

**FIVE WAYS MOOCs ARE
INFLUENCING TEACHING
AND LEARNING**

ACCESS • INNOVATION • COLLABORATION

TOWARDS A NEW PEDAGOGY

FIVE WAYS MOOCs ARE INFLUENCING TEACHING AND LEARNING

It is time to explore the extent to which MOOCs are enabling innovation, engagement and equity in higher education and to examine extent; have they inspired new approaches to teaching and learning across the gamut of activity in colleges, polytechnics and universities? It is also appropriate to look at the implications of MOOCs for public policy and the reform and continuing development of higher education.

George Siemens and Stephen Downes – Canadians then working at the University of Winnipeg – took the idea of an open and constructivist learning experience to scale when they offered the very first MOOC in 2008, the term MOOC having been first coined by David Cormier of the University of Prince Edward Island that same year. They, as are others, must now be surprised at the scale of MOOCs and their rapid development. Have MOOCs fulfilled the promise, as seen by Siemens and Downes, of changing not simply access to learning, but the experience of learning – something at the heart of the first MOOC?

This will be the focus of discussions at the 2017 World Conference of the International Council for Open and Distance Education (ICDE) that Contact North | Contact Nord is hosting in Toronto, Canada (October 17-19, 2017), focused on ONLINE, FLEXIBLE AND OPEN LEARNING: EXPANDING BOUNDARIES...TESTING LIMITS (www.contactnorth.ca/icde2017) - pushing the boundaries. In addition to exploring the teaching and learning implications of MOOCs and other approaches to online, flexible and open learning, there will also need to be a focus on equity and the impact of MOOC-like developments on sustainable development.

A recent study of those taking MOOCs by researchers from Harvard and MIT, reported in *Science*,¹ suggests the profile of successful MOOC graduates closely resembles that of many current participants in higher education and is not leading to greater equity in terms of educational outcomes. While there are extraordinarily talented students from all backgrounds who succeed in MOOCs, those from more affluent and better-educated neighbourhoods are more likely to enrol and succeed in these courses. Moreover, the relationship between socioeconomic resources and course success is strongest among teens and college-aged students, exactly the ages where we might hope that online courses could provide a new entry point into higher education². While MOOCs have increased access and can be very valuable for informal learning, formal outcomes – the kind of outcomes employers are looking for - are still in line with the outcomes from more traditional education.

About MOOCs

More people signed up for MOOCs in 2015 than in the previous three years combined. In total, some 35 million registered for a MOOC, with *Coursera* (<https://www.coursera.org/>) securing 7 million new registrations in 2015, with this company now occupying some 50% of the MOOC market. *FutureLearn* (<https://www.futurelearn.com/>) is now the third largest MOOC provider - they secured growth of 275% in 2015. Around 1,800 new courses were announced in 2015, taking the total number of courses announced since the inception of MOOCs to 4,200³. Over 500 universities and colleges around the world, not to mention other organizations, are now offering MOOCs. *edX* has more than 90 global partners, including the world's leading universities, not for profits and

1 See <http://science.sciencemag.org/content/350/6265/1245>

2 <http://ww2.kqed.org/mindshift/2015/12/14/what-achieving-digital-equity-using-online-courses-could-look-like/>

3 Based on data available at *By the Numbers: MOOCs in 2015*.

institutions as members (<https://www.edx.org/>).

It is time for us to stop focusing on online learning as something we need to justify, though it is clear that a significant number of faculty in universities and colleges remain unconvinced. There is a substantial body of evidence showing that there are no significant differences in learning outcomes between online and face-to-face learners⁴.

It is also time to stop seeing MOOCs as the vehicle by which higher education in the developed world will be transformed and redesigned. While MOOCs may eventually be disruptive, especially now that MOOC providers have recognized that learners are seeking credit and credentials (hence the development of specializations, nanodegrees, and XSeries credentials by the major providers), conventional public universities and colleges are not yet transforming and changing their business models largely because of the way in which public funding, public policy and public systems work. There is clear pressure to change, but “transformation” is not a word with a high degree of currency in public policy-making circles.

