

Reflecting on the Impact of the Open Education Movement

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Abstract: This paper critiques the rise and impact of the open education movement, focusing in particular on Higher Education. It considers the impact of adopting more open practices on learning, teaching and research. In terms of the impact on learning it describes three aspects: Open Educational Resources, e-textbooks and Massive Open Online Courses. In terms of the impact on teaching it describes three frameworks which can guide the design process: the 7Cs of Learning Design framework, the SAMR model and the ICAP framework. Finally, it considers the impact on research. The paper concludes by considering the barriers and enablers associated with adopting more open practices.

Keywords: Open education movement, Open Educational Resources, e-textbooks, Massive Open Online Course, 7Cs of Learning Design framework, SAMR model, ICAP framework

Introduction

Digital technologies offer a rich variety of ways in which learners, teachers and researchers can interact with multimedia resources and numerous channels for them to communicate and collaborate with their peers and the broader global community. Although the concept of affordances is subject to differing interpretations (Aagaard, 2018), one of the key and most commonly accepted affordances (Gibson, 1977; Gibson, 1979) of digital technologies is that they enable more open practices.

This paper will consider the impact of adopting more open practices on learning, teaching and research. It aims to provide a reflection on the current status and impact of the open education movement. It is now 16 years since the emergence of the open education movement and the promotion of Open Educational Resources (OER) by organisations such as UNESCO and the William and Flora Hewlett Foundation. The open education movement sits within a broader spectrum of open initiatives; such as open universities, the open source movement and practices associated with Web 2.0 technologies (Weller, Jordan, De Vries & Rolfe, 2018). Weller et al. (2018) suggest there are a number of principles associated with open practices, including: freedom to reuse, open access, free cost, easy use, digital/networked content, social/community-based approaches, ethical arguments for openness, and openness as an efficient model. Consistent with these principles open education can be defined as:

Resources, tools and practices that employ a framework of open sharing to improve educational access and effectiveness worldwide (Open Education Consortium, n.d.)



Weller, Jordan, DeVries and Rolfe (2018) state that open education is an evolving term that covers a range of philosophies and practices aimed at widening access to education for those wishing to learn, with the current focus predominantly on practices based around reuse and sharing.

Open practices have many facets and are complex, they are not new but are having an increasing impact in education as a result of new digital technologies and in particular social media. There is a lot of rhetoric around the potential of open practices and naïve assumptions about their impact, but it is important to caution against this; they are not inherently good in themselves but more so with how they are appropriated. In other words, the nature of and benefits of open practices depends on the context, i.e., how they are applied and implemented. Cronin (2017) argues that the use of open practices by learners and educators is complex, personal, and contextual; it is also continually negotiated. Higher Education institutions require collaborative and critical approaches to openness in order to support academics, students, and learning in an increasingly complex Higher Education environment. Olcott (2013) argues that openness and open education needs to be viewed along a continuum with varying degrees of openness and access to knowledge as the guiding core principle.

The OpenEdOz project identified a number of benefits of open education (OpenEdOz, 2016). Firstly, there are economies of scale through collaborative co-production of learning resources. Secondly, there are opportunities to raise the quality of learning at decreased time and financial cost. Thirdly, they enable provision of learning materials that are richer and more appropriate to the contexts and styles of learning of an increasingly diverse student community. Fourthly, there are opportunities to provide learning to disadvantaged communities globally and to remote and regional areas. Fifthly, they can promote greater collaboration between universities in fostering peer review and collegial development of learning materials. Sixthly, when used appropriately, they facilitate greater levels of transparency into the teaching process.

The Impact on Learning

To date the open education movement has had an impact on learning in three main ways: the creation and use of OER by teachers and learners, the use of e-textbooks, and engagement in Massive Open Online Courses (MOOCs).

Open Educational Resources

Open Educational Resources can be defined as:

Teaching, learning or research materials that are in the public domain or released with an intellectual property license that allows for free use, adaptation, and distribution (UNESCO, 2011).

