

An Analysis of Participants' Experiences from the First International MOOC Offered at the University of Oslo

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ABSTRACT

This paper explores pedagogical practices and participants' engagement in learning activities during the first international Massive Open Online Course (MOOC) offered by the University of Oslo through the FutureLearn platform in 2015. The data were collected using pre- and post-course surveys and participant observations. We used the acquisition and participation metaphors of learning proposed by Sfard (1998) as a conceptual framework to inform our analyses and discussions. The data indicated that new pedagogical practices are in the making for online learning, involving elements of existing practices and radically new ones. The instructors had sole authority in developing and curating course contents, thus following the acquisition metaphor of teaching and learning. In addition, the data indicated that, overall, the learners had a positive experience of learning by participating in the MOOC. The learners engaged in online discussion forums, interacting asynchronously with fellow learners and mentors. The discussion forums promoted knowledge sharing and collaborative learning activities among diverse groups (joiners, surveyors, and social learners). The apparent contradiction between teaching according to the acquisition metaphor and the learners' preferences for the participation metaphor was resolved by some of the learners through self-organised scaffolding. The teachers did not interact enough with the learners and so, to compensate, some learners took on facilitating roles. We discuss our findings in terms of the related work and contemporary trends in online learning and higher education research, including learning analytics, formative assessment, personalization, collaboration support, and lifelong learning.

Keywords

MOOC, empirical research, learner engagement, learner participation, acquisition metaphor, participation metaphor, knowledge-creation metaphor, readymade content, self-organised scaffolding

INTRODUCTION

Rooted in the ideal of openness in education, Massive Open Online Courses (MOOCs) have become a new instructional trend in higher education (HE) for engaging a large, diverse group of learners in online activities. Because of their flexibility, MOOCs have demonstrated in specific cases the coordinated efforts of “active engagement of several hundred to several thousands of learners who self-organise their participation according to their learning goals, prior knowledge and skills, and common interests” (McAuley et al., 2010, p. 5). Although the ultimate impact and sustainability of MOOCs are not yet known, these courses have gained popularity in the higher education (HE) sector since top universities from around the world began to embrace this model and to provide these courses free of charge. Arguably the biggest strength of MOOCs is their flexibility, as they provide opportunities for learning anytime and anywhere in formal and informal education, while one of the most frequently reported drawbacks is that they have high dropout rates (Breslow et al., 2013; Ho et al., 2014; Jordan, 2014) and require extensive preparation time. For example, in the MOOC analysed in this paper, there was a dropout rate of more than 90% of the students and it had 58 short videos prepared in advance (Singh, 2016).

MOOCs are one of the fastest growing technological developments in the education sector—they have grown by 10% since the launch of the first MOOC in 2008 (Toven-Lindsey, Rhoads & Lozano, 2015)—and offering a MOOC has been a matter of reputation and way of branding and marketing for many universities. MOOCs may prove to be an integral part of HE institutions in many parts of the world, but the size of the HE pie that MOOCs will claim is unknown and will likely be debated for a long time. Empirical research of the successes and failures of MOOCs is a promising direction for harnessing their potential as a source of teaching and learning, and we contribute with an empirical study from one of the Nordic countries.

MOOC developers have drawn a distinction between xMOOC and connectivist MOOCs (cMOOCs). In an xMOOC, online courses are built as an extension of the conventional campus course where the main distinction is with regards to the number of students who can enrol. Furthermore, xMOOCs are characterised by the learning resources they provide, which range from video lectures (a large number of short video tutorials on related topics), online reading materials, and automated assessment tools like quizzes (Kesim and Altınpulluk, 2015; Bates, 2014). However, the first MOOCs were initially envisioned as cMOOCs, a term coined by George Siemens and Stephen Downes in 2008 (Yuan & Powell, 2013). These initial MOOCs had a decentralised, network-based, nonlinear structure focused on exploration and conversation rather than fixed content and instruction (Margaryan, Bianco, & Littlejohn, 2015). In cMOOCs, each learner is responsible for his or her own learning process, which is enabled by his or her network of learners and their connections (Kesim & Altınpulluk, 2015). However, they turned out to be difficult to

organise on the large scale compared to xMOOCs, which are easier to organise and deliver for a large group of learners.

The differences between the two types of MOOCs are under debate regarding their respective strengths and weaknesses. A common perception is that cMOOCs might be preferable from a learning perspective, while xMOOCs might be more scalable. Another helpful method for comparing the two types of MOOCs is Sfard's (1998) *acquisition metaphor* (AM) and *participation metaphor* (PM) of learning. The AM compares learning to a process of taking in or being supplied with ready-made knowledge from a more knowledgeable person through individual efforts, whereas the PM views learning as a process of taking part in various social practices and shared activities with fellow learners.

The main aim of this empirical paper is to explore and analyse the patterns of pedagogical practices and learning experiences in the first international MOOC offered by the University of Oslo in 2015. It has two research questions:

- i. What are the pedagogical practices in the MOOC?
- ii. What are the experiences of the MOOC participants, and what do they say about the teaching and learning practices in the MOOC?

The rest of the article is organised as follows: First, we present a literature review to identify key issues of teaching and learning in MOOCs, as seen from the AM and PM perspectives. Then we describe the case and introduce the research design and methods. After that we present quantitative and qualitative data followed by analyses. Then we answer the research questions, compare our findings with the findings reported in the literature, and discuss the possibilities and limitations of MOOCs in terms of some contemporary trends in online learning in higher education before we summarise the results of our research.

LITERATURE REVIEW

MOOCs are considered as an upgraded version of distance education enabled by the advancement of educational technology. Anderson & Dron (2011) divide distance education pedagogy into three categories: cognitive behaviourism, social constructivism, and connectivism. Cognitive behaviourism is defined as the pre-web period of printed materials, television and radio; social constructivism refers to the web 1.0 and teleconferences period; and connectivism refers to the communication and interaction process provided by web 2.0 and social networks. The authors argue that the classical learning theories are insufficient in that they were developed in an era in which technology was not as influential on education as it is today, and they promote connectivism (Anderson & Dron, 2011; Siemens, 2004). The learning process in connectivism takes place as learners adopt others and share their knowledge through making connections with the collective knowledge of the community (Siemens, 2004). Learning is not merely the transfer of knowledge from the teacher to the learner and does not take place in a single environment; knowledge is transformed and transferred through the interactions of people, especially in a web environment (Kop, 2011).

Sfard (1998) argues that the major learning theories are based upon either the acquisition metaphor or the participation metaphor, which are not mutually exclusive categories but are complementary ways of thinking about the complexities of learning. The AM depicts learning as the acquisition and accumulation of knowledge, inherited from cognitive models that assume learning is a transmission of knowledge, and constructivist models that emphasise knowledge is not passively received but actively built on an individual's prior experiences. Knowledge from the AM perspective is considered a 'commodity' that can be acquired and therefore applied. Teachers are providers, facilitators and mediators of teaching and learning. Learners are consumers and learn by adaptation with the AM. Our preliminary observation is that the majority of MOOCs are, from the outset, grounded in the AM, as they are highly structured and solely designed by the teachers for consuming by a mass of learners. The assessment is more superficial and automated within a MOOC compared to a conventional campus course, and feedback on learning activities is minimal and part of summative rather than formative assessment. MOOCs based on the AM seem to be suitable for novice learners, as contents are presented in a carefully planned and sequenced manner (Singh, 2016).

