilitating. At the same time, there were strong voices calling for the reduction of the influence of institutions in our everyday life (Foucault, 1977; Illich, 1971).

Illich's vision was to see people take ownership of the learning process, rather than rely on institutions to control education. He called for "the possible use of technology to create institutions which serve personal, creative and autonomous interaction and the emergence of values which cannot be substantially controlled by technocrats" (1971, p. 2). He perceived that the alternative to "scholastic funnels," as he called educational institutions, would be true communication webs. In his work, Illich discussed the restriction on freedom, the "enclosure of the commons," the increased policing, and surveillance of everyday life from traditional educational institutions (Illich, 1992, p. 51), and the stifling effect all this has on people's creativity. Interestingly, these are the same issues that are increasingly discussed today in

education (Benkler, 2006; Bouchard, 2014; Willis, Spiers & Gettings, 2013). Under the influence of emerging technologies, the development of "open education" (e.g., MOOCs) seems promising as an avenue for moving Illich's ideas into reality. In the words of Willis et al. (2013):

"MOOCs tread on the utopia of education, the promise of knowledge, power, and social mobility vis-à-vis traditional or even online platforms, thereby marking out space that undermines the monetary value of education all the while elevating the value of disseminating the potentiality of knowledge for those who otherwise may not be participants" (Willis et al., 2013, p.2).

New technologies make it possible to connect with other people and exchange information and create knowledge on an unprecedented scale; they facilitate the creation of an open knowledge commons.

The knowledge commons - Challenges of learning on the network

We have spoken about the abundance of information on the Web, and how learner information behaviour might change under the influence of technology. The wealth of information means that choices need to be made about what information and resources are valuable and what not, while the low level of teacher presence on open online networks increases the self-directed nature of this task for learners. Some researchers advocate for online services that stimulate human filtering to help Web users with this information abundance, whereas others are working on automated information filtering systems (Boyd, 2010; Duval, 2011).

The challenge is that access to information on the Web is influenced by inherent power relations and the distinctive ways in which networks develop (Barabasi, 2003). It is also clear that commercial interests influence what information individuals can access easily and what they

have to work harder for to find or have to pay for (Bouchard, 2014; Ingram, 2014). Such issues raise not only educational questions and concerns, but also societal ones about the need for open and free access to information. Harvard Law School Professor Yocahi Benkler formulated this well:

> How a society produces its information environment goes to the very core of freedom. Who gets to say what, to whom? What is the state of the world? What counts as credible information? How will different forms of action affect the way the world can become? These questions go to the foundations of effective human action. (Benkler, 2006, p. 1)

Such questions and concerns are at the heart of the development of the knowledge commons. The Web is a place where information is stored, in addition to a place where people come together and actively do something with this information and the available resources (perhaps to produce multimedia, share, remix, or build on information). It is not only access to information that is at stake but also public access to knowledge. According to Hess and Ostrom, this situation requires "a new way of looking at knowledge as a shared resource, a complex ecosystem that is a commons —a resource shared by a group of people that is subject to social dilemmas" (Hess & Ostrom, 2006, p. 3). The commons might also be a place at which different disciplines come together and solve joint problems related to that knowledge.

Increasingly, countries aim at developing a 'knowledge economy' dependent on free flows of and free access to information. Individuals are also increasingly 'do-it-yourself' learners, which means that access to free and open content will increase their potential to find valuable, relevant information in their searches. As most current knowledge has been produced by publicly

funded universities, it is important to grasp who actually owns that knowledge as well as the yet to be developed future knowledge (Bouchard, 2014).

The research agenda related to free and open education and open online knowledge has to a large extent been owned by the USA and Europe, or, in effect, the more developed portions of the Northern hemisphere. At the same time, the actual research results have, until recently, been mainly published by commercial publishers. As a result, copyright of the publications has been transferred to these publishers. There are intense debates about such copyright and intellectual property rights today. Data for research has also been largely proprietary and owned by the producer. This has led to a worldwide billion-dollar intellectual property control industry (Bouchard, 2014; Weller, 2011). However, IP laws and practices were developed in a time of scarcity of resources. As we have moved into an era of abundance of resources, the old IP control systems no longer seem to work.

Some serious challenges against the closed knowledge situation are developing, especially as innovative and open alternatives are available. The scientific community and governments, such as the European Union, are all advocating for openness in data (including their own government data), as well as unprocessed Big Data and research publications so that data-mining and other forms of analysis and knowledge development might be made achievable (UNESCO, 2014; OECD, 2013).

