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## **EVALUATING MOOCS – WHAT IS REALLY HAPPENING?**

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### **Abstract**

This paper describes the evaluation of two Massive Open Online Courses (MOOCs) run by the University of Leicester as part of the FutureLearn initiative. It will use a novel approach to the evaluation, using a new MOOC classification schema. The new MOOC classification schema has been developed because it is believed that the current discourse around the concept of xMOOCs (primarily based around interaction with content and essentially adopting a behaviourist learning approach), and cMOOCs (which focus on harnessing the power of social media and interaction with peers, adopting a connectivist learning approach), is an inadequate way of describing the variety of MOOCs and the ways in which learners engage with them. The paper will provide a brief history of the emergence of MOOCs and the key stakeholders. It will introduce an alternative means of categorising MOOCs, based on their key characteristics. The paper fits under the ‘Quality aspects: assessment and evaluation, retention techniques, performance support’ conference theme. It will argue that using the MOOC classification schema can be used as a strategy to better design MOOCs, as well as an evaluation framework for analysing participants’ learning behaviours.

### **Introduction**

Every few years a new disruptive technology emerges, i.e. something that fundamentally changes the way we do things (Christensen, 1997). The Internet, mobile devices and even Virtual Learning Environments are all examples. Mobile phones have made landlines virtually redundant; and the functionality of today’s smart phones means that they are used for far, far more things than simply making a phone call. Virtual Learning Environments made institutions realise that technologies were an essential part of the service they offered students. They enabled teachers to upload content and provide mechanisms for students to communicate and collaborate via tools such as forums, blogs and wikis. The latest in the line of disruptive technologies is Massive Open Online Courses (MOOCs). Initiated by the *Connectivism and Connective Knowledge* course created by Siemens et al. in 2008 (Wikipedia, 2012), the number of MOOCs have proliferated in recent years. Indeed there isn’t a Vice Chancellor or Rector in the world who isn’t considering what the impact of these free online

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courses might have on traditional educational offerings. Martin Bean (Vice Chancellor of the Open University, UK), talking about the announcement of FutureLearn<sup>1</sup>, stated:

*In 2012 that wave of disruption hit higher education. By the end of the year, 18 of the top 20 universities in North America were offering MOOCs – so that's the "great brands" box ticked (Bean, 2013).*

However, MOOCs have generated heated debate; opinions are divided about their value and importance. Some argue that they open up access to education and hence foster social inclusion, others cynically suggest that they are merely a marketing exercise – more about 'learning income than learning outcomes' and point to the phenomenally high dropout rates (typically between 95-98%<sup>2</sup>). This paper will summarise some of the key discourses around MOOCs. It will describe the way in which they are being characterised as either xMOOCs or cMOOCs, but will suggest that this distinction is too limiting. It will put forward a categorisation that can better describe the nuances of different types of MOOCs and will demonstrate how this framework) can be use to create more pedagogically effective MOOCs, which will enhance the learning experience and lead to quality enhancement of these types of courses (Conole, 2012; Conole, 2013). This section will begin by defining MOOCs and providing a brief description of their emergence. Key stakeholders will be described, along with the perceived benefits and challenges associated with MOOCs. The types of MOOCs will be discussed and a new classification framework for distinguishing different types of MOOCs will be introduced.

### **A brief history of MOOCs**

MOOCs have been defined as:

*A massive open online course (MOOC) is an online course aimed at large-scale interactive participation and open access via the web. In addition to traditional course materials such as videos, readings, and problem sets, MOOCs provide interactive user forums that help build a community for the students, professors, and TAs (Teaching Assistants) (Wikipedia, 2012). The acronym highlights the key components; i.e. that they are online courses which harness the potential for learning in a large-scale, distributed community of peers, through open practices.*

Much has been written about the emergence of MOOCs as a phenomenon, these are not listed here, but for an up to date account of MOOC research, there are two recent special issues which point to much of the literature in the field<sup>3</sup>, and at the time of writing there is a call out

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<sup>1</sup> <https://www.futurelearn.com>

<sup>2</sup> For a debate on the pros and cons see the video of ASCILITE's 'The great MOOC debate' <http://alternative-educate.blogspot.co.uk/2012/12/audio-ascilite-2012-great-debate-moocs.html>

<sup>3</sup> <http://elearningyork.wordpress.com/2013/05/14/elearning-papers-special-moocs-and-beyond/> and <http://ispr.info/2012/10/26/call-massive-open-online-courses-moocs-special-issue-of-journal-of-online-learning-and-teaching-jolt/> (due out late 2013).

