QAA

MOOCs and Quality:
A Review of the Recent Literature

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QAA MOOCs Network

Contents

Foreword

The role of the Quality Assurance Agency for Higher Education (QAA) is to safeguard the standards of awards and improve the quality of UK higher education. We welcome the development of Massive Open Online Courses (MOOCs) as an innovation with great potential to widen participation and promote lifelong learning, drawing on providers' experience of online and blended learning opportunities. The widespread interest in a broad range of MOOCs has given providers a platform to promote higher education opportunities more generally.

We are committed to protecting the student interest and the continued high standing of UK higher education. We want to help prospective students make informed decisions about the quality of MOOCs, while respecting the open and innovative nature of this provision. In this way, we seek to recognise rather than constrain the potential of MOOCs.

UK universities and other awarding organisations are responsible for the quality of all the courses they offer. Since MOOCs are typically non-credit bearing and have no particular entry requirements, they are not formally scrutinised during QAA review.

We are delighted to have commissioned and now published this literature review by Dr Sarah Hayes, who is a lecturer in Technology Enhanced and Flexible Learning at Aston University, as a way of contributing to the MOOCs' debate. The review demonstrates the breadth and quality of the discussions, and supporting evidence, that are continuing to occur. The review is provided on the basis of offering a wider range of resources, which offer different perspectives and different ways of thinking about the issue of quality that MOOCs generate.

The initial findings of the review were showcased at the second meeting of the QAA MOOCs Network, held in London on 29 April 2015. The Network is designed to bring together practitioners interested in and involved in MOOCs in a variety of different roles and organisations, and the Network events provide an opportunity for the sharing of practice in an informal workshop environment.

This literature review forms part of QAA's ongoing work designed to provide resources to support higher education providers and others interested in the quality of MOOCs, and to promote the sharing of practice. This work includes the development of a toolkit, which will be designed to demonstrate how the UK Quality Code for Higher Education can be used by providers to assist in addressing questions of quality assurance and enhancement in relation to all aspects of MOOCs, whether design, approval, delivery and assessment, including assessment for the recognition of prior learning. This is not about creating additional hurdles or burdens for providers but about showing how existing principles of sound practice, agreed by the sector, can be applied to this developing area of provision to inform practice, benefiting providers, students and other stakeholders.

I am grateful to Sarah for her work in producing the review, engaging with an extensive number of sources and highlighting the range of debates that they reflect. I also want to acknowledge the work of Natalja Sokorevica (Development Officer in Standards, Quality and Enhancement) for her editing of the review, and to both Natalja and Cathy Kerfoot (Assistant Director in Standards, Quality and Enhancement) for facilitating the MOOCs Network.

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Introduction

This literature review presents a number of different perspectives from a broad range of sources relating to the nature of MOOCs and pertinent considerations of quality.

Higher education providers are adapting to recent and rapid global changes, markets and technologies, seeking to maintain and improve quality, as well as develop partnerships with their students. MOOCs are resources that could potentially support many positive changes. Thinking about the stakeholders involved and how they might contribute helps maintain a balanced approach towards MOOCs. MOOCs might offer inspiration for higher education providers to revisit both student and staff engagement, and what quality assurance and enhancement entail in the MOOC context.

This reflects a debate about whether MOOCs should be designed for greater engagement (Simpson, 2013) or simply point to a 'funnel of participation' (Clow, 2013). There is a need to examine the question of whether to accredit MOOC learning or not, when learners are not necessarily anticipating seeking assessment or accreditation for their learning. Wintrup et al (2015, p 31) report participant accounts of the value of the 'unconditional and free nature of their learning' and 'intellectual stimulation and personal development'. Yet, even though credit does not appear to be a major motivation for learners who have chosen MOOCs so far, there are clear signs that this will change (OBHE, 2013).