The PM, on the hand, represents learning as an active involvement in an on-going process of learning together with others in a particular context. Learning is a process of becoming a contributing member in a community of learners. Learners enter the MOOC as peripheral participants and apprentices (Lave & Wenger, 1991) while teachers and more skilled learners are expert participants and preservers of a culture of participation (Fischer, 2011). In a nutshell, the AM focuses on outcome and the PM on process. Thus, Sfard suggests employing both metaphors in order to design for and understand learning in modern educational settings.

Paavola, Lipponen & Hakkarainen (2004) and Moen, Mørch & Paavola (2012) argue that Sfard's PM is restricted in its focus on collaborative learning activities and communal participation and tend to overlook the outcomes of learning. They instead proposed the knowledge creation perspective (KCM), which emphasises communal participation of developing shared objects of activity, thus taking into account both process and outcome (Paavola, Lipponen, & Hakkarainen, 2004). It is collaborative efforts towards learning that result in shared knowledge, which is more than the sum of individual efforts (Moen, Mørch, & Paavola, 2012). The diverse types of learners from different backgrounds in MOOCs have potentials for collaborative knowledge creation if their ideas are encouraged, taken up, synthesised, and applied by individuals.

Kovanovic et al. (2015) found that MOOCs have attracted unprecedented public involvement and interest compared to previous innovations in educational technology, but media coverage of MOOCs decreased by 50% from 2013 to 2014, though government interest in and use of *learning analytics* for enhancing MOOC learning experience are growing (Clow, 2013), and the quality of MOOC discussions is increasing in the literature. Sunar and colleagues (2015) examined 66 papers related to *personalization* of MOOCs and have found that there is a growing trend of researchers focusing on implementing personalization and adaptation tools in MOOCs to improve users' engagement and reduce the huge dropout rate. Researchers are paying attention to improve individual learning experiences in MOOCs through personalised learning paths, personalised assessment through *adap-*

tive feedback, personalised forum thread and personalised learning materials and learning tasks (Andersen & Ponti, 2014; Sunar et al., 2015). These emerging themes will be brought up again later in the article when we discuss MOOCs in terms of contemporary trends in online learning.

In the same way as learning theories over time have created bridges across the individual and social learning gulf (e.g. as reflected in the syntheses of AM and PM), learning technologies show a similar trend, in our context manifest in the debate among xMOOC and cMOOC camps.

The cMOOC camp emphasises the connectivist approach with co-construction of knowledge as an integral part of learning (e.g. Andersen & Ponti, 2014), while xMOOCs advocate a more cognitive-behaviourist oriented approach with more focus on delivery of information and individual learning. They determine each a particular pedagogical approach. The cMOOCs are driven by the principles of pedagogy within a richly networked setting, aiming toward the social mode of learning, while xMOOCs are institutionally focused, overtly reliant on video lecture contents and automated assessment through quizzes, and characterised by pedagogy short on social contract (Bayne & Ross, 2014).

The recent literature is starting to move away from the simplistic binary categorization toward more nuanced and micro level discussions of what is happening in different kinds of MOOCs (Bayne & Ross, 2014). Therefore, some scholars like Waite et al. (2013) have proposed the notion of ‘hybrid MOOC’ or a process by which educators might mediate the dichotomy between xMOOCs and cMOOCs (Grunewald et al., 2013), embodying characteristics of both types of MOOCs, leveraging their strengths and inhibiting the weaknesses. However, up until now MOOCs have not improved the nature of individual learning and have only changed the form of social learning, yet do not address the type of learning needed in the 21st century (Bogost, 2013), which we argue requires the integration of learning theories as well as learning technologies. Particularly, the xMOOCs largely reproduce the banking model of education (e.g. Freire, 1970) through *readymade content*, including video lectures, digitised resources and automated assessment (Morris, 2014) and force students to “become passive, uncritical repository of teacher-owned knowledge” (Hai-Jew, 2014, p. 341). Pre-packaged instructional material does not promote active learning (Morris, 2014) and is not necessarily the best way for everyone to learn (Prensky, 2011). On the other hand, cMOOCs resist the banking model and provide the students with opportunities to direct their own learning experiences and to assist peers’ learning as well (Howard, 2017), but put a very high burden on students to collaboratively create new understanding, such as co-creation of tasks (Andersen & Ponti, 2014), which arguably is better tuned to expert learners than novices, or at least a combination of expert and novice learners (Moen, Mørch & Paavola, 2012).

In a review of previous studies, Tømte, Fevolden & Aanstad (2017) have found two contrasting views on the emergence and development of MOOCs: “the global disruption view and national mediation view” (p. 211). The proponents of the first view see the MOOCs as innovation and competition drivers for HE. The proponents of the national mediation view see MOOCs as e-learning delivery and argue that national education authorities need to work on policies for adjusting MOOCs into countries’ existing educational systems. This view has emerged as the dominant in Norway. A government appointed commission for

investigating the possibilities for adopting MOOCs into Norwegian higher education system found that the pace of digitalisation of HE in Norway has been slow and argues that MOOCs and new digital technologies can help develop Norwegian knowledge society. The main motivations for adopting MOOCs in Norwegian HE context are for strengthening quality, access, and marketing of Norwegian education and research, increase recruitment and cooperation, and reduce costs (Tømte et al, 2017).

There are different patterns of learner engagement in MOOCs, such as active participation, passive participation, lurking, dropping-in, etc., and these patterns keep changing (Hill, 2013; Milligan, Littlejohn & Margaryan, 2013). Simon Nelson (2014), CEO of the company FutureLearn, has characterised learner engagement patterns into six (overlapping) categories: joiners, learners, active learners, returning learners, fully participating learners, and social learners. Morris & Lambe (2014) have categorised MOOC participants into five types of learners: pre-university learners, university learners, professional learners, self-directed learners and leisure learners, according to different types of motivation for taking part in MOOCs.

The multiple ways of categorising MOOC learners can be attributed to different interpretation of MOOC dropout rates. On average, less than 10 % of the participants complete the MOOCs (Breslow et al., 2013; Waks, 2016). There are various reasons for learner dropouts such as: high workload, challenging course contents, lack of time, lack of pressure, lack of a sense of community, social influence, lengthy course start-up, and learning on demand (Hone & El Said, 2016; Zheng et al., 2015). The drop out is partly because of the “free factor,” which might have attracted learners who wanted to give it a try, but were not committed to completing the MOOC. In some cases, learners can buy a certificate by paying for it without even completing the MOOC (Singh, 2016). However, Clow (2013) argues that learners’ complete withdrawal from MOOCs may reflect self-directed learners’ choices to “climb out” (rather than drop out), and this mirrors learners’ variable level of activity over a MOOC’s duration. The monolithic distinction between completers and dropout is inadequate for describing the diversity of learners’ engagement patterns (Clow, 2013; Seaton et al., 2013). Concerning different ways of learning in MOOCs, Fasihuddin et al. (2015) propose a framework to personalise open learning environments based on the theory of learning styles, particularly on Felder and Silverman’s (1988) learning style model. The framework provides adaptive navigational support through sorting and hiding the learning materials based on learners’ learning styles and the involved preferences.