for a special issue of Distance Education<sup>4</sup>. Siemens et al. created the first MOOC in 2008, called '*Connectivism and Connective Knowledge*'. The course was based on a connectivist pedagogy, which aimed to foster the affordances of social and participatory media. It relied on the benefits of scale though significant interaction with a distributed network of peers. Participants were encouraged to use a variety of technologies; to reflect on their learning and to interact with others. There was no 'right way' through the course; the emphasis was on personalised learning through a personal learning environment. Variants on this course emerged, collectively known as cMOOCs, examples included: David Wiley's course on '*Open Education*'<sup>5</sup>, '*Personal Learning Environments and Networks (CCK11)*'<sup>6</sup>, and '*Learning Analytics (LAK12)*'<sup>7</sup>. A second type of MOOC emerged in 2011, namely xMOOCs. These were primarily based on interactive media, such as lectures, videos and text. xMOOCs adopted a more behaviourist pedagogical approach, with the emphasis on individual learning, rather than learning through peers. As a result a number of companies emerged, such as: Udacity<sup>8</sup>, EdX<sup>9</sup>, and Coursera<sup>10</sup>. These courses tend to be offered by prestigious institutions, such as Harvard and Stanford, the emphasis is on delivery of content via professors from these institutions.

Nkuyubwatsi provides a useful overview of MOOCs, including a review of some of the key courses from 2008 to the present day (Nkuyubwatsi, 2013). He discusses the key controversy around MOOCs, stating that MOOCs are hailed for their fit within a knowledge society, providing each learner with opportunities to engage with material via formative assessments and the ability to personalise their learning environment. However, he goes on to state that they are criticised for the lack of constructive feedback and the lack of creative and original thinking, citing Bates (2012) and low completion rates, citing Daniel (2012).

### ***Pedagogical approaches***

Participation in MOOCs can range from informal non-accredited participation through to engagement as part of a formal course offering. In some instances, tuition-paying students taking courses for credit join the same class as non-tuition paying, non-credit learners. Many xMOOCs are primarily based on interactive material and videos plus multiple-choice quizzes. Udacity, Coursera and EdX courses consist mainly of lecture videos, course materials, quizzes and assignments. Some do contain wikis and discussion forums, although these are not extensively promoted or used. In some cases forum posts can be up- or down-voted by other participants; if a post is up-voted that participant receives a 'karma point'. For some Udacity courses, participants have organized their own meet-ups with others who are Geographically co-located. Udacity has set up a meet-up site to facilitate this.

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<sup>4</sup> <http://www.tandf.co.uk/journals/cfp/cdiecfp.pdf>

<sup>5</sup> <https://learn.canvas.net/courses/4>

<sup>6</sup> <http://cck11.mooc.ca>

<sup>7</sup> <http://lak12.mooc.ca>

<sup>8</sup> <https://www.udacity.com>

<sup>9</sup> <https://www.edx.org>

<sup>10</sup> <https://www.coursera.org>

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Cormier, in a video describing the nature of Connectivist MOOCs<sup>11</sup>, defines five steps to success: orient, declare, network, cluster and focus. He also argues that knowledge in a MOOC is emergent and dependent on the interaction with others. In his *PLENK2010* course he defines four types of activities: aggregate, remix, repurpose and feed forward. Therefore the intention of cMOOCs is to harness the power of social and participatory media to enable participants to communicate and collaborate through a variety of channels; for example Twitter, blogs, wikis, etc. and the use of hashtags and curation tools (such as Pinterest or Scoop.it) to filter and aggregate. The focus is on personalisation, but also collective intelligence (Lévy, 1997). Each participant forges their own learning path through the materials; picking and mixing which content, activities and communications are meaningful for them. These types of course align well with Cormier's notion of Rhizomatic learning (Cormier, 2008; Cormier, 2011), i.e. networks are horizontal, dynamic and emergent, developing in different directions for different individuals. Barry provides a nice comparison of three different MOOCs in terms of workload, technology, content, pedagogy, assessment, etc. (Barry, 2013).

Assessment models for MOOCs vary, from simple Multiple Choice responses, through to peer-reviewed feedback and more formal, traditional modes of assessment. DS106<sup>12</sup>, adopted an interesting approach to assessment, whereby course assignments were collectively created by participants and then posted to an assessment bank (EDUCAUSE, 2013). Participants could then choose which assignment they wanted to do which were rated on a difficulty of 1 – 5. In this model the assessment bank expanded for use by further participants. An interesting recent innovation in terms of assessment is the use of open badges. The concept is simple; learners can apply for badges demonstrating their completion of aspects of a MOOC. This may be as simple as completion of part of the course or evidence of particular aspects of learning. Badges have criteria associated with them; learners are expected to demonstrate how they have achieved these criteria and this is validated either by peers or tutors. The Mozilla's Open Badges<sup>13</sup>, are perhaps the best known examples of badges. Their slogan is 'Get recognition for skills you learn anywhere'. There are three parts to the process: earn (earn badges for skills you learn online and off), issue (get recognition for things you teach) and display (show your badges on the places that matter). Therefore there are a variety of different pedagogical approaches being adopted in different MOOCs, some emphasising individual learning through interactive materials, others focusing more on social learning.