In a UK-focused report for the Higher Education Academy (HEA), *The Pedagogy of the Massive Open Online Course*, Bayne and Ross (2014) consider more specifically the teacher functions enacted in MOOC spaces. They respond to a Universities UK (UUK) report, *Higher Education's Digital Moment* (2013), which positions MOOCs as significant catalysts for sector-wide change, suggesting all higher education institutions (HEIs) will 'need to evaluate their long-term strategies in light of these developments' and HEIs need to consider the potential impact of MOOCs on communicating knowledge, diversifying recruitment and improving quality (UUK, 2013, pp 2–3). The report suggests this may require profound organisational change and while 'many aspects of higher education cannot readily be substituted online for free alternatives' (UUK, 2013, p 25), such as academic support and accreditation, there could be considerable impact if four elements of higher education become 'unbundled':

- content
- delivery platform
- feedback and support
- awards (UUK, 2013, p 26).

Bayne and Ross (2014), however, highlight the international nature of the UUK report, which they suggest does not attempt a critical approach and so misses the following: significant activity across a range of UK institutions, large and small; existing interest and activity around accreditation; and the diversity of the pedagogical approaches being taken. They therefore draw out key themes that emerge around pedagogy, course design, assessment and the role of the teacher.

In turn, considering the experiences of learners in MOOCs, a recent study by the HEA demonstrates that participants' experienced engaging high quality learning. *Engaged Learning in MOOCs: a Study using the UK Engagement Survey* (Wintrup, Wakefield and Davis, 2015) addressed the questions:

1   How can we know what learning is taking place in MOOCs?

2   Can we identify MOOCs' potential for future use in higher education?

Using an adapted version of the HEA's UK Engagement Survey 2014, researchers at the University of Southampton asked participants who had completed MOOCs delivered through the FutureLearn platform about their experiences as learners. They found MOOCs were successful in: 'enabling many participants to feel engaged in intellectual endeavours, such as forming new understandings, making connections with previous knowledge and experience, and exploring knowledge actively, creatively and critically' (HEA, 2015, p 41).

The MOOC Quality Project, which was an initiative of the European Foundation for Quality in E-Learning (EFQUEL), focused on the question of quality and MOOCs through a series of blog posts by 11 worldwide experts in the field. The approaches towards quality in the EFQUEL MOOC Quality Project are summarised by Creelman, Ehlers and Ossiannilsson 2014, who describe MOOCs as 'a recent stage in open education' and also as a challenge, in terms of a 'moving target' (Creelman, Ehlers and Ossiannilsson, 2014, p 79).

The nature of MOOCs

QAA acknowledge MOOCs as 'an innovation with great potential to widen participation and promote lifelong learning', and 'an opportunity to promote higher education opportunities more generally' (QAA, 2014). In 2014 approximately 1,000 MOOCs were available from universities in the USA, and 800 from European institutions, and in several languages besides English (Bates, 2014). MOOCs have certainly led to new discussions about teaching and learning, but the development of MOOCs is also controversial. Arguments seem to fall into two camps. Those who see MOOCs as revolutionary, suggesting universities should seize the opportunities presented by MOOCs (Barber et al, 2013). This position has been echoed by governments, vice-chancellors and in the press, with claims MOOCs would 'change teaching, learning and the pathway to employment' and that 'nothing has more potential to enable us to reimagine higher education than the massive open online course' (Friedland, 2013).

Others have called MOOCs a disruptive technology (Christensen, 2010), but 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' (Conole, 2013, p 2). As part of a 'digital revolution', MOOCs are celebrated for opening up education on an unprecedented scale through platforms such as Coursera and FutureLearn (Brabon, 2014, p 1). However, some suggest MOOCs are simply another instance of the hype around technology in education, a more modern version of educational broadcasting, which does not affect the basic fundamentals of education (Bates, 2014).

As a passing fad and a branding exercise (Brabon, 2014), in terms of drop-out rates, they are even labelled as 'a lousy product' (Thrun, 2013). Yet proclamations of 'disruptive change' have recently subsided in the news reports and been replaced in public discourse with 'more balanced and productive discussions related to the position of MOOCs in the broader spectrum of educational modalities' (Kovanović et al, 2014). Whether MOOCs really constitute a learning revolution, or simply reveal what technology can achieve in terms of educational offerings for masses (Creelman, Ehlers and Ossiannilsson, 2014) there are significant questions that arise concerning their contribution to, and limitations in, developing the knowledge and skills needed by learners in a digital age.