DESCRIPTION OF THE MOOC

A course titled “What Works: Promising Practices in International Development” was the maiden MOOC that the University of Oslo offered through the FutureLearn platform in 2015. It was Norway’s first online class open to the whole world (Ottersen, 2015). The course was developed by the University of Oslo’s Centre for Development and the Environment in close collaboration with Stanford University, the University of Malawi’s Chancellor College in Malawi, China Agricultural University in Beijing and the Norwegian Agency for Development Cooperation. The interdisciplinary researchers, scholars and development specialists from the collaborating universities and organizations contributed to video lec-

tures, reading materials, quizzes and so on for the six-week course. The University of Oslo's Centre for Information Technology (USIT) provided technical support in creating and delivering the MOOC through FutureLearn.

About 7,000 participants from 268 locations throughout the world signed up for the MOOC. In fact, participants continued to enrol in the course even after it was over. The majority of the participants were female (66%). The age group of 26 to 35-years old was the most prominent (37%). About 49% of the participants were full-time workers, and 18% were enrolled in full-time education. Most of the participants (about 81%) had university degrees.

The data extracted from the post-course survey show that more than 67% of the learners found the structure of the course to be very clear. For 34% learners, it was fairly clear. Through observation, it was easy to identify that the course contained different topics related to developmental studies, including development, governance, and democracy. The instructors, each coming from one of the collaborating institutions, provided the various course components, i.e. video lectures, suggested reading materials, quizzes, discussion/reflection/feedback forums, one assignment and two videoconferences. Course materials and activities were delivered weekly so that learners could complete them as flexibly as possible.

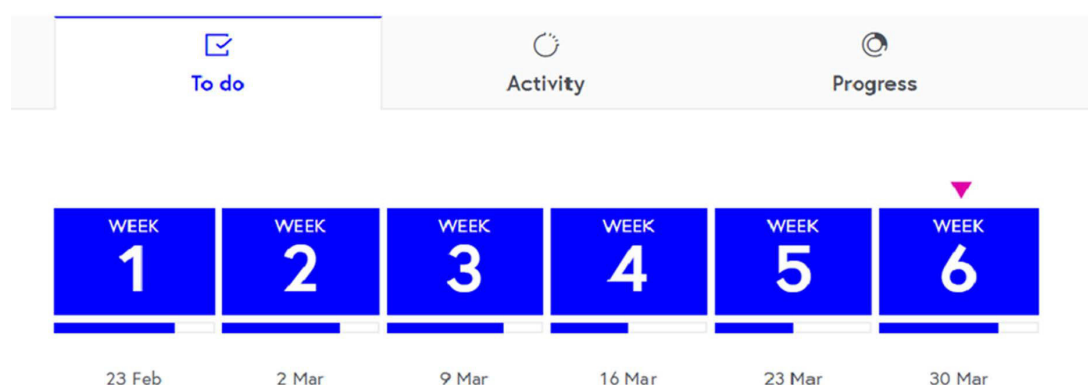


Figure 1. Dashboard for viewing and navigating the course contents (*top*) and weekly course schedule (containing activities and steps for learning) at *bottom*.

The MOOC has a dashboard user interface to view and access the different functions offered (Figure 1): To Do, Activity, Replies and Progress. The To Do icon was used to navigate course content, the Activity icon was the archive of the learner's posts, and Progress showed how much of the course had been completed. The dates underneath each week indicated when the course content was delivered on the platform.

The course was organised by a number of instructors and mentors. The instructors were university professors and teachers, and international development specialists, whereas the mentors were master's students, a learning designer, a lecturer and a professor who facilitated the teaching and learning. The instructors did not directly interact with the learners. Automated quizzes and peer assessments were used to gauge the understanding and performance of the learners. In the final week, only one participant who participated on the post-course survey reported that he peer-reviewed an assessment, whereas others did not

mention it. So, it was hard to determine how many learners submitted their assessments and received peer reviews. The mentors notified those who submitted assignments by email after they had been reviewed. FutureLearn provided a 250-word space for learners to leave comments and suggestions in response to the assessments. In addition, there were two online videoconferences offered on the Talkabout platform.

DATA COLLECTION TECHNIQUES

The researchers employed a mixed-methods research (MMR) approach by integrating different methods from two research paradigms: quantitative and qualitative (Creswell, 2009). In MMR, “the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study” (Johnson & Onwuegbuzie, 2004, pp. 17–18). Pre- and post-course surveys as a source of quantitative data, and participant observation as a source of qualitative data were used to explore the pedagogical practices and learners’ experiences in the MOOC. The design for data mixing that was adopted was the explanatory or sequential mixed-methods design (Teddlie, 2004; Creswell, 2009). In this design, one type of data (e.g., QUAN) provides a basis for the collection of another type of data (e.g., QUAL) and answers one type of question (here, QUAN) by collecting and analysing two types of data (QUAL and QUAN). Inferences are drawn from the analysis of both types of data.

The researcher (first author) received access to the quantitative pre-course survey questions from the USIT first, but the decision was made to prioritise the qualitative data collection and analysis despite it being the second phase of the research process. This decision was influenced by the purpose of the study to explore and explain pedagogical practices and factors that affected the participants’ engagement in the MOOC. Based upon the pre-course survey questions, a thematic analysis (Creswell, 2009) of the comments that participants left on different discussion forums was carried out. Each comment was coded using a range of analytic concepts and content descriptors: supportive, critical, expectation, motivating, demotivating, etc., and as advanced, average, etc., according to different themes of different questions and carried out in an iterative fashion (from lower to higher level codes).

The researcher obtained the survey data from the USIT at the end of the course. The nature of the pre-course survey data was predictive, while the nature of post-course survey data was descriptive and explanatory. The themes of the qualitative data were reviewed following the analysis of the post-course survey data to ensure that no important theme was overlooked. The number of participants who responded to the pre-course survey was much higher than the post-course survey as a result of the high dropout. As stated previously, qualitative data were used to the quantitative data.

Pre- and Post-Course Surveys

The surveys were developed and delivered by the course provider. The USIT supplied the researcher with the data. The pre-course survey data were used to decipher learner demographics in terms of *gender, education level, employment status, participation, expectations, preferred ways of learning and perceptions*. The post-course survey data were used

to explore how learners learned and what challenges or difficulties they faced during the 6-week course. Out of the approximately 7,000 course registrants, 936 learners filled out the pre-course survey, while only 38 replied to the post-course survey. Other items, like *pedagogical practices, course structure, course design and contents, factors promoting and hindering learner participation in the course, learners' preferred ways of learning, learner dropouts*, etc., were drawn from the post-course data. Since there was a significant variation in the response rate between the two surveys, the data were used to generate understanding, not for any comparative analysis.