Knox (2013) traces key OER initiatives starting with the original MIT OpenCourseWare project in 2001, along with relevant policy initiatives and guidelines. He suggests that these high-profile initiatives are representative of an apparent commitment and enthusiasm towards technology within the open education movement. However, he goes on to argue that despite the centrality of networks, systems and software, the technologies associated with open education appear to be rarely subjected to in-depth consideration, beyond the analysis of user interpretations.

Wiley (2007) developed the 4Rs framework for thinking about the bundle of permissions around use of OER; namely reuse, revise, remix, and redistribute. These 4Rs are the ways in which OER can be used:

- *Reuse* – use the work verbatim, just exactly as you found it
- *Revise* – alter or transform the work so that it better meets your needs
- *Remix* – combine the (verbatim or altered) work with other works to better meet your needs
- *Redistribute* – share the verbatim work, the reworked work, or the remixed work with others.

He argues that there are two criteria associated with OER: firstly, free and unfettered access to the resource, and, secondly, whatever copyright permissions are necessary for users to engage in the 4R activities. He later added a 5th R: Retain – the right to make, own, and control copies of the content (Wiley, 2014).

OER were believed to provide economies of scale as the same resource could be reused in a variety of different teaching contexts and provide exemplars of good practice to help academics improve their teaching. Baranuik (2008) lists the following as the principles underpinning the open education movement: that knowledge should be free and open to use and reuse, that collaboration should be easier, that individuals should receive kudos and credit for contributing to education and research, and that concepts and ideas are linked in unusual and surprising ways and not in the simple linear forms that today's textbooks present.

There was a naïve assumption that simply making OER available in repositories would mean that they would be used by teachers and learners; however, evaluation of early OER initiatives such as the Open University UK's OpenLearn repository showed that this was not the case as take-up by teachers and learners was low (McAndrew, 2006; McAndrew, Inamorato dos Santos, Lane, Godwin, Okada, Wilson, Connolly, Ferreira, Buckingham Shum, Bretts & Webb, 2009; Lane and McAndrew, 2010). Some years on this is still the case but there is now a better understanding of the barriers to using OER (Ehlers & Conole, 2010; de Hart, Chetty & Archer, 2015). To address this the OPAL initiative looked at how OER were being produced, managed and reused and introduced the concept of open practice (Conole, Ehlers, Munding, Inamorato dos Santos, Connelly, Koskinen, Kairamo, Nozes & Carneiro, 2010). Ehlers and Conole (2010) defined Open Educational Practices (OEP) as:

The use of Open Educational Resources for teaching and learning in order to innovate the learning process.

This definition includes the creation, use and repurposing of OER and their adaptation to the contextual setting. OEP can also include the open sharing of teaching practices and aims to raise the quality of education and training and innovate educational practices on an institutional, professional and individual level. Cronin and MacLaren (2018) provide an up-to-date authoritative account of the different definitions of OEP. They state that conceptualisations of OEPs vary widely, ranging from those centred primarily on the creation and use of OER to broader definitions of OEP, inclusive of but not necessarily focused on OER. The latter encompasses open content but also allow for multiple entry points to, and avenues of, openness.

E-Textbooks

Uptake and use of iPads, tablets, e-book readers and smart phones has rapidly increased in recent years, which is having an impact on how learners learn. E-textbooks or Open Digital Textbooks (ODTs) are a specific type of OER. Many courses, particularly in the United States (US), have a dedicated textbook. Increasingly paper-based textbooks are being replaced by e-textbooks, as evidenced by Allen and Seaman (2016). E-textbooks are more flexible than paper-based textbooks in a number of respects: the learner can search for keywords, highlight and annotate text, interact with multimedia resources and bookmark pages. A number of authors argue that ODT are beneficial because of their flexibility, accessibility, interactivity, and extensibility (see, for example, Daniel & Woody, 2013; Murray & Perez, 2011). However, Gu, Wu and Xu (2015) argue that the promise of the potential of e-textbooks has not yet been realised; issues around screen resolution and licensing restrictions are barriers. There is a bewildering array of e-textbook formats, but the most common are TEXT, HTML, CHM, PDF, and EPUB.

deNoyelles, Raible and Seilhamer (2015) undertook a two-year study of students' use and perception of e-textbooks. They confirm that the use of e-textbooks is on the increase. Lower cost and convenience are the top reasons students purchase an e-textbook, not the interactive features designed to enhance learning. They also found that the teacher's role over the two years of the study had not fundamentally changed; suggesting a need for further Continuing Professional Development (CPD), including increased awareness, instruction and active modelling. To give a flavour of some of the current e-textbook research and initiatives a number of case studies are described.