Brabon (2014) raises questions about pedagogy, experience, new business models for higher education and quality assurance, suggesting that if MOOCs are simply integrated into institutional flexible and blended learning strategies this overlooks the opportunity to reconceive how higher education might respond, by reimagining the idea of the campus degree. So, rather than MOOCs themselves providing a revolution, it is the questions they raise about learning more broadly in a global society that need to be considered, alongside quality assurance and enhancement considerations.

In response, Kernohan (2014, p 7) suggests the majority of commercial MOOCs are closer to traditional models of mass higher education, citing the role of the 'rockstar professor' and the focus on the teacher, rather than the institution they work for, where the 'persistent nature of the teacher as the primary point of contact' is a design feature of the MOOC and not of quality assurance processes.

Common features of a MOOC

Since institutions are seeing rising participation levels, user accounts can be accessed and questions about who the diverse audiences for MOOCs are, as well as longer-term issues of sustainability and quality, can be examined and evaluated. For example, Ho et al (2014), have examined data from the last two years and 68 open online courses offered by Harvard University (via HarvardX) and MIT (via MITx) to describe trends, participant intentions and pathways through surveys and network analysis. They describe substantial participation and steady growth, revealing the interesting high numbers of teachers-as-learners that enroll in their MOOCs (Ho et al, 2014). They discuss the key principles on which HarvardX and MITx were founded as: access, research and residential education. So, are these features common to all MOOCs?

According to Bates (2014), MOOCs share a combination of the four key characteristics listed below. Each of these raises questions about quality.

Massive

Massive with infinite scalability. However, there are some associated technological costs, such as bandwidth and back up for institutions to be aware of. Downes (2014) suggests the massive element applies not to the success of the MOOC in attracting many people, but to 'the design elements that make educating many people *possible'*. He emphasises that: 'to *educate* is to do more than merely deliver content, and more than merely support interaction, for otherwise the movie theatre and the telephone system are, respectively, MOOCs'.

Open

Open with no prerequisites for participants other than access to a computer or mobile device and the internet. Coursera owns rights to the materials, so they cannot be reused without permission. Material may be removed when the course ends. Coursera decides which institutions can host MOOCs on its platform, while edX is an open source platform. Any institution that joins edX can develop their own MOOCs and rules regarding rights to the material (Bates, 2014).

Online

While MOOCs are offered initially completely online, increasingly institutions are negotiating to use MOOC materials in a blended format for use on campus. The institution provides learner support for the materials through campus-based instructors, for example at San Jose State University on-campus students use MOOC materials from Udacity courses, such as lectures, readings and quizzes, and then instructors spend classroom time on small group activities, projects and quizzes to check participant progress (Bates, 2014).

Courses

MOOCs are different from other open educational resources, because they are organised into a whole course. Yet, even though many MOOCs offer certificates or badges for successful completion of a course, to date these have not been accepted for admission or for credit, even (or especially) by the institutions offering the MOOCs (Bates, 2014).

Distinctions between pedagogical styles of MOOCs

In the literature, two distinct pedagogical forms of MOOC have been discussed (Smith and Eng, 2013); these are explained below and might be considered 'process' or 'content-based' approaches (Yuan et al, 2013, p 3).

cMOOCs

The early MOOCs were 'connectivist' (Siemens, 2012), described as cMOOCs, due to the focus on creating mass communication and interaction. One quality question arising around process-based cMOOCs is that since individual participants of cMOOCs create a lot of the material, whether they own the rights to this and how long the MOOC materials will remain available? (Bates, 2014). In deciding on a framework for quality in a cMOOC, Creelman, Ehlers and Ossiannilsson (2014) question if this should then relate to the desired social interaction in cMOOCs, based perhaps on the Community of Practice Model or situated around the theory of constructivist or connectivist assumptions. The focus would be on progression of learners growing into the community of their peers, how they build up expertise through making use of the connections and links they build, within the sphere of social interaction (Creelman, Ehlers and Ossiannilsson, 2014).