Participant Observation

Participant observation (PO) is “engaging with people in as many different situations as possible” (Hammersely & Atkinson, 1995, p. 65). The researcher for this study enrolled in the course and introduced himself to his peers as an observer of their learning activities for research purposes. PO helped the researcher gain an understanding of physical, social, cultural and economic contexts of the learners. An observation log, which contained a checklist for coding learners' comments and views on *course structure, quality and design of course contents, experiences of engagement, factors promoting and hindering learner participation and nature of interactions*, was used to keep track of observed comments. The researcher's role as a moderate participant during the course changed into a complete observer after the course was over because of the massive amount of data to comb through. This unobtrusive and prolonged engagement in the collection of data helped to minimise bias (Onwuegbuzie & Leech, 2007). The data were observed for 3 months, for approximately 5 hours each week by the first author.

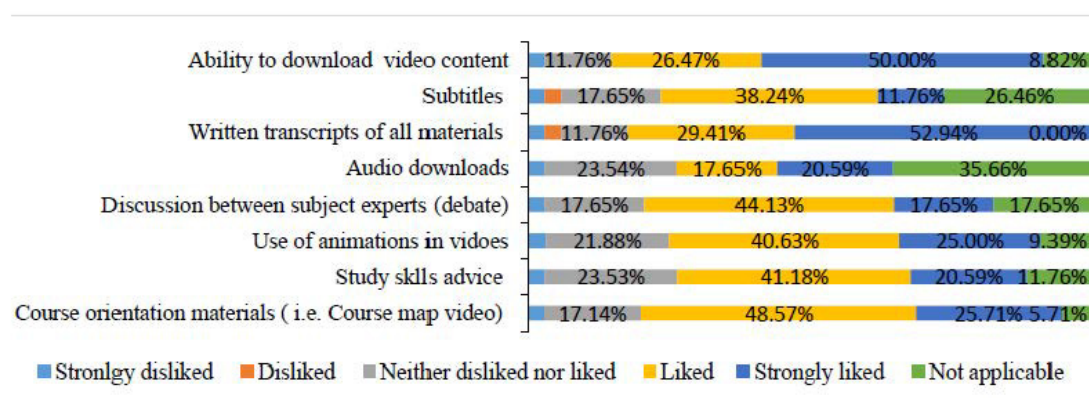
DATA AND ANALYSIS

Both the survey and observation data focused on recurring themes, and we identified the following six themes thorough thematic analysis though thematic analysis (Creswell, 2009) of the data by two researchers: quality of course design and course content; learner engagement; expectations of the MOOC; learning preferences; learner dropouts; nature of interactions among participants. The themes are presented sequentially, and for each theme first the results of surveys are presented and then instances of participant observation data provide supplementary evidence. The two data sets are analysed together to elaborate the aforementioned themes. When relevant we compare our findings with findings reported in the literature we have surveyed.

Quality of Course Design and Course Content

Data from the post-course survey showed that the majority of the learners (76%) found the level of the course to be about right, about 9% found it a bit advanced, 3% found it to be much too advanced and 12% found it to be a bit too basic. Concerning course design and content (Table 1), the majority of the learners liked the course content, materials, debates, animation videos, etc.

Table I. Learners' perceptions of course design and contents (N=35)



Data obtained through observation indicated that the majority of the learners appreciated the course design and course content. They found them insightful, thought provoking and academically challenging. However, some learners felt that the content was not explained well, and a few learners perceived the course content to be propaganda (i.e., applying a western perspective to solve all issues related to development). In addition, some learners with hearing impairments had difficulty understanding the course content because of a lack of subtitles.

At the end of the course, sixty-six participants left their comments regarding the course design and contents. Fifty-five participants felt good about the course. The following statement of P1 explains how the majority of the participants felt about course design and contents:

P1: It was not just the content of the course but also the teaching process that I appreciated. I liked the way that often we, the learners, were first encouraged to give our views on some ideas as to what would work before hearing from someone on the ground who described what had happened and then being given access to papers with a deep analysis of the issues and the evidence. I had my prejudices challenged (and even overturned!) by this process. While there were aspects that I would have liked to know more about, such as the possibility of development and capacity building even at a time of war/conflict, I recognize this was a six-week course. Thank you.

The above statement by P1 indicates that instructors encouraged the learners to share their views on different topics and issues and before they hear from someone on the ground how such issues had been dealt with. Such an approach helped to connect theoretical ideas with practical experiences and provided learners with insights into what really works on the ground. Learners' biases got challenged. However, some of the issues were less well explained due to time constraints.

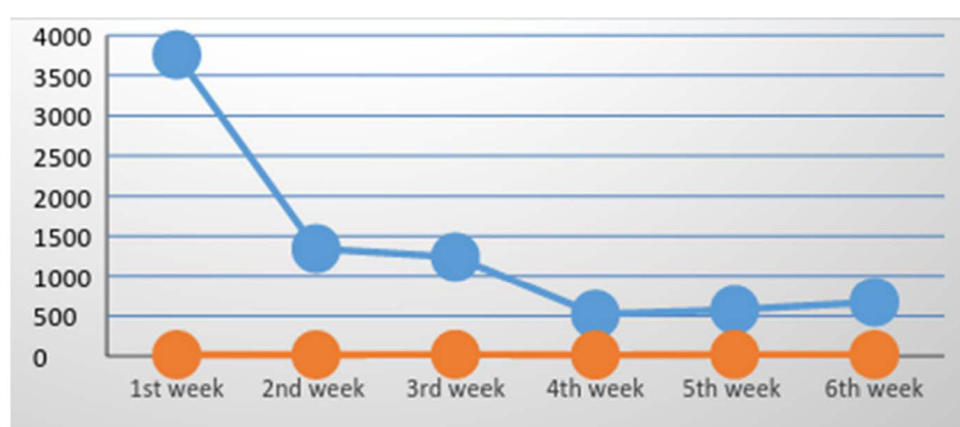
Learner Engagement

Learner engagement in the course was influenced by the student's perception of the course content, pedagogical practices, individual experiences, time, peer group, etc. A larger population of learners engaged in the discussion/reflection forums than in the forums integrated with video lectures. This suggests that the participants preferred learning through

reflection and discussion. As indicated by the post-course survey data, about 57% of the learners spent 30 to 60 minutes on the course each time they participated. The majority of the learners (about 84%) found the teachers very engaged in the teaching process. About 78% of the learners had a positive experience, and only about 6% of the learners found the course to be very poor.

However, the data obtained through observation showed that the majority of the learners engaged in the discussion/reflection forums, although learner participation was unevenly spread during the course period. The data in Table 2 derived from observation of learners' comments in the different forums show that learner participation dropped dramatically by week 4 (2/3 along), which is in line with previous findings (Breslow et al., 2013; Ho et al., 2014; Jordan, 2014).

Table 2. Learner dropout by number of comments the learners posted on the forums



The following statements from P6 and P25 are illustrative of how many participants felt about their engagement with the course.

P6: Thank you very much for the course. I thoroughly enjoyed participating (albeit late) and appreciate the contributions of all those involved. You have opened my eyes to new initiatives and practices that I previously knew nothing about, and also gave a multitude of perspectives, which helped give more of a 'complete' view of the situation. Many thanks

P25: Thank you for the course, I have learnt a lot. It wasn't what I was expecting, I thought it would be videos of case studies in various countries, as I have experienced in other courses. It was more academic and more challenging. The production levels were high and there were some truly superb lectures. The only part I didn't really enjoy was week 2. I wonder if you lost anyone that week? I have discovered a prejudice in myself: I would prefer to have received lectures on democracy from someone from Norway than someone from USA. I think putting Rule of Law as week two gave it too much emphasis, part of a week would have been enough for me, especially as the subject was returned to in week 6. It was also interesting to read the views and experiences from learners all over the world, thank you. I enjoyed doing the assignment, though so far I have only had one review, I hope I will get another. I enjoyed reading the assignments of others. The interview with Dr Gro Harlem Brundtland was an uplifting finale.