One of the earliest e-textbook initiatives was BCCampus, which began in 2012 (Burgess, 2017). It aimed to create a collection of open textbooks aligned with the top 40 highest-enrolled subject areas in British Columbia. Currently there are over 230 ODT associated with BCCampus. Burgess argues that in addition to the financial savings the project has contributed to the wider acceptance of OER across the institution.

The Ohio e-textbook pilot project enabled schools to pilot digital texts and electronic educational content in the classroom, as well as providing professional development for teachers on how best to utilize digital content and mechanisms to share lessons learned with other schools across the state (Kasich & Carey, 2015). The project found that the benefits of using digital content include:

- greater student engagement in learning
- improved technology skills for students
- access to updated curriculum
- opportunity to be more innovative in the classroom
- improved technology integration skills for teachers
- improved quality of instructional materials
- opportunity to differentiate and personalise learning.

The project found that the challenges of using digital content include:

- not all students have access to computers and the Internet at home
- balancing instructional time constraints with the time to use the digital content
- concern about the reliability of the technology

- not enough time to implement adequately and not being able to provide enough computers/devices with Internet access for students to use
- instructional time constraints
- lack of teacher interest and buy-in
- access to devices
- students with limited access to the Internet at home.

The UK Open Textbooks project is investigating the viability for UK Higher Education Institutions to publish open textbooks by testing two models — the OpenStax and the OpenTextbook Network models (Kernohan & Rolfe, 2017; Marques, 2017). Kernohan and Rolfe argue that the increased interest in the use of e-textbooks is in part related to the spiralling cost of textbooks; this is particularly problematic in the US where courses typically have a recommended textbook, which essentially is a required purchase or is incorporated into students' fees.

Brown, Costello and Nic Giolla Mhichill (2018) report on research in progress investigating the current and intended future use of ODT in Irish Higher Education. Early findings suggest that e-textbooks have not featured predominately in Irish Higher Education policy texts. They argue that there is a significant gap in understanding of the adoption patterns of use and perceived advantages and disadvantages of ODT in Irish Higher Education.

The LATIn American Open Textbook Initiative (LATIn) aimed to help solve the problem of the high cost of textbooks for higher education. The main goal was the creation of a supporting architecture, methodologies and policies for the dissemination of cooperative open textbooks for higher education, customized specifically for the region (Ochoa, Silveira & Sprock, 2011). A key issue in South America is access to books. Two factors deter students from having access to printed textbooks: price and content relevance. In addition, many families cannot afford to spend money on textbooks so students resort to photocopies (Darnalt, 2014). Furthermore, literacy levels are low and books are considered a luxury item.

Inamorato dos Santos, Nascimbeni, Bacsich, Atenas, Aceto, Burgos and Punie (2017) report on an EU-wide overview of open education. They state that open educational policies in Europe aim to stimulate open and flexible learning in order to provide European citizens with the skills needed in the 21st-century economy and society, and to raise the profile of innovative ways of learning and teaching through ICT. They stress that embedding ICT and OER in education will increase both the efficiency and fairness of education and training in Europe. Their report identified four types of policies in relation to open education:

- policies focusing specifically on opening up education through the promotion of open educational resources (OER) and open educational practices (OEP)
- policies relating to general ICT (information and communication technologies) for learning with some open education component
- comprehensive strategic educational policies with some open education component
- policies designed as National Open Government Plans with some open education component.