xMOOCs

The more instructivist models have been labelled xMOOCs. These tend to employ a knowledge transmission model, through video recordings of classroom lectures or custom produced mini-lectures (Jona and Naidu, 2014). These may feature famous professors from highly reputed universities. Online participants learn autonomously without (necessarily) much focus on creating social interaction. A suitable quality framework for xMOOCs could therefore be a content-oriented type of framework, which is assessing the quality of the content presented. Subject matter experts would be needed and an analysis of the learning design to evaluate how content is presented, and which type of learning objectives and assignments are given (Creelman, Ehlers and Ossiannilsson, 2014).

We therefore need to consider the specific characteristics of MOOCs to see how quality can be described, assured and developed. However, between examples of cMOOCs, run as open connectivist learning networks by Stephen Downes and George Siemens, and the more traditional lecture-based xMOOCs, such as the model offered by Coursera, there is a lot of ground. While comparisons between cMOOCs and xMOOCs help us understand two different pedagogical routes MOOC development might take, 'this can be used by those espousing a connectivist perspective to criticise xMOOCs' (Bayne and Ross, 2014, p 22). Some authors suggest this is much too simplistic a categorisation (Lane, 2012; Conole, 2013; Clark, 2013). Clark (2013), for example, has gone considerably further to produce a taxonomy of eight types of MOOC, from the pedagogic, not the institutional perspective. He considers learning functionality, rather than MOOCs' origins, in his list (table 1).

Table 1 – Taxonomy of eight types of MOOCs by Clark (2013)

Transfer MOOCs	These are existing courses placed on a MOOC platform that rely on a 'name' of the institution, or of an academic, to attract learners. The pedagogic assumption is that of transfer from teacher and course content to learner. Many mimic traditional academic courses, with lectures, short quizzes, set texts and assessments. Coursera courses largely fall into this category.
Made MOOCs	These demonstrate a more innovative use of video, avoiding simply talking heads, to favour Khan Academy or Udacity hand-on-board sequences. A more formal, quality-driven approach is taken to the creation of material, assignments, problem-solving and sophisticated interactive experiences. Peer work and peer assessment are used to cope with the high teacher-student ratios. These are more vocational in nature, VOOCs (Vocational Open Online Courses), where the aim is to acquire a skill or skills. Udacity takes this approach.
Synch MOOCs	Synchronous MOOCs have a fixed start date, fixed deadlines for assignments and assessments and a clear end date: for example, Coursera and Udacity. It is argued that this helps motivation and aligns teacher availability and student cohort work.
Asynch MOOCs	These either have no, or frequent start dates, looser deadlines for assignments and assessments, and no final end date. The pedagogic advantages of asynchronous MOOCs is that they can be taken anytime, anywhere and work better over different time zones. Udacity has relaxed its courses to enrol and proceed at a user's own pace. Some suggest this is a tactic to reduce drop-out rates, due to missed assignment deadlines. Coursera offers a completely open self-study option but this does not warrant a certificate of completion.
Adaptive MOOCs	Adaptive MOOCs use adaptive algorithms to present personalised learning experiences, based on dynamic assessment and data gathering on the course and courses. They rely on networks of prerequisites and take learners on different, personalised paths through the content. This has been identified by the Gates Foundation as an important new area for large-scale productivity in online courses. Analytics are also used to change and improve the course in the future. Cogbooks is a leading example of this type of MOOC.