Big and open data to enhance learning

The majority of e-learning design models are currently founded on the development of positive learning outcomes under the influence of effective teaching practice in institutions of higher education. Without a doubt, new and emerging learning technologies make different models possible. Some research groups are currently working on data-driven learner support structures and learning environments such as MOOCs. The European Union as well as the

National Research Council of Canada are each separately funding several large research projects to develop personal learning environments by using data (as well as visualizing traces of data) that learners have left behind in their online activities to support their learning (Downes, 2013; Duval, 2011). At the same time, the Open University in the UK is working on discourse analysis techniques to enhance learning (Ferguson Wei, He, & Buckingham Shum, 2013). Moreover, a research group at Carnegie Mellon University is just starting to work on using machine-learning techniques to personalize the learning experience (Spice, 2014).

Clearly, researchers of the twenty-first century have access to massive amounts of data that capture the entire digital experience in a constant stream of inputs and outputs. Given such massive data inputs, the key challenge is the analysis of such "Big" data. Big Data poses new difficulties in terms of incredible diversity and abundance of data as well as the complexity and uncertainty in deciphering any meaning from it. There are also challenges related to determining important contextual cues or information from the data, and in the overall interpretation of results (Kitchin, 2014).

What all of these projects have in common is that they attempt to use learner data to enhance future learning. However, there is intense debate around the ethical use of data gathered from online learners. There are also myriad issues around informed consent in conducting research. As shown in the recently published Facebook experiment on emotional contagion (Authur, 2014), such ethical issues and concerns may or may not influence or affect users of social media.

The problem of course is that it is not the learner who is in charge of these projects, but technologists and researchers. In some cases, the research is even funded by corporations and it

is unclear how this might affect the research. For instance, if corporations such as Google fund educational research projects, we have to question the research results as Google has a vested interest in the findings; accordingly, the results can impact its' bottom line. Such corporate embedded search practices stand in stark contrast to those who advocate for open learning and an open knowledge commons. Moreover, sociologists argue that "any form of digital data is an evolving entity that the original sources often have little or no control over" (Selwyn, 2014, p.7). Furthermore, that data is not only shaped but also shapes our everyday lives. This means that we should be cautious about how data is being used in an educational context as the different layers of data might make it non-transparent how they have been manipulated and who controls them.

Open access to knowledge and education

Of course there are many questions to ask in relation to opening up education and knowledge. Weller (2011) insightfully revealed how digital and open scholarship can be fostered through the current technological changes. He also pointed out how openness of academic publication might positively impact on public engagement. In 2013, Weller highlighted a variety of motivations for providers to offer MOOCs, including opening access, experimenting with pedagogy, and marketing their courses (Weller, 2013).

These motivations pose a challenge for MOOC providers and instructors. For instance, it is difficult to filter and streamline the abundance of information made available to learners as well as the resources and data generated by these same learners and other MOOC participants. Kop, Fournier, and Mak (2011) argued for the need of a human face to the pedagogy in an open learning environment, not just an automated one. When a human touch is added, there is a sense of trust in the validity of the information and any knowledge that emerges or develops later. Kop

et al. also posit that active engagement in the learning process by the learner is at the heart of a quality learning experience.

This emphasis on active and engaging learning resonates with the views of Stephen Downes, one of the founders of the MOOC. Downes (2013) suggested that to harness the potential of emerging technologies in connectivist MOOCs, four principles are paramount to foster learning, namely: (1) the autonomy of participants, (2) connectivity, (3) diversity of participants, and (4) openness. Moreover, Siemens (2011) and Bell (2011) have highlighted the importance of human agency and the necessity of active participation in connectivist learning. Facilitators in a cMOOC promote a learning organization whereby there is not a body of knowledge to be transferred from educator to learner and where learning does not take place in a single environment. Instead, Connectivism promotes an environment in which participants contribute resources and technologies peer to peer to the network and are active participants on networks around a particular topic of interest. In doing so, they contribute to the knowledge commons.

One of the challenges that all MOOCs have in common, however, is that participants use them as they do other Web resources. For instance, at times they dip in and out to select and mix resources and technologies to complement their own learning needs. Such behavior is atypical of learners in university courses. As a result, this Web as a resource mentality by many MOOC participants has been perceived as contributing to the exceedingly high drop-out rates in MOOC-related learning opportunities. Our research in cMOOCs has shown that for participants to remain engaged in MOOCs, it is necessary to create a learning environment with a high level of activity and presence of participants. If this is achieved, the open educational MOOC network is

a good place for contemporary learners to find their information, make connections with others, and be challenged to learn.

