

This work has been submitted to **NECTAR**, the **Northampton Electronic Collection of Theses and Research**.

Article

Title: Are Massive Open Online Courses (MOOCs) pedagogically innovative?

Creators: Armellini, A. and Padilla Rodriguez, B. C.

Example citation: Armellini, A. and Padilla Rodriguez, B. C. (2016) Are Massive Open Online Courses (MOOCs) pedagogically innovative? *Journal of Interactive Online Learning*. **14**(1), pp. 17-28. 1541-4914.

It is advisable to refer to the publisher's version if you intend to cite from this work.

Version: Published version

Official URL: <http://www.ncolr.org/issues/jjol/v14/n1/2>

<http://nectar.northampton.ac.uk/8234/>



Are Massive Open Online Courses (MOOCs) pedagogically innovative?

Alejandro Armellini
University of Northampton

Brenda Cecilia Padilla Rodriguez
Autonomous University of Nuevo Leon

Abstract

While claims about pedagogic innovation in Massive Open Online Courses (MOOCs) are common, most reports provide no evidence to justify those claims. This paper reports on a survey aimed at exploring how different stakeholders describe MOOCs, focusing on whether they would consider them pedagogically innovative, and if so, why. Respondents ($n = 106$) described MOOCs primarily as free, openly accessible online courses that attract large numbers of participants. Views on pedagogic innovation fell into three categories: 1) MOOCs are pedagogically innovative (15.1%). Explanations referred to massiveness, openness and connectivism. None of the participants offered a clear definition of or criteria for pedagogic innovation. 2) MOOCs are not pedagogically innovative (84.9%). More than half of the respondents added an unsolicited opinion, including strong criticisms of MOOCs. 3) MOOCs may or may not be pedagogically innovative. The evidence suggests that caution should be exercised when characterising MOOCs as pedagogically innovative.

Digital technologies continue to widen the range of approaches to learning and teaching in higher education. While numerous papers have discussed pedagogic innovation (e.g., Conole, De Laat, Dillon & Darby, 2008; Salmon, 2014; Sharples et al., 2014), it is difficult to find a clear, agreed, and explicit definition of this concept in the literature. The mere adoption of new technologies in learning and teaching can be easily mistaken for educational innovation (Salmon, 2005; Westera, 2004).

Academic institutions seem to adopt mainly instrumental strategies that preserve existing pedagogic patterns (Westera, 2004). For example, online learning platforms are often used as content repositories (eg, Armellini et al., 2012; Zemsky & Massy, 2004). The online delivery of an activity that was originally designed for face-to-face teaching is not necessarily pedagogically innovative. Staff with limited experience in the field tend to believe that online learning is about technical solutions rather than pedagogic innovation (Salmon, 2005). The use of new technologies *per se* does not imply changes to the underlying educational processes.

True pedagogic innovations focus on the teaching and learning aspects of education. Innovations might imply radical changes but often relate to variations of well-established practices. They are context-based, in the sense that an innovation in a particular setting might not

be so in another (Vieluf, Kaplan, Klieeme, & Bayer, 2012). The challenges associated with pedagogic innovation (or absence of it) apply to all types of post-secondary education, including online provision.

This paper focuses on pedagogic innovation in massive open online courses, or MOOCs, whose emergence was followed by a pattern of uncritical hype accompanying the use of new technologies (Baggaley, 2013). There have been claims to support the view that the scope for innovation in MOOCs is partly determined by the capabilities of the learning management system (Universities UK, 2013), which emphasises the focus on technology. MOOCs have even been branded a new pedagogy (e.g., Sharples et al., 2014). However, the evidence from previous research into MOOCs and from the study presented in this article suggests that MOOCs can be accurately described in many ways, but “pedagogically innovative” is not one of them.

Pedagogic innovation and Massive Open Online Courses: An overview of the literature

In this article, we use Vieluf et al.’s approach to the concept of pedagogic innovation as our working definition: pedagogic innovation refers to new, context-dependent developments in teaching practices and methods, and variations of existing methods. What constitutes innovation in a given setting will not necessarily be innovative in another (Vieluf et al., 2012).