The quotes of the two participants imply that they thoroughly enjoyed participating in the course. Some of the learners joined the course late and found contents more subjective, often biased. They liked to hear fellow learners' views and experiences from different parts of the world. They enjoyed hearing a resource person's views, which might have encouraged many of them to continue the course.

The literature indicates that there are different patterns of learner engagement in different MOOCs: lurkers, drop-ins, passive participants and active participants (Hill, 2013; Milligan, Littlejohn, & Margaryan, 2013). Clow (2013) observed four FutureLearn MOOCs and found seven distinct patterns of learner engagement: samplers, strong starters, returners, midway dropouts, nearly there, later completers and keen completers. They noted that these patterns of engagement were influenced by pedagogical decisions.

Based upon their activities, Nelson (2014) grouped learners on the FutureLearn platform into six categories: joiners, learners, active learners, returning learners, fully participating learners, and social learners. These overlapping categorisations can be simplified into three main categories, namely joiners, surveyors and social learners, which we illustrate with our data.

The joiners were the largest category in this course. Joiners are the subset of those enrolled who actually introduced themselves to their peers and mentors. The course provider reported that 7,000 learners signed up for the course, but only 936 responded to the pre-course survey and actually joined the course and only 955 introduced themselves to their peers and mentors. Some of the joiners sometimes liked the course content, but did not take active part in interactions with others.

The surveyors were those who went through all course content and examined the video lectures and read comments. If they found something interesting, they engaged in interactions with peers and mentors; otherwise, they just read the postings. The number of joiners slowly decreased, which implies that they became surveyors. Furthermore, when learners joined the course late, they became surveyors because they were not able to fully understand the course content. These learners would engage in some activities, skip some and then come back later.

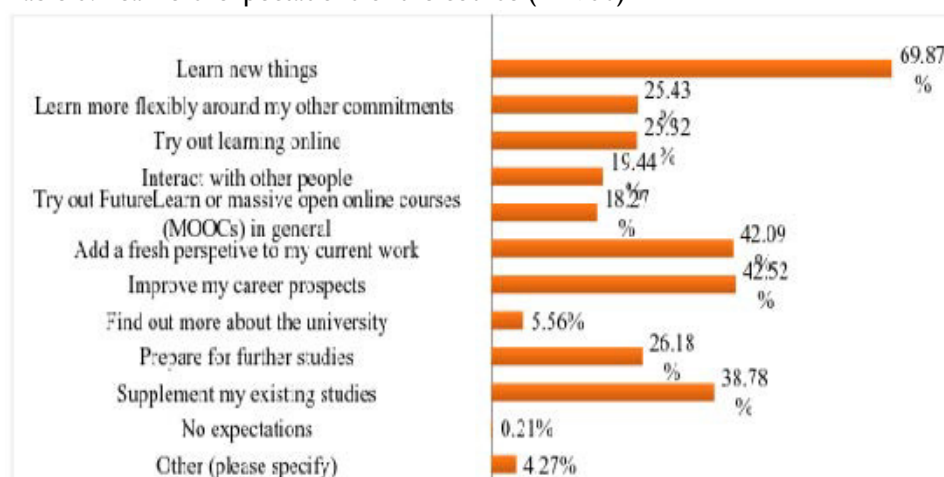
Finally, the *social learners* were those who posted, viewed and learned from comments. The learners who responded to the post-course surveys (total 38) can be regarded as social learners because they responded to all questions concerning the course content and their engagement in the course was high. However, the actual number of social learners varied according to the different topics presented in the course. In the first week, about 200 learners engaged in all content, but this number decreased to about 50 learners in the last week. These learners also took part in the videoconferences, wrote blog posts and shared with peers. They also created their own videos based on their own experiences concerning different issues of development and poverty reduction.

Expectations from the MOOC

The pre-course data (Table 3) indicate that the majority of the learners (70%) expected to learn something new, while about 42% expected to add a fresh perspective to their current work and about 43% expected to improve their career prospects. Similarly, learners were motivated to join the course to gain extracurricular skills, to prepare them for further stud-

ies, because of the course flexibility, because they wanted to try online learning, to interact with other people, etc. The post-course data showed that more than 65% of the respondents met their expectations of learning flexibly and interacting with other people. About 56% met their expectation of supplementing their existing studies. Similarly, the course helped 49% add a fresh perspective to their current roles and improve their career prospects. This shows that the expectations from the MOOC were sustained or increased for those who completed the course.

Table 3. Learners' expectations of the course (N=936)



Learners with different levels of education, age range, employment status, etc., had different motivations and expectations for participating in the MOOC. The following statements from four participants reflect an attitude that different learners from different background had different expectations of the course:

P7: Hi there all. I am from South Africa and I am working for an international NGO focusing on housing solutions. I am very keen to be exposed to broad perspectives on good practice that have shown success in different contexts.

P8: Hi everybody. I am from Germany, have a PhD in Medical Research and work for over 20 years in HealthCare in different disease areas (currently cardiovascular) on global positions. Non-communicable diseases are some of the most increasing disease areas – yes, also in developing countries! Just have a look at: <http://rabinmartin.com/report/noncommunicable-diseases-in-the-developing-world-addressing-gaps-in-global-policy-and-research/> And I'm always interested to learn about critical factors, that make the difference between success and failure!

P10: Hi! My name is ... and I'm from Oslo, Norway. I'm a political scientist who have lived, studied and travelled extensively in southern Africa. Currently I'm interning for an NGO in Kampala, Uganda – my first time in east Africa! I'm passionate about some aspects of international development, however, I'm also extremely critical of international development aid. I've signed up for this course to learn more about the subject and to learn about/critically discuss various approaches.

P12: ... I am excited to learn about what really works, and not at least why it works. I can really see myself work in a NGO (UNICEF, UNESCO) or Norad after graduation in october this year.