### Stakeholders

The stakeholders for MOOCs are essentially learners (in terms of participating in the MOOCs, tutors (if there are any – in terms of facilitating the MOOCs), teachers (in terms of designing and assessing the MOOCs), institutional managers (in terms of considering their place alongside traditional educational offerings), policy makers (in terms of thinking of the longer

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<sup>11</sup> <http://www.youtube.com/watch?v=eW3gMGqcZQc>

<sup>12</sup> <http://ds106.us>

<sup>13</sup> [doughbelshaw.com/blog/2012/07/19/informal-learning-gaming-and-openbadges-design/#.UAviyURJH40](http://doughbelshaw.com/blog/2012/07/19/informal-learning-gaming-and-openbadges-design/#.UAviyURJH40), <http://openbadges.org>

term implications for the educational landscape) and venture capitalists (looking to get a return on investment). Arguably the origin of MOOCs was bottom up; developed by individuals with a vision for promoting open educational practices<sup>14</sup> and fostering connectivist learning approaches through use of social and participatory media. However the recent emergence of start-ups, like Udacity, and initiatives like FutureLearn suggest a shift to a more top down structured approach. Coupled with this, there is evidence of an increase in the notion of open education at policy debate. For example, in December 2012, the Opening up Education through Technologies conference was held in Oslo. The conference was aimed at ministers of education across Europe, to inform them of current thinking on openness and the implications for policy. UNESCO has long been a promoter of Open Educational Resources, stating that:

*UNESCO believes that universal access to high quality education is key to the building of peace, sustainable social and economic development, and intercultural dialogue. Open Educational Resources (OER) provide a strategic opportunity to improve the quality of education as well as facilitate policy dialogue, knowledge sharing and capacity building.*<sup>15</sup>

Whether there is a tension between the grass roots initiatives and the more structured approaches remains to be seen. The plethora of MOOCs now available, in a variety of languages (although the majority are still in English), is staggering. Recent examples include: the announcement in the UK of FutureLearn (with 21 UK institutions), Open2Study from the Open University of Australia and the EU-based OpenUpEd.

Terminology is always tricky when trying to describe a new disruptive technology. Even the term for the use of technology to support learning is contested and various terms have been used over the years: educational technology, learning technology, networked learning, Technology-Enhanced Learning, etc. (Conole & Oliver, 2007). MOOCs can be seen along a spectrum of adopting more open education practices; from the concept of Learning Objects (Littlejohn, 2003) and more recently Open Educational Resources (Glennie, Harley et al., 2012).

As mentioned earlier, to date, MOOCs have been classified as either xMOOCs or cMOOCs. I want to argue that such a classification is too simplistic and in this section put forward an alternative mechanism for describing the nature of MOOCs. Downes suggest four criteria: autonomy, diversity, openness, and interactivity (Downes, 2010). Clark (2013) recently provided the follow taxonomy of types of MOOCs: transferMOOCs – where existing courses are transferred to a MOOC, madeMOOCs – are more innovative, making effective use of

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<sup>14</sup> Open Educational Practices (OEP) were first defined in relation to the creation, management and repurposes of Open Educational Resources (OER) as part of the OPAL initiative (<http://www.oer-quality.org>), i.e. a focus on how OER are being used rather than their production per se. The notion has seen been expanded to cover other facets of Open Education, including MOOCs. Therefore I would argue OEP relate to adopting more open practices in educational contexts.

<sup>15</sup> <http://www.unesco.org/new/en/communication-and-information/access-to-knowledge/open-educational-resources/>

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video and interactive material and are more quality driven, synchMOOCs – with a fixed start and end date, and asynchMOOCs – which don't have fixed start and end dates and have more flexible assignment deadlines, adaptiveMOOCs – which provide personalised learning experiences, based on dynamic assessment and data gathering on the course, groupMOOCs – where the focus is on collaboration in small groups, connectivistMOOCs – emphasis on connection across a network of peers, miniMOOCs – which are much smaller than the traditional massive MOOC. Reich asked the question is a MOOC a textbook or a course (Reich, 2013)? He suggests that even the notion of a course is contentious, with parameters such as: start/end dates, self-paced or directed learning, skills or content based, the nature of interactions and whether or not certification is included. He suggests there are two analogies for MOOCs; as books or courses. I think these analogies are flawed. Learning occurs along a spectrum from informal to formal; from loosely based resource-based learning to a structured, time-defined course, which is accredited. MOOCs, in my view, can fit along any point of this spectrum; i.e. they can be used by individuals to support informal learning, where learners might not complete all of the MOOC, but instead dip into different aspects – through to receiving full accreditation and being part of an institutional provided formal course.