MOOCs represent a particular type of the online courses currently prevalent in the educational landscape (Johnson, Adams Becker, Estrada, & Freeman, 2015). They are considered massive because their technological infrastructure has the potential to support large-scale use (Steward, 2013), as evidenced by the number of MOOC participants, which often reaches the tens of thousands (e.g., Grainger, 2013; Harrison, 2014; MOOCs@Edinburgh Group, 2013). They are online because they are delivered via the Internet. They are open because any person in the world with Internet access can participate free of charge, without having to meet any strict pre-requisites of knowledge or demographics (Anderson, 2013). They are called courses because they represent coherent academic interventions with a defined set of learning outcomes (Youell, 2011, p. 4), and usually have start and end dates.

While it has been suggested that the pedagogy of each MOOC needs to be analysed individually (Bali, 2014), the most influential categorisation of MOOC pedagogy identifies two main types: cMOOCs and xMOOCs (Daniel, 2012). cMOOCs follow the original concept of MOOCs. They are based on connectivism, a pedagogical approach which emphasises the importance of learning in networks and views learning as a process of connecting ideas, concepts or information sources (Siemens, 2005). cMOOCs focus on a networked, disaggregated mode of social learning (Bayne & Ross, 2014; Yuan, Powell, & Olivier, 2014). They are largely unstructured and open in terms of the available activities related to the course topics (Siemens, 2013). Information is mainly generated by students (Baggaley, 2013).

The current landscape is dominated by xMOOCs, as portrayed by courses in the online learning platforms Coursera and edX, which largely follow a traditional approach where the teacher is viewed as the expert and the student, a consumer of knowledge. Learners replicate the knowledge structure set in the course (Siemens, 2013). xMOOCs are “characterised by a pedagogy short on social contact and overly reliant on video-lecture content and automated assessment” (Bayne & Ross, 2014, p. 21). Course content is defined by designers (Baggaley, 2013) and delivered to students via a learning platform.

xMOOCs can be described as within the comfort zone of academics, as they limit themselves to basic behaviorist pedagogy, relying on the transmission of content, computer-marked assignments and peer assessment (Bates, 2012; Stacey, 2013). The ‘innovation’ of these

MOOCs appears to rely on opportunities to consume knowledge (Perrotta, 2014), with little regard for research into how to teach online effectively (Stacey, 2013).

The difference between xMOOCs and cMOOCs is not clear cut (Bayne & Ross, 2014; Universities UK, 2013; Yuan et al., 2014). Many courses are breaking down the distinctions between these two approaches (Universities UK, 2013). Variants now include so-called Distributed Open Collaborative Courses (DOCC), Synchronous Massive Online Courses (SMOC) and MOOCs 2.0, which are MOOCs that claim to integrate effectively with other courses and lead to credible credentials (Mapstone, Buitendijk, & Wiberg, 2014). While MOOCs can have substantially different underlying learning assumptions and designs, the current dominant approach to MOOCs tends towards xMOOCs. It resembles old models of online learning based on video lectures, reading texts, and quizzes with automated feedback (Yuan et al., 2014).

Criticisms on the pedagogy of these MOOCs and their lack of innovation have emerged (Baggaley, 2014; Bates, 2012; Stacey, 2013). Stephen Downes argues that MOOCs as deployed by commercial providers resemble “television shows or digital textbooks with -at best- an online quiz component”. Modern MOOCs emphasize a static design and a passive approach to the acquisition of knowledge. George Siemens considers that big MOOC providers “are simply repackaging what is already known rather than encouraging creativity and innovation” (Parr, 2013). For institutions with experience delivering online courses, MOOCs do not represent a major innovation. On the contrary: a review of 76 MOOCs revealed that their quality in terms of learning design is low, for example, by failing to follow fundamental principles such as the provision of expert feedback - perhaps an unfeasible task when thousands of students are involved (Margaryan, Bianco, & Littlejohn, 2015). Furthermore, many MOOCs seem to perpetuate mistakes associated with earlier online learning initiatives, by failing to incorporate best practice in distance learning (Hollands & Tirthali, 2014). Open educational resources (OERs) are often re-structured as courses: some degree of participation by teachers is added, resulting in such resources being subsequently referred to as MOOCs (Andersen & Ponti, 2014). This implies a strong focus on the transmission of content - hardly an innovative practice.