Group MOOCs	Group MOOCs start with small, collaborative groups of students and aim to increase student retention. NovoEd (formerly Venture Lab) offers both MOOCs and closed, limited number, internal courses. They argue that some subjects and courses, such as entrepreneurship and business courses, lose a lot in loose, open MOOC structures and need a more focused approach to group work. The groups are software selected by geography, ability and type and are also dissolved and reformed during the course. Learners have mentors and rate each others' commitment and progress.
Connectivist MOOCs	Pioneered by George Siemens and Stephen Downes, these connectivist MOOCs, mentioned earlier, rely on connections across a network rather than predefined content to share knowledge contributed by the participants, not 'fixed' knowledge.
Mini MOOCs	Associated with universities, whose courses last many weeks, these MOOCs often fit the semester structure and timetable of traditional institutions. They are shorter MOOCs for content and skills, intense experiences that last for hours and days, not weeks. They are more suitable for precise domains and tasks with clear learning objectives. The Open Badges movement tends to be aligned with this type of MOOC.

Clark (2013) reminds us that these categories are definitive and not mutually exclusive, as, for example, a transfer MOOC could be synchronous or asynchronous. He suggests these categories are a start and that we should see MOOCs as informing the debate around learning to help with problems of relevance, access and cost.

Quality considerations

MOOCs can vary from enabling anyone to study free university courses or just to pursue interests through taster courses. Some provide 'digital storefronts' to market the brand of an institution (Jona and Naidu, 2014, p 141). Some are aimed at openness and others at profiteering. So it is difficult to discuss quality in MOOCs in general terms when it depends on which type of MOOC.

Ehlers, Ossiannilsson et al (2013) suggest quality is very much the condition that determines how effective and successful learning can take place. They question if the quality of MOOCs can be assessed in the same way as any traditional university course, or if we have to take into account a different type of objective with MOOC learners, related to only small sequences of learning, tailored to an individual's purpose and then signed off, so that participants can move to other MOOCs, because their own personal learning objective was fulfilled.

Creelman et al (2014) suggest that some criteria will be similar to those applied to a traditional syllabus, but may manifest in new ways. Other criteria will be specific to the online environment. One example they cite is related to 'choice'. The question of whether drop-outs are viewed as a sign of deficient quality or an expression of individual choice and so actually designed into MOOCs, is just one example leading the way to new thinking on quality in this field (Creelman et al, 2014).

Downes (2014) claims the success of a MOOC is process-defined rather than outcomes-defined, and that it should be seen as a vehicle for discovery and experience. There is no target group as such in a MOOC, because everyone is welcome, where participants' aims and motivations may vary widely, and many participants have no intention of even completing the course (Creelman et al, 2014).

The debate about drop-out rates needs to be balanced with establishing the aims of MOOCs. If the aim is opportunity of access to free, high-quality courses from elite universities and professors, then high drop-out rates may not be a primary concern (Gee, 2012), but finding out why and at what stage students drop out of courses could help inform future decisions about quality.

Pomerol, Epelboin, and Thoury (2015) pose further questions on who the MOOCs are aiming for and for what purposes. We need to develop better metrics to understand how learners are interacting with MOOCs (Conole, 2013) and respond to developments in adaptive learning driven by learner analytics (OBHE, 2013).

Since each learner has her/his own objectives and success criteria, and the success of the course depends on each learner meeting their own goals, Downes (2014) offers four key success factors for a MOOC: autonomy, diversity, openness and interactivity. The success or failure of a course depends on how well it satisfies these criteria.

Data on learners and engaging students in MOOCs design

The need to gather data on learners, Kernohan (2014) suggests, underpins everything from assessment design of a MOOC to the very idea of offering a course with a defined start and end date, but little research has stemmed from such data collection as yet, and would only be based on the kind of learner that completes a MOOC. This raises the question of how much research can, or should, be done before a MOOC is implemented, given new university programmes are scoped and the types of learners defined prior to approval.

There are studies looking at student demographics, behaviours and completion (Breslow et al, 2013; Kizilcec et al, 2013; Koller et al, 2013), but a limitation is that such data neglect the 'student voice', which might explore in detail the reasons behind the trends observed (Jordan, 2014, p 151).