How could MOOCs contribute to the knowledge commons?

The MOOC concept at its inception seemed promising to achieve an open learning environment that creates networks of people learning from each other and contributing to a common good, which we label a "Knowledge Commons." In such a knowledge commons, MOOCs are positioned on the cusp of formal and informal education. In this gray space between formal and informal education, MOOCs are open and they are not necessarily controlled by educational institutions; in fact, they could be controlled by the learners or participants.

As noted earlier, MOOCs have been around since 2008. Initially, they were based on connectivist principles. Connectivist experimentations were suddenly possible, since, at the time, emerging technologies increasingly facilitated peer to peer interaction, collaboration, and knowledge and resource sharing on an unimaginable scale. People were invited to explore, reach out, evaluate, create, connect, negotiate, share, and control their learning environment.

More recently, however, the name MOOC has been repurposed by several higher education institutions to mean something different. In effect, technological platforms have allowed for the scalability and replication of traditional university courses with a top-down pedagogy in an online environment. This development has allowed higher education institutions to market their course offerings by opening-up tasters to the wider public. At the same time, it has also allowed for the creation of for-profit spin-out companies. Providers of these MOOCs (sometimes referred to as xMOOCs) have so far closed the courses after they end, which highly restricts their contribution to an open knowledge commons. The connectivist MOOCs, in

contrast, leave open their learning environments and make the student contributions and resources produced by knowledgeable invitees freely available, which also contributes to the commons.

Conclusion

The generation, accumulation, processing, and analysis of digital data is now being touted as a potential solution for many prevailing educational problems. Researchers are currently working on using data to enhance the learning experience and to personalize learner searches. However, researchers call for caution in how data is being used in an educational context. This leads us to believe that, at least at the present time, the validation of data and information might still require the involvement of humans, perhaps through the use of social media.

We propose a learning design model that not only uses data, but also technologies, such as social media. The learning design model would allow the support of learners in a one-off event, such as the participation in a MOOC. Perhaps more importantly, it would also keep the resources and communications channels available after the event to contribute to the open knowledge commons. We have tentatively produced a model for the purposes of this chapter (see Figure 1).

Figure 1. MOOC Model Knowledge commons

It is clear from the model that we value human involvement. What also is noticeable in this model is that we want to ensure MOOCs contribute not only to learners own learning process and that of their peers during an open learning event, but also to the knowledge commons. For this to occur, MOOCs should be open and make available all resources. Moreover, learners' active involvement in knowledge production, and in creating and contributing to knowledge, should be fostered. This viewpoint requires a pedagogical model that is not just based on

traditional transfer of knowledge, but that involves active participation in the learning process, through which learners produce something of relevance. It involves communication with (knowledgeable) others to advance their learning as well as guidance on how to contribute to the knowledge commons. It is toward such ends that we are proceeding in promoting a philosophy of sharing across any and all learning environments We invite you to meet us there!

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Rita Kop is dean of the Faculty of Education at fully online Yorkville University, She has been a researcher at the National Research Council of Canada and holds a Ph.D. in Adult Continuing Education. Her current research focuses on learning in advanced networked learning environments. Before she joined the NRC, she was an assistant professor at Swansea University in the UK. At Swansea, Rita worked with community groups and universities contributing to community-based and online services for adults in some of the most deprived areas of the UK. Dr. Kop is originally from the Netherlands, where she spent ten years as teacher and head teacher in elementary education. For more information: http://www.you-learn.org. She can be contacted at rkop@yorkvilleu.ca.

Hélène Fournier has been a Research Officer at the National Research Council Canada's Institute for Information Technology since 2002 and holds a Ph.D. in Educational Psychology from McGill University. Her research areas is education and technology. She has participated in several research projects focused on the application and evaluation of advanced technologies in the training sector, in distance education, and, more recently, in learner-centered research and development of Connectivist Massive Open Online Courses (cMOOCs) and Learning and Performance Support Systems. Dr. Fournier has contributed to the advancement of research in the field of distance education, online learning, and adult learning. She has also been engaged in the study of informal learning experiences in the context of cMOOCs. She has published widely in peer reviewed journals and at international conferences.