How much is really new about the pedagogy of MOOCs? Online courses have been available for decades. Institutions with experience in online learning have identified pros and cons of a wide range of pedagogic approaches that MOOCs, at best, replicate (Baggaley, 2013; Hollands & Tirthali, 2014). Sceptics point out that “the supposed benefits of MOOCs were already realised in previous generations of ODL [online distance learning] innovation” (Haggard, 2013, p. 4). Yet, MOOC reports still cite pedagogic innovation as a highlight of MOOCs or a reason for investing in them (Grainger, 2013; MOOCs@Edinburgh Group, 2013; Sharples et al, 2014; University of British Columbia, 2014). While claims about pedagogic innovation in MOOCs are common, most reports are unclear about the specific characteristics of or criteria for such innovations, and provide no explicit evidence to justify those claims.

This paper reports on a survey aimed at exploring how different stakeholders describe MOOCs. If respondents characterized them as ‘pedagogically innovative’, they were asked to define ‘pedagogic innovation’ and explain how MOOCs, in their view, meet that definition.

Methodology

Different stakeholders formed the sample for this study, including MOOC students, researchers, designers, learning technologists, teachers, managers and others. In their own capacities, participants are active in the field of online education and learning technologies in higher education. They were contacted using the authors' networks, via social media (e.g., LinkedIn and Twitter) and special interest groups (e.g., the mailing list of the UK Association for Learning Technology [ALT]). They were encouraged to respond to and share an online survey with knowledgeable colleagues. One hundred and six people participated on a voluntary basis (see Table 1).

Table 1

Respondents and their relation with MOOCs

Role	Description	Percentage
'MOOC student'	Enrolled and took part in at least one MOOC	54.72%
Researcher	Conducted research on MOOC design, delivery, implementation and/or evaluation	11.32%
Designer	Created the materials for, or otherwise contributed to the design of at least one MOOC	16.98%
Learning technologist	Supported the technological side of MOOC design, delivery, implementation and/or evaluation	9.43%
Teacher	Delivered or facilitated at least one MOOC	16.98%
Manager	Managed or supported the administrative side of MOOC design, delivery, implementation and/or evaluation	20.75%
Other	Other roles not included in the above	10.38%

Note. Some respondents played more than one MOOC-related role.

The two-page [survey](#) was designed to identify how different MOOC stakeholders characterized MOOCs. On the first page, participants had to select from a list the features that, in their view, best describe MOOCs:

- With large number of participants
- Open access
- Pedagogically innovative
- Vast interaction between learners
- Free of cost
- Online course
- Technologically advanced

- Focus on autonomous, self-regulated learning

The option “other” was also available. These characteristics were presented in a random order to prevent skewing results. On this first page, it was not evident that the focus of the research was on claims of pedagogic innovation. Frequencies and percentages were calculated.

If respondents selected the “pedagogically innovative” option from the above list, on the second page of the survey they were asked to provide reasons, for example, by suggesting a working definition for “pedagogic innovation” and explaining how MOOCs meet that definition.

At the end of the survey there was an additional open space for comments. Answers were identified by a generic ID created for participants (e.g., P1, P2) and analyzed for salient themes.

Results and Discussion

Respondents described MOOCs primarily as online courses, free of cost, offering open access and attracting a large number of participants (see Table 2). Only 16 (15.1%) considered them pedagogically innovative. When asked to explain, three people provided answers that were either vague or seemed to contradict their previous stance. For example, “perhaps the MOOCs are not innovative but they bring pedagogical innovators together?” [P76].

Table 2
MOOC key features

Feature	Frequency	Percentage
Online course	88	83.0%
Free	77	72.6%
Open access	77	72.6%
With large number of participants	70	66.0%
Focused on autonomous, self-regulated learning	64	60.4%
Vast interaction between learners	23	21.7%
Pedagogically innovative	16	15.1%
Technologically advanced	10	9.4%
Other	12	11.3%

Participants’ stances have been grouped as follows: MOOCs are pedagogically innovative, MOOCs are **not** pedagogically innovative, and MOOCs may or may not be pedagogically innovative. No pattern was found in relation to a possible correlation between the role of participants and their stance.