What we should focus on is how MOOCs are supporting new developments in teaching and learning. Their impact on pedagogy is more important, at least at this time, than their potential impact on public education systems.

MOOCs and Pedagogy

There are five ways in which MOOCs are currently having an impact on teaching and learning:

1. Encouraging and enabling unbundling – the separation of design, development, deployment, delivery and support for learning.
2. Changing the nature of credit granting and credentials.
3. Supporting and accelerating the development of blended learning.
4. Supporting the development of learning portfolios.
5. Demonstrating the power of learning communities and peer tutoring.

MOOCs showcase the developments which online learning and other innovations have been encouraging for some time: they are not so much initiating these developments as acting as an accelerant for them.

Unbundling

“Unbundling” refers to the separation of the components of the learning and credentialing process. Who designs and develops programs and courses will not be the same as the group which then delivers these programs and courses. Who assesses learning and skills will be different from who delivers learning. Who provides credentials will differ from who assesses learning and skills. Learners will be able to “mix and match” the providers of content, the mentoring and coaching for mastery and then undertake assessment in dedicated assessment centres so as to secure recognition by professional bodies, credit coordinating agencies, universities and colleges. Given that quality no longer relates to “residency” (in Canada, 50% or more of a learner’s learning must take place at a given institution for that institution to provide degrees, diplomas or certificates) but to competencies and mastery, unbundling is the key to personalized learning routes and differentiation of providers.

Elements of unbundling are already occurring:

- **Course development separate from delivery:** MOOCs and open education resources make content freely available for learners to use to develop

⁴ See [No Significant Difference](#) provides the evidence base for verification of this claim.

knowledge, skill and competencies. Most large online learning institutions (e.g. Open University UK, Athabasca University, Thompson Rivers University, Western Governors University US, Indira Gandhi University, India) use course development teams, which then may not teach the courses they developed. MOOC providers are investing in instructional design and development so as to improve the efficacy and quality of the learning experience for learners, showcasing the difference design can make to the quality of learning. By doing so, they are showing faculty and students what a high quality course can look like.

- **Delivery Separate from Course Development.** The development of an adjunct faculty, peer support and tutoring and other systems of support provides for models in which a standard course is delivered in multiple sites to a very large number of learners (the largest MOOC in 2015 had some 440,000 learners⁵) by qualified individuals who did not develop that course. This is how all of the dedicated online distance learning institutions have achieved scale and how programs and courses could follow suit. MOOCs have shown how scale can be achieved.
- **Assessment Separate from Delivery.** The MOOC developments in Malaysia are important in terms of this component of unbundling. In Malaysia, 20 public universities developed a set of MOOCs (64 so far with more to come), which are fully integrated into their on-campus program offerings. Anyone can take a MOOC and then asked to be assessed on admission to the university they have chosen for their program studies. Malaysia is the first country in the world to implement a nationwide strategy that integrates MOOCs with on-campus classes⁶. Some professions (e.g. nursing) and other occupations (e.g. Power Engineers in the UK) already undertake assessment independent of the learning providers and assessment processes of institutions. The growth of competency-based certification is now being accelerated by the development of micro-credentials, nano-degrees, badges and other forms of skill and competency recognition. Skills assessment centres in Australia cover a range of different professions and trades. Western Governors University is based on this construct of outcomes-based assessment of learning – it is how they award degrees⁷.
- **Certification Separate from Assessment.** Some qualifications use credit coordination as the basis for the award of a degree or diploma. Athabasca University's Bachelor of General Studies⁸ is one such degree, but other similar prior learning and competency-based qualifications are available around the world. Western Governors University is based on this construct of outcomes-based assessment of learning – it is also how they award degrees⁹. There are emerging collaborative programs between a variety of institutions – up to five collaborating partners – where the learner completes their competency journey and then chooses which institution is the primary provider of their qualification.