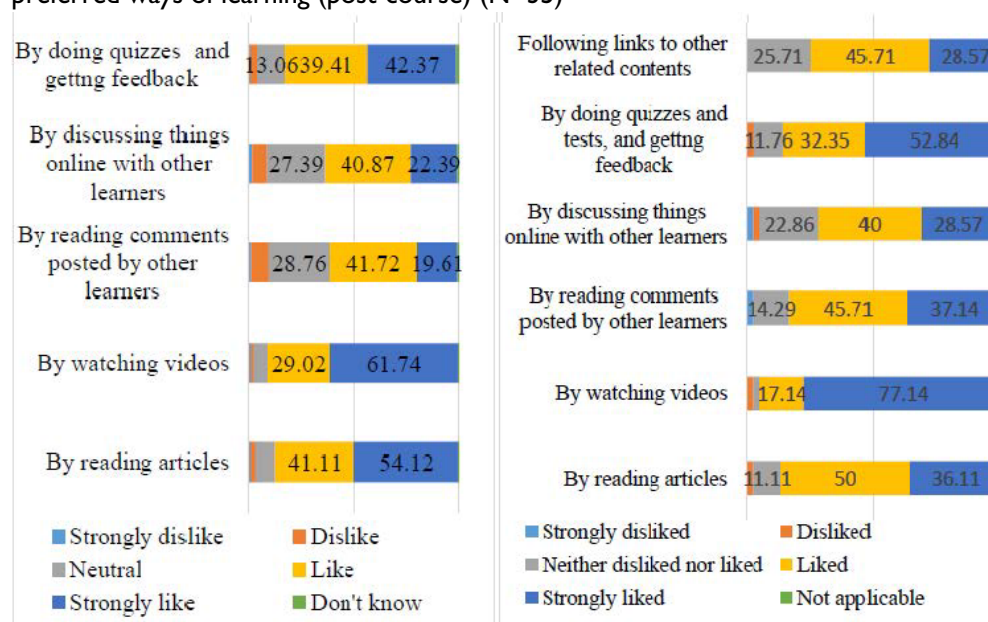
The above statements from different participants and the quantitative data shown in Table 3 show that different learners had different expectations of the course.

Morris & Lambe (2014) suggested that expectations vary according to type of learners, distinguishing among pre-university learners, university learners, professional learners, self-directed learners, and leisure learners. The pre-university learners want to increase their understanding of a current subject; university learners also increase their understanding of a current subject and explore potential areas for further study. Professional learners want to gain competences and skills to improve their career prospects, and add fresh perspectives to their current work. Self-directed learners want to gain knowledge and understanding of new subject areas, or build and expand a professional network based on personal interest. The leisure learners want to satisfy their curiosity and support the professional community.

Learning Preferences

Learning preferences refer to an individual learner's habitual ways of processing and acquiring information, and data from learning preferences are shown in Table 4.

Table 4. *Left: Learning preferences prior to the course start (N=920), and Right: learners' preferred ways of learning (post-course) (N=35)*



Data from the surveys show that the majority of learners preferred learning by watching video lectures and taking quizzes. Around 50% of the learners liked to learn by reading the comments posted by fellow learners, by following links to other related contents, and by discussing matters online with fellow learners.

Personal comments indicate in more detail what preferences learners had regarding learning, which include the role of collaboration and reading commentaries of videos for learning, as shown in the following online conversation by three participants.

P23: Thank you so much all of classmates who collaborated to improve my knowledge. It is greatly appreciated.

P24: would be great if all the videos have translations/word version. nice lessons. just wondering how citizen fora has worked in other developing countries especially

P29: <http://blog.riverford.co.uk/2015/03/06/guys-newsletter-unruly-cabbages-the-last-stand/> ..., you may find this blog on seeds, from an English organic farmer, interesting.

As indicated by the above statements, the learners engaged in a wide variety of participatory activities such as knowledge sharing, commenting on video lectures, posting counter arguments on fellow learners' views and perspectives, sharing their views through their personal blogs, reading transcripts, reading suggested reading materials, etc. Such activities promoted active and collaborative learning practices in the MOOC.

There were different ways for the participants to learn in the MOOC. Watching videos or reading the related transcripts was the only way for acquiring the actual information from the course. In addition, there was a separate forum for reflection activities, where learners were encouraged to create their own blog posts and videos and share them with peers.

Felder and Silverman's (1988) categorization of learners on the basis of how they process and acquire information proposes four types of learning preferences: sensory or intuitive; visual or auditory; active or reflective, and sequential or global. Sensory learners prefer learning by example and practice, while intuitive learners prefer meaning and theories; visual learners learn through pictures, diagrams, and films, while auditory learners prefer learning by written and spoken explanations; active learners prefer to work with others and create things, while reflective learners prefer thinking and working alone; and sequential learners prefer learning in an orderly and linear manner, while global learners prefer to learn holistically. From our data we can say that learners who preferred to watch videos and read the related transcripts can be termed visual-auditory learners or sequential-holistic learners. The learners who prefer to engage with peers and mentors in the discussion forums can be termed as active-reflective learners.

Learner Dropouts

A few learners responded to the post-course survey question on what factors hindered them from participating in the course. They could choose from lack of time, lack of motivation/interest, lack of pace as the course progressed, difficulty in using the platform, different learning environment, poor internet connection, and joining the course just for curiosity.

The following statements of three different participants indicate different contributing factors for learner dropouts:

P3: (an English teacher): ...I think there are two factors behind that. Firstly, some parts of the course especially week1 and some of the ...Chinese contributions were perceived by many as propaganda ... I think it alienated quite a lot of students. In future the tone of some lectures could be softened.

Secondly, language has been a barrier. The lectures have been longer, denser and linguistically far more demanding than other FutureLearn courses I have done. Personally, I appreciate the extra rigor and have got a lot out of this course. But I think the team overestimated the Eng-

lish level of many students. In one of the assignments I reviewed the writer was completely out of his depth with the topic in English and so was one of those who reviewed my article. I[n] future it might help to include subtitles in the videos or connect the comments forums to a translation website so that people could write in their native language if necessary

P16: For me, not having a transcript is more than an inconvenience. My hearing is not good so this possibly amounts to discrimination. I have completed several of these Future Learn courses but I've never met with a straight, though apologetic 'no' before. Transcripts might have been late in coming but they came eventually. This is a great disappointment.

P7: Hello, my internet connection is not the best I would love you attach the transcript of each video so that we can download and read in case of poor internet connection

Through observation, three other reasons were also found, namely internet quality, lack of time and a lack of transcripts for some of the lecture videos. For a few participants, an important factor hindering their participation was a lack of English language proficiency. These learners asked for the transcripts for each video, and the mentors tried their best to supply these transcripts as fast as possible. When there was a delay, fellow learners also made transcripts for some of the videos and shared them with their peers. The fact that the course was free may have also contributed to dropout because the learners were not fully invested in completing the course.

Many of these reasons for dropout have been noted in previous research (Hone & El Said, 2016; Zheng et al., 2015). However, dropping out should be viewed as just one of many activities that self-directed learners engage in (Clow, 2013). The monolithic distinction between completers and dropout is inadequate for describing the diversity of learners' engagement patterns (Clow, 2013; Seaton et al., 2013), and the dropouts may have already achieved their aim of learning about a particular concept before they completed all parts of the course. They may just have been surveyors of the course contents.

Nature of Interactions Among Participants

The post-course survey data showed that the majority of the learners (84%) found the mentors to be very engaging. Through observation it was found that only mentors and learners took part in the comment/discussion/reflection/feedback forums, not the instructors. The observed interactions were between mentors and learners, and between learners and learners. The mentors would read the learners' posts and then post replies. Their role was to balance the viewpoints among participants. Interactions between learners were much more frequent than between learners and mentors. The mentors tried to motivate the learners to watch the videos, read the suggested material, take quizzes and interact with fellow learners. Fellow learners answered many of the other learners' questions in the discussion forums. As stated previously, learners even provided English subtitles to some of the video lectures. As the course progressed, the instructors seemed to be out of touch with the learners' activities as they only appeared on the lecture videos and videoconferences. This can be compared to the idea in scaffolding of a teacher fading away from the educational activities as the learners gradually become independent. The lack of actively engaged teachers in the whole learning process—what we take for granted in conventional teaching—may have actually discouraged some of the learners from

remaining in the course. On the other hand, the learner community provided an alternative, which we present next.