MOOCs “are pedagogically innovative”. Reasons for considering MOOCs pedagogically innovative were varied and mostly unclear. Recursive definitions were offered, ie.,

those using the term being defined, or a variant of it, in the definition itself (“**innovation pedagogy** is a learning approach focused on the development of **innovation** competences, defining how knowledge is assimilated, produced and used in a manner that can create **innovations**” [P60] - emphasis added). As is the case in the literature (Conole et al., 2008; Sharples et al., 2014), it was not possible to elicit clear definitions of pedagogic innovation, which raises questions about the validity of claims in relation to MOOCs being pedagogically innovative. Most answers that attempted to describe the term focused on the *novelty* of teaching and learning practices (e.g., “pedagogical innovation therefore means the application of new/different artistry across teaching and learning” [P52]).

Other explanations referred to well-established practices, such as practical learning (e.g., “Learn by doing is already an innovative pedagogical way of teaching, and that is what a MOOC does” [P21]). Massiveness (e.g., “it’s the massive part which offers the potential for a new type of learning experience” [P90]) and openness (e.g., “MOOCs innovate in non-rivalrous open pedagogies: pedagogies that enable access and use of open educational courses and related content without preventing others from enjoying the same privilege” [P7]) were also identified as examples of pedagogic innovation.

The role and influence of connectivism as an approach to learning (Siemens, 2005) was considered central to pedagogic innovation in MOOCs. Learning in networks emerged in participants' responses as the distinctive factor for pedagogic innovation:

- “The idea of global reach and establishing vibrant learning communities is interesting and the possibilities this presents to learners, educators etc. There is definitely the potential to do something pedagogically innovative.” [P76]
- “You are not limited to one person ‘leading the course’. With cMOOCs in particular, the learning is spread [throughout] the community. There may be a facilitator, but the experts are found by connecting with others, connecting with content, interacting and building new knowledge.” [P64]
- “Where MOOCs are innovative is in the concept of ‘community as curriculum’ - learners, as a group, generating the course content and ultimately defining for themselves what the course is...” [P26]

The [DS106](#) cMOOC was named as an example of pedagogic innovation. It is a course on digital storytelling started by the University of Mary Washington. It featured an assignment bank, where assignments collectively created by students were posted online, and a radio live streaming station, which was used as a platform to broadcast the work created in the class.

MOOCs “are not pedagogically innovative”. Most participants (84.9%) did not consider pedagogic innovation to be a main feature of MOOCs. Fifty-eight of them (54.71% of the survey sample) had an opinion on the topic. Some respondents expressed it in the space available for comments in the survey; others discussed it as part of unsolicited exchanges on email and distribution lists while the survey was live. Some shared related resources; others, their contact details for further discussion. These behaviors reflect respondents’ interest in (and in some cases passion for) this topic.

Unsolicited criticisms of MOOCs also arose in the survey:

- “MOOCs are a marketing innovation, not an education or technology innovation” [P72]
- “I consider MOOCs to employ a regressive, anachronistic pedagogy which is at times behavioristic and at other times ‘connectivist’, ie. chaotic.... MOOCs are more about hype and imposed by cost cutting aims, masqueraded as ‘democratic’, ‘open’ and ‘free’ courses” [P41]

- “[MOOCs are] over-hyped, low completion, low value, disposable, poorly recognised, poorly regulated, limited quality assurance, lacking rigour” [P20]

These claims align with a range of views expressed in the literature, such as Baggaley (2014), Bates (2012), and Stacey (2013).

Participants offered different reasons for describing MOOCs as not inherently pedagogically innovative. Explanations included MOOCs being about content, replicating traditional methods of online learning, and portraying technological advances that did not necessarily reflect new teaching methods.

MOOCs seem to offer value to participants not because they are good ‘courses’ that innovate pedagogically, but because they constitute useful *resources*. As one respondent put it, “any course could be transferred to online learning without any innovation at all, and many MOOCs are simply that - shovelware to get content to the masses.” [P20] This matches Andersen and Ponti’s (2014) description of OERs being structured in a course-like fashion and then called MOOCs. In this respect, MOOCs could be renamed ‘Massive Open Online Resources’ or MOORs.