A key component of unbundling, which MOOCs can be seen to be actively promoting, is the effective use of peer coaching and assessment. A typical MOOC's use of peer assessment involves: (a) the use of common rubrics; (b) the random distribution of learner's work to peer raters and assessors; (c) written

5 [Understanding IELTS: Techniques for English Language Tests](#) course, taught by the British Council.

6 The government aims to teach 15 per cent of all public university courses online as MOOCs by the end of 2016, increasing to 30 per cent by the year 2020.

7 For a description of the work of WGU, see <http://teachonline.ca/sites/default/files/contactNorth/files/pdf/publications/wgu.pdf>

8 For details of this degree see http://calendar.athabascau.ca/undergrad/current/page03_07.php

9 For a description of the work of WGU, see <http://teachonline.ca/sites/default/files/contactNorth/files/pdf/publications/wgu.pdf>

feedback and comments on each work assessed – what is often called “coaching through the script”; and d) peer ratings and an indication of how this rating “sits” (average or median) with all ratings provided to all learners. Some have suggested a range of modifications to this work (Suen, 2013)¹⁰, including a Calibrated Peer Review™ system¹¹. While it is currently the case that those MOOCs which make the most extensive use of peer review and assessment have the lowest completion rates (Suen, 2013), the extensive use of these methods is triggering interesting developments of peer-based coaching and mentoring and peer assessment in post-secondary education generally (Lawrence and Zollinger, 2015)¹².

The emergence of unbundling is not due entirely to MOOCs – it has been taking place for many years. But MOOCs are accelerating the process of unbundling and are showcasing the power of scale. Given that many colleges and universities are struggling financially¹³, including dedicated distance teaching institutions¹⁴, getting to scale is an attractive proposition if revenue can be attached to the large learner numbers. Micro credentials and assessment seem to provide a route to leverage MOOCs for institutional development.

One observation rarely made with respect to unbundling is that these developments accelerate innovation for each “bundle” of activity – design, development, deployment, delivery, assessment, and credentials. Rather than having to create a comprehensive system level innovation, breakthroughs and disruption can occur at the level of one or more components of this system.

Changing the Nature of Credit Granting and Credentials

There are two kinds of assessment involved in any course experience. Assessment *for* learning focusing on whether or not the learner is making progress and mastering the knowledge, skills and competencies they need so as to benefit from their learning. Assessment *of* learning is a way of testing what the learner knows in order to finalize their learning experience and, in many cases, award credit.

What MOOCs have identified is that not all learners are interested in the assessment *of* learning – summative assessment and only a small percentage are interested in assessment *for* learning. Some learners just want access to quality, intentionally designed and credible learning resources.

Indeed, we need to start thinking about the different needs of different learners in the world, which demands that all of us be life-long learners. The following four kinds of learners have very different needs from the learning we provide, as the table seeks to show:

We can take this understanding of different learners and their needs a step further, seeking to elaborate what we understand to be the implications of their needs.

10 Suen, H.K. (2013) Peer Assessment in MOOCs. Educause. See https://net.educause.edu/ir/library/pdf/ELI139_OL14.pdf

11 Developed by the University of California, see <http://cpr.molsci.ucla.edu/Home.aspx>

12 Lawrence, J., & Zollinger, S. W. (2015). Assessment Matters: Enriching Design Education Through Online Peer Critique. *The Journal of Effective Teaching*, 15(2), 78-86.

13 Moody’s Investors Service, which rates over 500 universities in the U.S., including 230 four-year public schools and close to 275 private colleges and universities, found that public institutions have a total of \$125 billion in outstanding debt. Private college/university debt stands at \$85 billion. Moody’s is also forecasting that operating revenue growth will slow below 3%, at the same time that expenses are expected to increase at around 7%. Although state government funding is growing modestly, it is still below pre-recession levels and now comes with a lot of strings attached.

14 Athabasca University (Canada) and the UK Open University are both experiencing financial difficulties, in part because of a reduction in the buying power of operating funds provided by government but mainly from shifts in the pattern of student registrations.