The question of what MOOC learners are like is closely linked to considerations of quality assurance. One suggested approach is that MOOCs are evaluated by learners and educators, including reflecting on comments from participants using social media (Yuan et al, 2013). In a study of MOOCs offered by Harvard University (via HarvardX) and MIT (via MITx), one fifth of participants answered a survey about their background in teaching, and 39 per cent said they were current or former teachers (Ho et al, 2014). This raises questions about how educators might redesign MOOCs if they discover a lot of the audience will actually be fellow teachers (Fabris, 2015).

Furthermore, we might consider how the variable quality of participation in MOOCs links with initiatives from Jisc and Staff and Educational Development Association (SEDA), such as the Change Agent Network (2015), which is currently encouraging a network of staff and students to work in partnership in higher education providers and further education to support curriculum enhancement and innovation. Students with an active interest can work in partnership with staff in higher education providers to explore the many questions that arise about MOOC learners, but there needs to be strong mechanisms and support put in place in higher education providers for this to become a core practice.

Non-completion rates

A common feature of MOOCs is the high non-completion rates being reported. Yuan and Powell (2013) suggest issues of quality, sustainability, pedagogy, completion rates and awarding of credit in MOOCs are of major concern for higher education providers, and that if their use is to take hold, some form(s) of quality assurance will be needed to ensure that they conform to effective practice (Jona and Naidu, 2014).

Research undertaken by Jordan (2014) suggests it is misleading to simply invoke early enrolment and completion figures as representative of non-completion. Six-figure enrolments are atypical, decreasing over time, as the number of courses available continues to increase. The majority of courses have completion rates of less than 10 per cent of those who enrol, but the definition of completion rate is the percentage of enrolled students who satisfied the courses' criteria in order to earn a certificate. This definition is used because this information is most frequently available, but we might also consider the many ways in which MOOC students could be participating in, and benefitting from, courses without completing assessments. Jordan (2014) suggests this warrants further work to better understand the reasons why those who become engaged initially do, or do not, complete courses.

From a quality point of view it may be necessary to consider if completion in this context is a prime concern or not. Jordan does not suggest completion rates be ignored, but seen as a starting point for better understanding MOOC course design and ways to assist students in completing. According to Jordan (2014) further topics to consider are: the impact of different assessment types, and looking at completion in relation to underlying pedagogy to see what differences emerge based on how transmissive (so-called 'xMOOCs') or connectivist ('cMOOCs') courses are.

Another aspect is whether clear pre-course information is being made available to prospective students about what the course can and cannot offer, including which pedagogical approaches are being used. This might detail the level of student commitment, the schedule, deadlines, technical requirements, role of teacher or tutor (if any), availability and level of interaction, and availability of credentials (Creelman et al, 2014).

Good learning and instructional design

Conole (2013) picks up on key questions about learning that apply here, such as what characterises good learning, as this can help show to what extent these facets are realised in MOOCs. Their design should: encourage reflection, enable dialogue, foster collaboration, apply theory learnt to practice, create a community of peers, enable creativity, and motivate the learners.

The instructional quality of MOOCs therefore varies, and here there are opportunities to revisit what instructional design principles need to be applied to provide high quality learning experiences for individual participants. In *Instructional Quality of Massive Open Online Courses (MOOCs)*, Margaryan et al (2015) present their analysis of the instructional design quality of 76 randomly selected MOOCs. They examine the quality of 26 cMOOCs and 50 xMOOCs from the point of view of First Principles of Instruction. Based on a 10-principle framework, they draw five fundamental principles from Merrill (2002, 2009, 2013), abstracted from key instructional design theories and models, as follows.

1   **Problem-centred:** learning is promoted when learners acquire skills in the context of real-world problems. This is contrasted with topic-centred instruction, where a subject is taught in isolation from the real-world tasks.

2   **Activation:** learning is promoted when learners activate existing knowledge as a foundation for new skills. Activities help learners to incorporate the new knowledge or skill into their existing knowledge.

3   **Demonstration:** learning is promoted when learners observe a demonstration of the skill to be learned. This highlights the importance of showing learners how to apply the new information or skill in new situations.