In line with previous claims (Baggaley, 2013; Haggard, 2013; Hollands & Tirthali, 2014), respondents argued that MOOCs replicate traditional methods of online teaching. For example:

The vast majority [of MOOCs] currently available don’t seem particularly pedagogically innovative to me. Many seem to be an extension of current pedagogic practices in HE [higher education] institutions in the lecture theatres and VLEs [virtual learning environments]. They were supposed to be innovative, extend, share and open access to education for all, but we seem to have just replicated the status quo in the www [World Wide Web]. [P37]

Participants recognized the technological advances in MOOCs but highlighted that these do not imply pedagogic innovations: “The first thing that pops into my head when I think MOOC - is technology, not pedagogy.” [P59] “Courses I have done have made good *technological* use of video, discussion boards and online quizzes, but none of that is pedagogically innovative.” [P36] As pointed out by Salmon (2005) and Westera (2004), learning technologies (e.g., “videos, scripts, questions, quizzes” [P32]) can often be mistaken for educational innovation.

However, even if they did not consider pedagogic innovation a key characteristic of MOOCs, respondents saw interesting possibilities for new large-scale teaching and learning practices:

- “[...] one could argue that having thousands of students from any educational and other background and place of origin is a new experience for MOOC creators and students alike, and that this therefore is innovative.” [P4]
- “When truly massive they [MOOCs] have the potential to use that volume to offer innovative solutions - partly because the scale justifies the effort, but partly because scale allow volume analytics and the data to then allow more personalised learning and also potentially richer peer-learning.” [P35]
- “Their [MOOCs’] innovation is related to the massive number of participants. A considered and designed MOOC platform (FutureLearn) build [*sic*] new learning frameworks impossible without those numbers. Self-organising student groups, peer review and marking on a massive scale, following peers of interest, etc.” [P98]

The *potential* of MOOCs to be pedagogically innovative was acknowledged: “MOOCs in themselves are not pedagogically innovative but with some imagination they could be helpful - as long as the diversity of student was placed at the front of education.” [P94]

MOOCs may or may not be pedagogically innovative. Specific MOOCs, but not all, can be pedagogically innovative or have elements of pedagogic innovation: “I think that a MOOC can be this [pedagogically innovative], or can contain elements that are. I don't think they are pedagogically innovative (whatever that means) in or of themselves.” [P95] Six participants identified specific features between different types of MOOCs. cMOOCs were considered more innovative than xMOOCs:

- “cMOOCs are constructing new educational methods through collaboration and coproduction between learners, and learners / teachers. xMOOCs are starting to have innovative features such as validation of massive scale peer learning.” [P38]
- “I would argue cMOOCs might be [pedagogically innovative] but xMOOCs are generally regressive” [P41]

Umbrella terms (such as “pedagogically innovative”) were seen as unhelpful to describe all types of MOOCs. As one respondent put it:

MOOCs exist on a continuum. They are many things, not one thing, ranging from the innovative vision of Siemens, Downes, Cormier et al. to the narrow, retrograde products developed by Koller and Thrun. Discussing them in blanket terms is problematic. [P26]

As courses attempt to remove the differences between cMOOCs and xMOOCs (Bayne & Ross, 2014; Universities UK, 2013; Yuan et al., 2014), the debate becomes more complex. Analyzing the pedagogy of a large number of individual MOOCs (Bali, 2014), looking for emerging pedagogic patterns and linking them to agreed criteria for pedagogic innovation may partly address this concern.

Conclusions

The massiveness and technological features of MOOCs offer potential for innovation in higher education. This does not necessarily translate into pedagogic innovation. The convenience sample in this study may not represent the larger population of educators, designers, and participants who engage with MOOCs, which constitutes a limitation of this research. However, results from this study match the findings from earlier research: claims linking *pedagogic* innovation to MOOCs are largely unfounded. Where respondents attempted to justify the view that MOOCs are inherently innovative in pedagogic terms, they not only struggled to define pedagogic innovation, but also failed to explain how MOOCs fit any set of innovation criteria. xMOOCs in particular seem to rely on strategies that have been used in online and distance learning for decades. Criteria to identify and evaluate pedagogic innovation should consider existing practices in a specific context, in order for such practices to be compared and contrasted against new ones.

Pedagogic innovation can have a positive or a negative effect on the learning process, or no impact at all. Ideally, any pedagogic innovation should result in better learning outcomes or in a more effective teaching method to enable all participants to achieve those outcomes. This aspect has the potential to turn pedagogic innovation into mainstream practice. However, pedagogic innovation is not a prerequisite for excellence. Any program of study (including MOOCs) may achieve its objectives and offer a good learning experience, regardless of whether it can be seen as innovative.