Continuing Learners	<ul style="list-style-type: none"> • Communities of practice supported by intense workshops, online courses, short courses, project-based learning • CPD a requirement for many professions / jobs – e-portfolios track activity • Nano-credentials, badges and certificates of competence/completion
Concentrated Learners	<ul style="list-style-type: none"> • Looking for fast track qualifications, earned through flexible approaches to learning • Learner mobility key to this work – both within a province, between provinces and globally • Intensive growth of PLAR, WBL accreditation and other forms of assessment • More adaptive learning to personalize the experience • Faculty become mentors, coaches and guides, not instructors, as a result of high quality access to OER programs / courses • Shorter degree and credential programs • Anytime, anywhere assessment for credit
Committed Learners	<ul style="list-style-type: none"> • Varied programs and access, but focus is not on time in class or time served, but competencies and outcomes • Assessment centres key to understanding whether an individual has or has not mastered the skills / competencies required • Badges, certificates and other forms of recognition • Strong links to employer expectations and skill requirements – joint assessment between learning providers and employers
Casual Learners	<ul style="list-style-type: none"> • 365 days a year admission to short, medium and long courses • OER and self-managed learning • Peer networks for peer support – leveraging social media and collaborative software • Access to coaching / mentoring for a fee • Significant use of learning applications and short, intense learning

Table 1: Different Learning Agendas for Different Types of Learners

Each of these four kinds of learners is seeking different kinds of learning experiences and different kinds of assessment and recognition. Each requires different kinds of support and service.

This is what the major MOOC providers (and others) have started to realize. There are now 109 credentials (83 specializations, 13 X-Series MOOCs, 12 nanodegrees and 1 HBX Core), which would be attractive to some categories of learners. There are also a growing number of colleges and universities which will undertake proctored examinations for MOOC completers, which converts MOOC learning to formal credit. Arizona State, the University of Illinois – Urbana-

Champaign, Excelsior College, Georgia State University, the University of Alberta (Canada) and several others are all making this option available.

MIT now permits students to obtain 50% of their program in supply chain management through MOOCs with assessment, provided they take the remaining 50% on campus. Georgia Tech has a full master's program in computer science that can be taken entirely by MOOCs. This program is not open to anyone – students must go through Georgia Tech's application process and pay to enrol – but this MOOC-based master's degree is a game changer.

Another game changer would be the successful launch of a global transfer credit system for MOOCs. This is something under active discussion by Delft University of Technology, Swiss Federal Institute of Technology in Lausanne (EPFL), the Australian National University, the University of Queensland, the University of British Columbia and Boston University¹⁵.

These new ways of offering credit are enabling greater access, increased learner mobility and greater flexibility for learners in securing the credentials they may need for employment and socio-economic mobility.

But there is more. Quickly developing is a new set of credentials to recognize knowledge, competency and skills. From badges which use the Mozilla open technical standards, specializations, nanodegrees, XSeries and HBXCore. Learners have more options and choices about how they demonstrate mastery.

Let us understand these new kinds of credential opportunities.

- **Badges:** Launched in 2011 using an open architecture and standards, badges have been slowly gathering pace since. They are based on an agreed competency specification and process of assessment. Once a person masters a competency and has been assessed and successful, a badge showing their mastery is placed in their portable e-portfolio. Learners can make their portfolio available for review by prospective or current employers or educational providers. While some are trying to commercialize this development¹⁶, most are seeking to leverage these developments to advance competency-based learning and credentials. More than 14,000 independent organizations are already issuing badges to document formal and informal learning and workplace training, providing more ways for learners and workers to get verifiable recognition that can lead to increased access to opportunities for further education and career success. The McArthur Foundation is supporting a network of such organizations – the Badge Alliance¹⁷ – to leverage and accelerate these developments. Badges are now being offered through MOOCs by George Washington University and others.
- **Specializations:** Coursera began specializations in 2014 and now has some 83 specializations. They consist of a group of related courses designed to help learners deepen expertise in a subject. According to Coursera, 1.5 million Coursera learners have signed up for courses that are part of specialization. To earn a specialization, learners need to achieve a verified certificate in every course that is part of a specialization. The final step is a capstone project – a project that demonstrates the knowledge acquired during the specialization. The cost of a specialization lies in the range of \$150 – \$500US. An example would be the Methods and Statistics in Social Sciences specialization developed by the University of Amsterdam, which comprises four courses and a capstone project.