Discussion forums integrated with each section of the course were the main tools for interacting, and hence learning, during the MOOC. Interaction was supported both synchronously and asynchronously: the host organised videoconferences and the conversations in the discussion forums were asynchronous. The learners engaged intensively in asynchronous conversations and made use of social networking services outside of the platform, such as Facebook and Twitter, to share content to self-organise the required scaffolding. This can be seen as a process of collaborative learning (Ludvigsen & Mørch, 2010), which was one of the aims of running the MOOC. Future work should explore how to best stimulate collaborative learning on a broader scale, and we discuss some of the issues related to this in the next section.

General Discussion

In this section we answer and discuss our research questions, which have two parts, pedagogical practices and learners' experiences from the MOOC. In addition, we identify some emergent trends in technology development with implications for MOOCs, and we discuss alternative directions MOOCs can take in future higher education.

Pedagogical Practices

Five key pedagogical features characterise the MOOC we have studied: video lectures, reading materials, e-assessment, discussion forums and videoconferences. The proper sequence was first to provide the contents of teaching and learning to the participants and then encourage them to discuss the materials by collaborating with peers. The course structure, course content and learning activities in the MOOC were solely designed and created by the instructors in advance. The video lectures and reading materials suggested by the instructors were the primary sources of knowledge, and discussion forums were the major sources of interaction and collaborative learning. The task of interacting with students was left to the mentors who explained concepts, clarified misconceptions, and helped learners acquire knowledge. Therefore, the MOOC resembled both an xMOOC and a cMOOC, but it was found to be much closer to an xMOOC than a cMOOC. The concepts of the banking model of teaching (Freire, 1970) and the acquisition metaphor of learning (Sfard, 1998) can partly explain this; they are based on the idea that the human brain is a container and the learning process fills the container with content. The course included video lectures, reading material and peer comments for accumulating facts and acquiring knowledge. The video lectures were the primary method of transmitting information, and the automated quizzes were the main tool for assessment. Thus, the MOOC was acquisition oriented at the outset, as the instructors' role was to develop and deliver highly structured course content.

However, the learners did enjoy the video lectures, which suggests that they wanted to acquire as much knowledge as possible. They became consumers of the knowledge communicated through the platform. Automated quizzes assessed the basic facts, such as 'Income inequality has been increasing in Latin America since 2002' (True or False). The whole process was directed towards helping the learners acquire as much knowledge as

possible about what works in international development programs. Some researchers argue that even though videos can be watched multiple times at the learner's own pace, it is not necessarily the best way for every person to learn (Prensky, 2011), and pre-packaged instructional content does not promote active learning (Morris, 2014). In a very large MOOC with thousands of participants, it is hard to pay attention to the individual needs, and a reliance on automated testing will likely push MOOC providers further into the banking model of education and force students to 'become passive, uncritical repository of teacher-owned knowledge' (Hai-Jew, 2014, p. 341). This increases the "danger of the relegation of education to a mere exercise of technology" (Freire, 1970, p. 75). However, technology also provides new solutions to the shortcomings associated with very large MOOCs, which have many participants with individual needs. We address this later.

Learners' Experiences of Participation

The MOOC brought a global learner cohort together for information or knowledge sharing, connection and interaction, and created opportunities for collaborative learning through discussion forums. A large number of learners engaged in the forums, which were the only method used to activate the learners in the course content, apart from two videoconferences stimulating to debate. The discussion forums were the spaces and tools that brought geographically scattered learners together and encouraged them to build a community of learners and a culture of participation (Fischer, 2011). The interactions that took place in the forums were asynchronous, so the learners had more time for flexible communication, e.g. thinking about what to say compared to face-to-face interactions. The forums were also the only way for promoting collaborative learning practices (Ludvigsen & Mørch, 2010).

However, synchronous communication by two videoconferences complemented the discussion forums and helped learners directly discuss the issues with the mentors and fellow learners. This whole process can be seen as an attempt at enculturation into a *community of practice* (Lave & Wenger, 1991; Wegner & Nückles, 2015), but, as discussed below, there was a high dropout rate in this course, which indicates that for some, the MOOC was more of a *community of interest* (Fischer, 2001), which consists of people who come from different communities of practice (e.g., different professions) and who may not want to complete a course or become a skilled practitioner in a field, but rather want to gain knowledge about one or more sub-themes of the course that are of particular interest (Fischer, 2001) in order to promote a self-directed type of learning (Clow, 2013; Morris & Lambe, 2014).

In these online communities, newcomers often enrol without long-term expectations; for example, they might want to find the answer to a question or the solution to a problem, and once they have achieved this goal, they leave the community. A community of interest is therefore an assembly of people brought together to exchange critical information, obtain answers to personal questions or problems, to improve their understanding of a subject, to share common passions or to engage in a hobby or activity (Fischer, 2001). Thus, the MOOC seemed to enrol members in a community of practice as well as multiple communities of interest. Further work ought to study this preliminary hypothesis in more detail.

The High Dropout Rates

The MOOC in this study had a high dropout rate. The data show that the main causes for the steep dropout rate were lack of time, lack of motivation or interests, poor internet quality, lack of proficiency in English, some of the course contents being perceived as western propaganda, and dense or fuzzy videos. The course may not have catered to the needs of a diverse group of learners, but learner completion and dropout rates need to be seen as a part of a process of becoming social learners. The learners' withdrawal from the MOOC may reflect a self-directed choice to climb out (rather than dropout), which mirrors these learners' varying levels of participation in the MOOC (Clow, 2013). In addition, the kind of pedagogical practices prevalent in the MOOC, which were more in line with the AM than the PM, did not seem to promote learner-centred practices.

Approaches belonging to the PM typically emphasise communities, social practices, collaborative activities and the situated nature of human cognition and knowledge. Future-Learn's approach of bringing together different institutions, scholars and experts from all over the world to develop and deliver course content may result in enhanced institutional and teacher collaboration and community building among teachers. However, whether such online courses can also help learners build a community remains to be seen.

Connecting, interacting and sharing across diverse cultures (Fischer, 2011), attitudes and skill sets in a MOOC (McAuley et al., 2010) may not necessarily promote collaborative learning, as learners from diverse locations and cultures may not feel ready for collaboration. Therefore, course organisers should clearly state the aim of enculturation, namely, for students to progress from novice and peripheral participants to advanced practitioners in a community of practice (Lave & Wenger, 1991), or to help professionals find answers to specific problems by participating in a community of interest (Fischer, 2001).