Concrete practices within specific cMOOCs may constitute pedagogic innovations in the areas of course design and delivery, such as the student-created assignment bank and the radio

station of DS106 described above. However, these practices are not exclusive to MOOCs: they can (and do) occur in any course, across different modes of study. The MOOC environment did not prompt them.

MOOCs provide good examples of technological innovation but also of highly debatable approaches to pedagogy. They may be deemed valuable as *resources* (MOORs), but far less so in terms of being pedagogically innovative *courses*. We should be cautious about applying blanket terms to describe different types of MOOCs. However, based on the evidence currently available and contrary to what many reports claim, MOOCs cannot be described as inherently pedagogically innovative.

References

- Andersen, R., & Ponti, M. (2014). Participatory pedagogy in an open educational course: challenges and opportunities. *Distance Education, 35*(2), 234-249.
- Anderson, T. (2013). *Promise and/or Peril: MOOCs and Open and Distance Education*. Athabasca University. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.363.4943&rep=rep1&type=pdf>
- Armellini, A., Moseley, A., Hayes, N., Sweeney, D., Padilla Rodriguez, B. C., Conole, G., & Beard, J. (2012, September). *An inclusive review of current uses of the institutional VLE by staff and students at the University of Leicester*. Paper presented at the Association for Learning Technology Conference, Manchester, United Kingdom.
- Baggaley, J. (2013). MOOC rampant. *Distance Education, 34*(3), 368-378.
- Baggaley, J. (2014). MOOC postscript. *Distance Education, 35*(1), 126-132.
- Bali, M. (2014). MOOC pedagogy: Gleaning good practice from existing MOOCs. *The MERLOT Journal of Online Learning and Teaching, 10*(1), 44-56.
- Bates, T. (2012, August 5). What's right and what's wrong about Coursera-style MOOCs [blog post]. *Online learning and distance education resources*. Retrieved from <http://www.tonybates.ca/2012/08/05/whats-right-and-whats-wrong-about-coursera-style-moocs/>
- Bayne, S., & Ross, J. (2014). *The pedagogy of the Massive Open Online Course: the UK view*. York, UK: Higher Education Academy. Retrieved from https://www.heacademy.ac.uk/sites/default/files/HEA_Edinburgh_MOOC_WEB_240314_1.pdf
- Conole, G., De Laat, M., Dillon, T., & Darby, J. (2008). 'Disruptive technologies', 'pedagogical innovation': What's new? Findings from an in-depth study of students' use and perception of technology. *Computers & Education, 50*(2), 511-524.
- Daniel, J. (2012). Making sense of MOOCs: Musings in a maze of myth, paradox and possibility. *Journal of Interactive Media in Education, 2012*(3). Retrieved from <http://jime.open.ac.uk/articles/10.5334/2012-18/>
- Grainger, B. (2013). *Massive Open Online Course (MOOC) Report*. London, UK: University of London. Retrieved from http://www.londoninternational.ac.uk/sites/default/files/documents/mooc_report-2013.pdf
- Haggard, S. (2013). *The maturing of the MOOC: Literature review of massive open online courses and other forms of online distance learning* [BIS Research Paper No. 130]. London, UK: Department for Business, Innovation and Skills. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/240193/13-1173-maturing-of-the-mooc.pdf
- Harrison, L. (2014). *Open UToronto MOOC Initiative: Report on Second Year of Activity*. Retrieved from <http://www.ocw.utoronto.ca/open-utoronto-mooc-initiative/>
- Hollands, F., & Tirthali, D. (2014). Why do institutions offer MOOCs? *Online Learning (formerly Journal of Asynchronous Learning Networks), 18*(3), 1-19.
- Johnson, L., Adams Becker, S., Estrada, V., & Freeman, A. (2015). *NMC Horizon Report: 2015 Higher Education Edition*. Austin, Texas: The New Media Consortium. Retrieved from <http://cdn.nmc.org/media/2015-nmc-horizon-report-HE-EN.pdf>
- Mapstone, S., Buitendijk, S., & Wiberg, E. (2014). *Online learning at research-intensive universities*. League of European Research Universities (LERU). Advice Paper.