15 Reported in Times Higher Education Supplement, January 4th 2016 <https://www.timeshighereducation.com/news/moocs-international-credit-transfer-system-edges-closer>

16 Pearson has launched an e-portfolio called Acclaim from which it is not possible to export badges once deposited. A critical review is available here: <http://dougbelshaw.com/blog/2016/02/11/pearson-open-badges/>

17 See <http://www.badgealliance.org/>

- **Nanodegrees:** Udacity began offering nanodegrees in partnership with companies and major employers in June 2014, partnering with companies such as Google, AT&T, Tata and others to create custom MOOCs which meet the competency and skill needs of these employers. All of the nanodegrees are in ICT at this time, but there is nothing preventing these being offered in a range of other subjects. Some of these nanodegrees come with job guarantees.
- **XSeries MOOC:** Launched by MIT through edX in 2013, each XSeries will cover content equivalent to two to four traditional residential courses and take between six months and two years to complete. In a break from previous offerings, the XSeries sequences are composed of shorter, more targeted modules without one-to-one residential course equivalents. These programs will offer certificates of achievement but not academic credit. Many have been developed for specific industrial needs (e.g. supply chain management), but are not linked to particular companies.
- **HBX Core:** This is the Harvard Business School offering a credential of readiness (CORE). Irrespective of the background of the learner, all will take three modules: Business Analytics, Economics for Managers, and Financial Accounting. The aim is to enable basic competency across these three components of business practice. HBX Core takes ten weeks of study, costs \$1,800US (\$3,600 if credit is required – eight university credits are available).

We can expect to see more credentials and platforms linking badges, nanodegrees and other forms of recognition of learning through e-portfolios (see below). As competency-based learning gathers pace; as more employers look less at degrees; as statements and demonstrations of competency are looked for; these forms of recognition for learning will grow in scope, quality and relevance.

What has not yet happened, but will need to happen, is the needed renaissance in assessment (Hill and Barber, 2014)¹⁸. Rich assessments, based on demonstrating understanding, showing skills in action through simulation or immersive challenges, will be needed to further refine the move towards a more holistic form of skills assessment.

Supporting the Development of Blended Learning

Paul Stacey (2013)¹⁹ offers an insightful overview of the pedagogy of different kinds of MOOC offerings. He contrasts the early connectivist cMOOCs, which focused less on knowledge transfer and more on the co-creation of knowledge and community-based learning, with the massification MOOCs which, in his view, took a step backwards pedagogically and focused more on getting knowledge to as many people as possible. He suggests that edX and Udacity, for example, have not used our rich understanding of learning as a process, but have merely replicated what happens in classrooms in an online environment; in other words, old wine in a new bottle. He supports Terry Anderson's view that xMOOCs – the name given to massification MOOCs – are essentially objectivist and behaviourist in their approaches to learning and lack any sense of “presence” from either the person or the professor or the persons of learners. Most MOOCs do not foster relationship building and it is, in Stacey's view, relationships which form the basis for learning.