4   **Application:** learning is promoted when learners apply their newly acquired skill to solve problems. Appropriate learner guidance, through diminishing coaching, or 'scaffolding' and feedback for learner guidance are key aspects.

5   **Integration:** learning is promoted when learners reflect on, discuss, and defend their newly acquired skill. Learners have opportunities to reflect on what they have learned, revise, synthesise, or modify their new skills, and demonstrate and defend their new knowledge or skill to peers and others.

The First Principles of Instruction listed above focus on learning activities. These are augmented by a set of five further principles abstracted from the literature focusing on learning resources (such as course materials, or people that learners draw on to carry out learning activities) and learning support (processes and procedures such as expert feedback that assist learners in carrying out learning activities) (Margaryan et al, 2015, p 79).

6   **Collective knowledge:** learning is promoted when learners contribute to the collective knowledge.

7   **Collaboration:** learning is promoted when learners collaborate with others.

8   **Differentiation:** learning is promoted when different learners are provided with different avenues of learning, according to their need.

9   **Authentic resources:** learning is promoted when learning resources are drawn from real-world settings.

10 **Feedback:** learning is promoted when learners are given expert feedback on their performance.

Margaryan et al (2015, p 82) suggest these ten principles are fundamental criteria of instructional quality and can be applied to evaluate any form of structured instructional courses, rather than only MOOCs and other types of online courses, including 'classroom-only' courses. For on-campus research they recommend a different methodological approach to the one they took. Using a course survey instrument, their findings indicate that the majority of MOOCs score poorly on most instructional design principles, but most of the MOOCs surveyed scored highly on organisation and presentation of course material. 'The results indicate that although most MOOCs are well-packaged, their instructional design quality is low' (Margaryan et al, 2015, p 77).

So, whilst MOOCs offer an innovative, potentially exciting educational experience, which promotes social inclusion, there are also risks to learner experience through bad design (Conole, 2013). At a basic level, a MOOC offers free access to a collection of educational resources logically linked in progression (Creelman et al, 2014). Many MOOCs though have little or no qualified tutoring or guidance, just online areas for student communication and learning materials resulting in learning engagement being out of the control of the organisers.

Creelman et al (2014) suggest the real quality issues of the MOOC phenomenon may lie in any 'value-added' services on higher layers than the course material. They suggest that, if tutoring, guidance, validation and examination are available at a price, then these 'add-ons' can be more easily assessed and quality guidelines set up.

Opportunities and further research

When it comes to quality, there are some pressing, but also exciting questions arising in relation to the rapid development of MOOCs. Topics raised in this literature review relate to the nature of MOOCs; learners, staff, and institutional approaches to MOOCs; and mirror some of the debates around staff and student digital abilities, pedagogical design and enhancement of the curriculum, completion rates as well as purposes for developing MOOCs, including marketing activities for higher education providers or involving the awarding of credit.

The author has identified a number of opportunities that MOOCs present for higher education providers, as follows:

- to revisit their curriculum and policy, taking useful examples from MOOCs as teaching tools into departments across the higher education providers, and in turn bringing key stakeholders together with their quality staff to examine existing policies and strategies and consider what new guidance is needed

- to work collaboratively as MOOCs offer positive disruption that can assist in a transfer of knowledge in relation to online learning provision between quality teams, academics, technologists, librarians, marketing and support staff, and students. However, these need to be recognised in order to actively explore how what MOOCs provide might inform the variety of flexible approaches towards curriculum design (such as distance and work–based learning, flipped classroom and blended approaches)

- to update their distance learning strategies with statements of response to the growing numbers of MOOCs and their intentions in relation to quality

- to understand who their MOOC stakeholders are

- to build strong partnerships with students, where staff and students have a vested interest in engagement and enhancement opportunities from MOOCs, as well as reiterating what is really valuable about the higher education provider offer and role, in comparison with the offer from national and international competitors

- in partnership with their students, to define where individuals can input into MOOC research, curriculum design and policy.