- Margaryan, A., Bianco, M., & Littlejohn, A. (2015). Instructional quality of Massive Open Online Courses (MOOCs). *Computers & Education*, 80(2015), 77-83.
- MOOCs@Edinburgh Group. (2013). *MOOCs @ Edinburgh 2013: Report #1*. Retrieved from https://www.era.lib.ed.ac.uk/bitstream/1842/6683/1/Edinburgh_MOOCs_Report2013_no1.pdf
- Pappano, L. (2012, November 2). The year of the MOOC. *The New York Times*. Retrieved from <http://www.nytimes.com/2012/11/04/education/edlife/massive-open-online-courses-are-multiplying-at-a-rapid-pace.html>
- Parr, C. (2013, October 17). MOOC creators criticise courses' lack of creativity. *Times Higher Education*. Retrieved from <http://www.timeshighereducation.co.uk/news/mooc-creators-criticise-courses-lack-of-creativity/2008180.fullarticle>
- Perrotta, C. (2014). *The digitisation of knowledge produces hybrids: Politics and identities in MOOCs*. In S. Bayne, C. Jones, M. de Laat, T. Ryberg & C. Sinclair (Eds.), *Proceedings of the 9th International Conference on Networked Learning 2014* (pp. 212-219). Edinburgh, Scotland.
- Salmon, G. (2005). Flying not flapping: A strategic framework for e-learning and pedagogical innovation in higher education institutions. *Research in Learning Technology*, 13(3), 201-218.
- Salmon, G. (2014). Learning Innovation: A Framework for Transformation. *European Journal of Open, Distance and E-Learning*, 17(2), 220-236.
- Sharples, M., Adams, A., Ferguson, R., Gaved, M., McAndrew, P., Rienties, B., ... Whitelock, D. (2014). *Innovating Pedagogy 2014: Open University Innovation Report 3*. Milton Keynes, UK: The Open University.
- Siemens, G. (2005). Connectivism: A learning theory for the digital age. *International Journal of Instructional Technology and Distance Learning*, 2(1), 3-10.
- Siemens, G. (2013). Massive Open Online Courses: Innovation in education? In R. McGreal, W. Kinuthia, S. Marsha & T. McNamara (Eds.), *Open Educational Resources: Innovation, Research and Practice* (pp. 5-16). Vancouver, Canada: Commonwealth of Learning and Athabasca University.
- Stacey, P. (2013, May 11). The Pedagogy of MOOCs [blog post]. *Paul Stacey: Musings on the edtech frontier*. Retrieved from <http://edtechfrontier.com/2013/05/11/the-pedagogy-of-moocs/>
- Stewart, B. (2013). Massiveness + Openness = New Literacies of Participation? *MERLOT Journal of Online Learning and Teaching*, 9(2). Retrieved from http://jolt.merlot.org/vol9no2/stewart_bonnie_0613.htm
- Universities UK. (2013). *Massive open online courses: Higher education's digital moment?* Retrieved from <http://www.universitiesuk.ac.uk/highereducation/Documents/2013/MassiveOpenOnlineCourses.pdf>
- University of British Columbia. (2014). *UBC MOOC Pilot: Design and delivery overview*. Retrieved from https://circle.ubc.ca/bitstream/handle/2429/51200/UBC_MOOC_Pilot_Report.pdf?sequence=1
- Vieluf, S., Kaplan, D., Klieeme, E., & Bayer, S. (2012). *Teaching Practices and Pedagogical Innovation: Evidence from TALIS*. OECD Publishing. doi: <http://dx.doi.org/10.1787/9789264123540-en>

- Westera, W. (2004). On strategies of educational innovation: Between substitution and transformation. *Higher Education*, 47(4), 501-517.
- Youell, A. (2011). *What is a course or programme or route or pathway or learning Opportunity...?* London, UK: JISC, Higher Education Statistics Agency.
- Yuan, L., Powell, S., & Olivier, B. (2014). *Beyond MOOCs: Sustainable Online Learning in Institutions* [white paper]. JISC CETIS. Retrieved from <http://publications.cetis.ac.uk/wp-content/uploads/2014/01/Beyond-MOOCs-Sustainable-Online-Learning-in-Institutions.pdf>
- Zemsky, R., & Massy, W. F. (2004). *Thwarted innovation. What happened to e-learning and why*. Learning Alliance at the University of Pennsylvania. Retrieved from <http://www.thelearningalliance.info/Docs/Jun2004/ThwartedInnovation.pdf>