I want to suggest that a better classification of MOOCs is in terms of a set of twelve dimensions: three are related to the context of the MOOC (the degree of openness, the scale of participation (massification), the diversity of the participants) and nine are related to the learning (the amount of use of multimedia, the amount of communication, the extent to which collaboration is included, the type of learner pathway (from learner centred to teacher-centred and highly structured), the level of quality assurance, the extent to which reflection is encouraged, the level of assessment, how informal or formal it is, autonomy). This schema can be used to design, describe and evaluate MOOCs (Table 1).

Table 1: A new MOOC classification schema

<b>Dimension</b>	<b>Characteristic</b>
<b>Context</b>	
Open	The degree to which the MOOC is open
Massive	How large the MOOC is in terms of number of participants
Diversity	The diversity of the participants, in terms of discipline and cultural background
<b>Learning Elements</b>	
Use of multimedia	The extent to which rich multimedia and interaction are used
Degree of communication	The amount of communication
Degree of collaboration	The amount of collaboration
Amount of reflection	The ways in which reflection are encouraged
Learning pathway	The degree to which a guided and structure learning pathway is available
Quality Assurances	The types of Quality Assurance processes in place
Certification	Any mechanisms for certification and accreditation
Formal learning	Whether or not the MOOC feeds into any formal educational offerings
Autonomy	The degree of participant autonomy

## Methodology

The evaluation will follow Patton's utilization focused evaluation approach (Patton, 2008). The aims of the evaluation are to: understand the patterns of learners' interactions in the MOOCs., gather perceptions of the MOOCs from the course designers, deliverers and learners, describe how participants (both course delivers and learners) interacted with the MOOC components and how much time they spent on the MOOC each week, describe how course delivers interacted with the MOOC components and how much time they spent on the MOOC each week, understand the reasons why the University of Leicester wanted to be involved in Futurelearn, understand why the course teams wanted to develop the MOOCs, gather evidence of learners' reasons for participating in the MOOCs, understand the reasons why learners dropped out of the MOOCs., and make recommendations on the design and delivery of future MOOCs. The courses are being developed by Archaeology (which ran from 25<sup>th</sup> November 2013 to 17<sup>th</sup> January 2014) and Criminology (which is starting on 31<sup>st</sup> March 2014), each lasts six weeks. The evaluation will include: Interviews with the course designers at the beginning, to find out why they wanted to develop the MOOC, the target audience(s), how they foster reflection, communication and collaboration, what assessment elements are included, and how they hope to ensure low dropout rates, interviews with those delivering the MOOCs and the nature of any problems, what the perceived benefits of the course were, what kinds of interactions and communications the participants engaged with, an interview with the Director of Distance Education, to gather information on: the context, why Leicester joined FutureLearn and how the courses were chosen, interviews with MOOC participants to gather data on their use and perception of the MOOC, a survey<sup>16</sup> of MOOC participants, analysis of the online courses, in terms of participant interactions and discourses, collection and tabulation of data on the number of registrants and participants of various types and their dropout rates over the six weeks and analysis of any learning analytics data that are available.

## Conclusion

The paper has described a new classification schema that can be used to evaluation MOOCs. This is being used in the evaluation of two MOOCs being delivered by Leicester University. The conference presentation will report on the evaluation drawing on data collected through interviews and surveys with MOOC stakeholders. As stated at the beginning of this paper, there is a lot of interest around MOOCs at the moment. Many institutions are signing up with MOOC providers to see what the benefits and issues of developing and delivering MOOCs might be. However, there is little data to date on robust evaluation of these initiatives. We need to better understand the reasons why institutions and course designers are betting involved, as well as the perceptions and interactions of participants. The new MOOC classification schema described in this paper can be used to both design and evaluate MOOCs.

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<sup>16</sup> This is an adaptation of the University of Edinburgh MOOC survey, available online at <https://www.era.lib.ed.ac.uk/bitstream/1842/6683/1/Edinburgh%20MOOCs%20Report%202013%20%231.pdf>

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