As with each new learning innovation, MOOCs present the possibility of new approaches to education, but the promises now need to be evaluated to see what can be delivered in the longer term, on a sustainable basis and with what implications for HEIs and for the assurance of quality (Creelman et al, 2014).

This raises two key questions for higher education providers to consider:

1   Do MOOCs follow sound pedagogy and instructional design approaches to online learning that will lead to quality outcomes and experiences for students?

2   What new pedagogies and organisational mechanisms might be required if MOOCs are to deliver a high quality learning experience? (Yuan et al, 2013).

To add to the debate, Morris (2014) provides the following seven key issues requiring quality assurance decisions.

Table 2 – Seven key issues requiring quality assurance decisions identified by Morris (2014)

1	HEIs offering massive fee-paying 'courses' or 'whole programmes'	· Credit · Keeping records · Curriculum design, approval and monitoring · Recruitment, selection and admission
2	Online courses (non-credit bearing or accredited) offered on MOOC platforms by non-HEIs or in partnership with other organisations	
3	Recognition of award of professional qualifications via online courses by professional, statutory and regulatory bodies, and employers	
4	Accredited courses involving substantial peer review elements, unvalidated online assessment methods or examination centres	· Recognition of prior learning
5	Personalisation of the learning experience for learners with differing needs	
6	Standards of professionalism of teaching/teachers on online courses	
7	Blending of online courses with on-campus learning opportunities	· Academic appeals and student complaints · Legal considerations, staff training and new policies

Although MOOCs are now a global phenomenon and have attracted much media attention, especially in regions such as Australia, China and India *(*Kovanovic et al, 2015), Siemens, Gašević and Dawson (2015) suggest the first wave of MOOC research activities is still dominated by researchers from North America. They call for future studies that represent other continents, cultures, and economies in MOOC research. Wintrup et al (2015) suggest further research from three key perspectives, which are discussed further in table 3:

1   Education enhancement: curriculum developers and learners

2   Higher education providers and their marketing teams

3   Researchers and policy makers.

Table 3 – Key areas for further research on MOOCs by Wintrup et al (2015).

Education enhancement: curriculum designers and learners	• Understanding what engages different types of learners in a MOOC context (this offers curriculum developers new insights for enhancement)
	• Identifying independent learning activities most suited to online learning
	• Promoting intellectual challenge and enabling new forms of understanding
	• Making the above more explicit to learners
	• Enabling learners to make informed choices on how to spend their time
	• Being clear about what social learning/interactivity contribute to engaged learning (both within the MOOC community and outside of it)
	• Providing direction and guidance to learners on ways to apply new empirical or theoretical knowledge to 'real world' problems to promote creativity
	• Including and eliciting learners' own ideas and projects
	• Increasing opportunities for self-directed and open-ended learning, which is important if learners are using MOOCs as a stepping-stone to higher learning
	• Considering how the diversity, commitment and focused interests of MOOC learners might best promote the formation of networks and communities
	• Gaining a stronger understanding of how to enhance engagement in independent online learning is relevant also to blended forms of learning, for example the 'flipped classroom' concept, work-based learning, professional development and lifelong learning in general

Higher education providers and their marketing teams	• Learner characteristics suggest MOOCs need to be reaching different sections of the population for widening access to higher education to be achieved – further work needs to go into how this might be done • Given the successful engagement of many who persist with MOOCs, marketers and those communicating key messages about MOOCs need to consider in greater depth how to attract a more diverse cohort. Accreditation of learning that is recognised for entry to higher education programming is neccessary if MOOCs are to provide routes to the full range of higher level learning.
Researchers and policy makers	• Further research is necessary to understand the educational role of MOOC peer communities and their interactivity if MOOC teams are to make informed decisions about how best to invest time supporting learners. This is likely to differ across types of MOOC, across curriculum development teams and according to learners' own reasons for undertaking the MOOC • For government and MOOC providers to know whether the widening access goal has been realised, collation and analysis of a much more detailed range of demographic information over significant periods of time is necessary, following learners from first contact through and well beyond completion • More understanding of the potential of analytics to support persistence and completion through targeted communications and interventions

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