18 Hill, P. and Barber, M. (2014) Preparing for A New Renaissance in Assessment. See <https://research.pearson.com/articles/preparing-for-a-renaissanceinassessment.html>

19 Stacey, P. (2013) The Pedagogy of Moocs. Presentation at the University of Cape Town, 17th October 2013. Available at http://www.slideshare.net/Paul_Stacey/uct-pedagogyof-moocs?qid=52ce1e2b-bad9-4d6f-9918-bd22dcdadc2c&v=&b=&from_search=1

Yet many who teach in higher education have seen MOOCs as opening up the pedagogy of the classroom. The extensive use of short video sequences, of simulation, or modular approaches to learning, of peer coaching, of intense quizzes are all helping instructors teaching in more traditional settings develop a new confidence in experimenting with new approaches to classroom teaching. Just as one impact of the Open University in the UK was to raise the bar in terms of the quality of learning materials in higher education.

In particular, the approach in some courses offered by FutureLearn appears to embrace elements of the cMOOC, even though they are being offered on a large scale. This is the basis of an important presentation by Rebecca Sharples and Mike Ferguson (2014)²⁰, which points to a MOOC-based participatory learning design. Some courses offered by FutureLearn are based on four key pedagogic frameworks: (a) learning as conversation (based on Gordon Pask, Diana Laurillard's work); (b) visible learning (based on John Hattie's work); (c) narrative learning; and (d) social network learning. For many who teach in traditional environments, these approaches demonstrated by example in the MOOCs which use these methods, have enabled them to see and engage in a new form of learning design and has supported their own risk taking.

Blended learning is the new normal in higher education. It represents a willingness to explore new approaches to teaching and learning, leverage open education resources and seek to foster new kinds of learner engagement. A frequent request from faculty, especially new faculty, is to "show me" how this works in the subjects they teach. Some MOOCs are meeting this need.

Supporting the Development of E-Portfolios

Learner mobility is a major tenet of public policy and is fast emerging as a key issue for the future of higher education. With a growing number of trans-national qualification agreements (e.g. EQF, South African Development Community Qualifications Framework, Transnational Qualifications Framework of the Small States of the Commonwealth, Caribbean Qualifications Framework, Association of South Asian Nations Framework Agreement)²¹, many of which are now reciprocal, learners have greater mobility now than they have ever had. Further, national and regional systems of credit transfer, work-based learning accreditation and prior learning assessment and recognition (PLAR) are all making the life of registrars more difficult. Securing transcripts, interpreting transcripts, assessing equivalencies, valuing credit and credentials is now a complex task.

The idea of the ePortfolio is not new; the first examples began to emerge in the mid 1990s. What is new is their more extensive use. In November 2015, for example, Cal State rolled out a massive initiative to make ePortfolios available to more than 3 million students and alumni. Also last month in the US, 80 of the country's most selective institutions – including the Ivy League schools, Stanford, University of Chicago, Amherst, Swarthmore and Williams – announced a plan to offer free ePortfolios to high school students so that they can begin tracking their skills, achievements and work and engage in reflective learning. It is estimated that, worldwide, over 30 million students now maintain an e-portfolio.

Learners enrolled in MOOCs can and have increased the value of their learning experience by using an ePortfolio. ePortfolio accounts are available for individuals anywhere; the ePortfolio providers host the functionality and data on their own servers. Many ePortfolio providers also offer simple ways of

20 Ferguson, M. and Sharples, M. (2014) Innovative Pedagogy at Massive Scale – Teaching and Learning in MOOCs. ECTEL 2014 Presentation, Graz, Austria. Available at http://www.slideshare.net/sharplem/innovative-pedagogy-at-scale-ectel?qid=cfa17384-bf1f-45b1-94ac-6ceffa9a705f&v=&b=&from_search=7

21 For a review and analysis, see [http://www.etf.europa.eu/webatt.nsf/0/720E67F5F1CC3E1DC125791A0038E688/\\$file/Transnational%20qualifications%20frameworks.pdf](http://www.etf.europa.eu/webatt.nsf/0/720E67F5F1CC3E1DC125791A0038E688/$file/Transnational%20qualifications%20frameworks.pdf)

using a smart phone or tablet to capture evidence and to upload the evidence to an individual ePortfolio. Aside from helping to get credit for the learning accomplished in a MOOC through PLAR, ePortfolios can also expand the learning within the ePortfolio itself. Being able to look back at your own work in your ePortfolio and then integrate that work, or assess it, or see your own changes over time, is in itself a learning experience. MOOC learning can therefore be extended by reflection within an ePortfolio.