The KCM

Paavola & Hakkarainen (2005) and Moen, Mørch & Paavola (2012) argue that Sfard's (1998) AM and PM have limitations because they only represent the monological and dialogical approaches to knowledge and learning and lack the 'trialogical' approach, which refers to "learning as a process of knowledge creation which concentrates on mediated processes where common objects of activity are developed collaboratively" (Paavola & Hakkarainen, 2005, p. 535). The trialogical approach and KCM focuses on understanding the processes of collective knowledge advancement that are important in a knowledge society. This metaphor goes beyond the two basic metaphors (AM and PM). It posits that individuals participate in collaborative learning activities in a community of learners, which allows them, in some situations, to acquire individual knowledge and, in other situations, to create new knowledge that is usable for the community at large (Moen, Mørch, & Paavola, 2012). Learners in this MOOC were encouraged to create their own videos and post them on the discussion forum. They were also told to write their own blog posts and share them with fellow learners. However, these were individual efforts rather than collaborative group work because the responses to students' creations (videos and blogs) were few and not meant for engaging in collaborative knowledge creation. This indicates an area for further work—promoting collaborative knowledge creation in MOOCs through sustained efforts at building on each other's videos and blog posts.

MOOCs and Trends in Online Learning

Four trends in technology development in online learning address some of the shortcomings of MOOCs cited above: learning analytics; formative assessment by new forms of feedback; personalization, and collaboration support. They can help to increase collaboration, stimulate sustained engagement, suggest new models of course preparation, detecting dropout and providing countermeasures, while leveraging strengths such as flexibility of learning and scaling up delivery of instructional material.

Learning analytics (LA) is a new interdisciplinary field that takes advantage of learning activities captured and stored within digital learning environments such as MOOCs and can 'mine' and analyze these digital traces (log data) to identify patterns of learning behaviour and provide insights into learning practices (Gašević, Dawson & Siemens, 2015), including identifying potential dropouts of a course based on predictive modelling. By using visualization techniques, LA can provide instructors and mentors with overviews of learners' activities with educational resources in large online communities to help them cope with management issues as enrolment arises. Social learning analytics can visualise communication links between participants in collaborative learning activities, identify outliers in a community, and measure collaborative activity using social network analysis (Ferguson & Shum, 2012).

Formative assessment by new forms of feedback is found to be particularly effective in promoting learning, because good feedback encourages evaluation of an educational activity and provides information on both teaching and learning (Black & William, 2009; Gamlem & Smith, 2013). However, formative assessment is a thorny issue in MOOCs because it takes a long time for a small group of teachers to provide individualised feedback in a large community. Alternative methods have been proposed, such as peer feedback and adaptive (automated) feedback. Peer feedback was observed in our study through self-organised scaffolding, but to the best of our knowledge it was not organised as such by the course organisers. To improve students' learning further, teachers and educational technologies will need to embed feedback much more actively in learning activities. Data generated through learning activities such as solving a quiz to determine prior knowledge and writing an essay to demonstrate new skills according to a learning goal are prime data sources for adaptive feedback systems (Engeness & Mørch, 2016).

Personalization is a research focus in order to improve users' engagement and to reduce huge dropout rates (Sunar et al., 2015). A promising direction in personalization research is personalised learning materials and learning tasks. Andersen & Ponti (2014) investigated participants' co-creation of tasks in cMOOCs and what opportunities and challenges emerge. The authors identified and studied how peers can be part of creating course content and suggest offloading some of the teachers' work in course preparation onto students by co-creating course assignments, which they refer to as mutual development of tasks (Andersen & Ponti, 2014).

Collaboration support is another solution to making learning more engaging, as computer supported collaborative learning can support 21st century skills (Ludvigsen & Mørch, 2010). Furthermore, when asynchronous technology is supplemented by synchronous technology beyond video conferencing, new forms of learning environments that can stimulate sustained engagement become possible. This includes 3D virtual worlds, virtual real-

ity (VR) and augmented reality (AR) (Caruso, Mørch, Thomassen, Hartley, & Ludlow, 2014). We expect in the future to see hybrid cMOOCs, which support both modes of interaction with fellow learners, teachers and instructional materials, where individual learners are switching between synchronous and asynchronous modes of interaction according to small group preferences.

Role of MOOCs in Higher Education

MOOCs can bring global learner cohorts together for information or knowledge sharing, connection and interaction, and open up opportunities to foster directed learning. Additionally, MOOCs can be useful digital resources for referential learning, and promote a life-long learning culture by extending the reach and access to educational opportunities. Furthermore, they can bring different higher education institutions together from all over the world, with different scholars and experts for delivering the course contents, which can strengthen institutional collaboration for innovating online pedagogy and learning activities. Collaboration among different institutions and instructors also contributes to new forms of researcher exchanges and effective development of teachers' dispositions, knowledge and skills, which in turn may result in creation of better teaching and learning materials.

In addition, Yuan & Powell (2013) argue that MOOCs can positively impact HE in two different ways: "improving teaching; and encouraging institutions to develop distinctive missions that will include considerations about openness and access for different groups of students" (pp.17–18). However, video-based learning in the MOOC, which characterises xMOOCs, may not result in meaningful learning (Morris, 2014) because the current format of MOOCs promotes the banking model of education, which might be suitable for learning in the knowledge domain, which can be mastered through repetitive practice as in many courses in undergraduate education. Thus, we may see in the future a branching in HE among institutions that focus on distance education and courses delivered as MOOCs for lower degree students, and institutions that focus on graduate education in residential research based universities. They can be useful tools to connect HE institutions with workplaces as more than fifty percent of the MOOC participants are practitioners, which can augment the process of information and knowledge sharing between HEIs and workplaces.

Summary and Conclusions

In this article we have reported findings from the first International MOOC organised at the University of Oslo in 2015. This MOOC consisted of video lectures on contemporary topics (best practices) in international development, online reading material, e-assessment (quizzes), discussion forums, and video conferencing. These components have long been used in distance education, and the course was presented in a similar manner to on-campus courses. What was unique to this MOOC compared to distance education and on-campus courses was the large numbers of students who initially enrolled. This MOOC was similar to an xMOOC in the sense that teachers had a privileged role in designing and determining the course content and the teaching and learning processes. In contrast, the FutureLearn platform is said to be a learner-centred MOOC, but our findings indicate it was teacher-centred in this case, as it was the teachers who designed everything that hap-

pened on the course. It is therefore mainly an xMOOC, but the asynchronous textual exchanges were the main form of online communication in the course and they supported the participation metaphor (PM) of learning, but were not sufficient to help learners become actively engaged in their own learning. A large portion of the learners liked the course contents and teaching process, and on the basis of their learning activities, we found three categories of learners: joiners, surveyors, and social learners. However, some found some of the course materials to be biased and subjective, which was one of the reasons for the high dropout rates. Among the social learners we observed a phenomenon that can be explained as an emergent form of PM, approaching the collaborative knowledge creation metaphor. The teachers did not engage in interactions with learners, only the mentors appointed by the course providers did. In lack of teacher support, the learners depended upon peer support for scaffolding their learning and a group of learners emerged that took on this task, which is one of the most interesting findings from the study. This was realised through self-organised scaffolding activities: making videos of their experiences, writing blogs and engaging in the debates in the discussion forums. A direction for further research is to explore whether or not MOOCs can promote learning activities that leverage contemporary research in learning analytics, adaptive learning, formative assessment, and collaboration support to achieve better integration of individual and collaborative learning within an environment that is engaging and manageable for both learners and teachers.

Acknowledgements

The authors are grateful to Jesper Havrevold, USIT, University of Oslo, for providing the authors with quantitative data and giving the first author access as participant observer in the “What works” MOOC.

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