The ubiquity of ePortfolios means that, for the first time, student work is now machine-readable. Employers can look beyond the certificate, diploma or degree to spot patterns across student work, assess its relevance to workplace demands and use predictive algorithms to parse competencies and match candidates to job descriptions. Newfound data from ePortfolios also allows employers to identify future talent, develop a candidate pipeline and begin meaningful engagement through internships to evaluate student work firsthand.

We are starting to see ePortfolio and MOOC integration in some of the more recent MOOC offerings²² (there is even a MOOC on how to develop and use ePortfolios²³). Learners themselves are making this happen, using simple and effective low cost tools²⁴.

Demonstrating the Power of Learning Through Communities of Practice

Not all MOOCs engage their learners in active and mindful communities of learning. Not all are designed in such a way as to leverage the expert knowledge of learner peers or to co-create new knowledge or refine existing knowledge through the crowdsourcing of knowledge, understanding and experience. But some are.

edX has enabled self-managed study groups to form and is encouraging them to develop and deepen their understanding of the learning in which they are actively engaged. Some of these groups then arrange meet-ups (in person or virtual). To give one example, in Düsseldorf (Germany), a local MOOC group taking a course in entrepreneurship arranged for local experts and guest speakers to engage in brainstorming sessions to improve entrepreneurship in Düsseldorf²⁵. As a result, Düsseldorf MOOC participants developed a pitch clinic (a kind of Dragons Den) for local start-ups to explore solutions for the challenges of start-ups and maturing entrepreneurs from a Düsseldorf perspective. Coursera, the largest provider of MOOCs, has a Learning Hubs Initiative, which establishes physical spaces for learners to access their classes. Coursera reports that their Learning Hubs participants show higher completion rates ranging from 30 - 100% vs. the 6.8% Coursera-wide average.

A number of the contributors to a recent collection of papers (Mesquita and Peres, 2015)²⁶ suggest that MOOCs, especially those offering certification or new forms of credit recognition, will increasingly make use of effective practice from the research and experience of communities of practice, both to strengthen learning and the capacity to learn, but also to increase completion rates. In some cultures, this will be especially important where sharing and collaboration are normative features of that culture.

22 Bonk, C.J. *et al* (2015) MOOCs and Open Education Around the World. London: Routledge/ Taylor & Francis.

23 See <http://www.openeducationeuropa.eu/en/news/europortfolio-and-uoc-announce-launch-eportfolio-self-development-study-mooc-emma-platform>

24 A catalogue of these tools is available at <http://epac.pbworks.com/w/page/12559686/Evolving%20List%20of%20ePortfolio-related%20Tools>

25 For more, see http://www.huffingtonpost.com/michaelgoldberg/moocs-and-meetups-together_b_6538414.html

26 Mesquita, A. and Peres, P. [Editors] (2015) *Furthering Higher Education Possibilities Through Massive Open Online Courses*. Hershey, PA: IGI Global.

Intensive Investment Needs to be Made in Learning Design

It cannot be claimed that MOOCs represent an innovative new pedagogy, even if they do present a new way for higher education to “do business”. Though some MOOCs do have elements of an emerging pedagogy and present some innovative approaches to the teaching of a range of subjects. One reason they are important is that they are showcasing to faculty members around the world how teaching and learning can be conceived and executed in a way that better leverages technology. This in itself is important.

What is clear is that extensive investment needs to be made in learning design for MOOCs and that such design needs to take full account of not only what we now know about adult learning, including recent insights from neuroscience, but also what we know about communities of practice, crowdsourcing of ideas and insights and the emerging lessons from innovative assessment. Everywhere in the practice of MOOC design and deployment, there are pockets of innovation: we now need to connect these pockets and offer the design framework which would increase further learner engagement and completion.