Inamorato dos Santos et al. (2017) cite the OpenEdu Framework (Inamorato dos Santos, 2016), which consists of six core dimensions of open education (Access, Content, Pedagogy, Recognition,

Collaboration and Research) and four transversal dimensions (Strategy, Technology, Quality, Leadership).

Massive Open Online Courses

The first Massive Open Online Course (MOOC) (Connectivism and Connective Knowledge) was developed and delivered in 2008 in Canada. The aspiration behind the course was to enable networked learning adopting Siemens (2005) connectivist learning principles. Since then there has been a proliferation of MOOCs most of which arguably reflect a more didactic, individualist approach centred around content and quizzes. Jansen (2018) argues that MOOCs are offered online only, providing massive and open learning opportunities for all, promoting engagement in the knowledge society. He goes on to state that MOOCs, and open education in general, are providing new learning opportunities for millions of people. For example, Class Central (2018) estimates that in 2017 almost 80 million people worldwide registered for a MOOC. Although still the subject of considerable debate MOOCs are a significant innovation in education, and increasingly a lever for innovation in mainstream degree education (Brown, 2018a). It is expected that MOOCs will have an impact on the further development of formal higher education and CPD, as well as in opening up education more generally.

In the initial phase of development, Yuan and Powell (2013) speculated that MOOCs offer the opportunity for massification of courses, which in turn generated significant interest from governments, institutions and commercial organisations. They argued that the promise of MOOCs is that they provide free access to cutting-edge courses that could drive down the cost of university-level education and potentially disrupt existing models of Higher Education. Since this time a wealth of literature has been published offering insights into the motivations for learners, which include: supporting lifelong learning or gaining an understanding of a particular subject, with no particular expectations for completion or achievement; fun, entertainment, social experience and intellectual stimulation; convenience, often in conjunction with barriers to traditional education options; and to experience or simply explore online education.

Brown (2018a) argues that MOOCs are a complex and multi-faceted phenomenon. He identifies three phases of MOOC development: MOOCs for marketing, MOOCs for lifelong learning and MOOCs for credit and CPD pathways. Brown argues that, at least in Europe, institutions committed to innovating with and harnessing the potential of MOOCs are increasingly:

- looking at ways of integrating MOOCs into the learning experiences of campus-based students
- experimenting with MOOCs to push the boundaries and design features of more common virtual learning environments (VLEs)
- seeing MOOCs as a means of increasing the level of choice and variety of course offerings for all students
- taking advantage of MOOCs to help promote readiness and the academic capital of prospective students
- integrating MOOCs as part of a strategy to internationalise the curriculum
- exploring ways of offering scholarships for MOOC completion to international students living in developing countries

- using data collected through MOOCs to build institutional capacity and capability in the area of learning analytics
- adopting MOOCs as part of a wider dissemination plan for major research projects
- using MOOCs as a resource and opportunity to promote effective online learners as an important outcome in itself
- exploring the advantages of closer collaboration with other institutions offering MOOCs on the same platform, including conjoint degree programmes.

The Impact on Teaching

Conole (2013) has argued that designing for learning in the context of the openness movement is the key challenge facing education today. To harness the potential of digital technologies for learning, teachers need to adopt new approaches to design. Learning Design as a research field has emerged in recent years and aims to help teachers make more pedagogically informed design decisions that make appropriate use of digital technologies. There are three aspects of Learning Design: guiding the design process, providing visualisations of the design, and providing mechanisms for teachers to share and discuss their designs (Dalziel, 2015). A number of frameworks for Learning Design have emerged in recent years; three of these relevant to fostering open practices are described here. Conole (in press) provides a more detailed account of Learning Design frameworks.

The 7Cs of Learning Design Framework

The 7Cs of Learning Design Framework emerged from empirical data on how academics design learning interventions. Interviews were held and academics were asked how they went about designing learning interventions, where they got inspiration and guidance, and how they represented and shared their designs. The data informed the development of the 7Cs of Learning Design Framework. Figure 1 shows the 7Cs Framework, each C has associated with it a set of resources and activities to guide the design process (Conole, 2015).

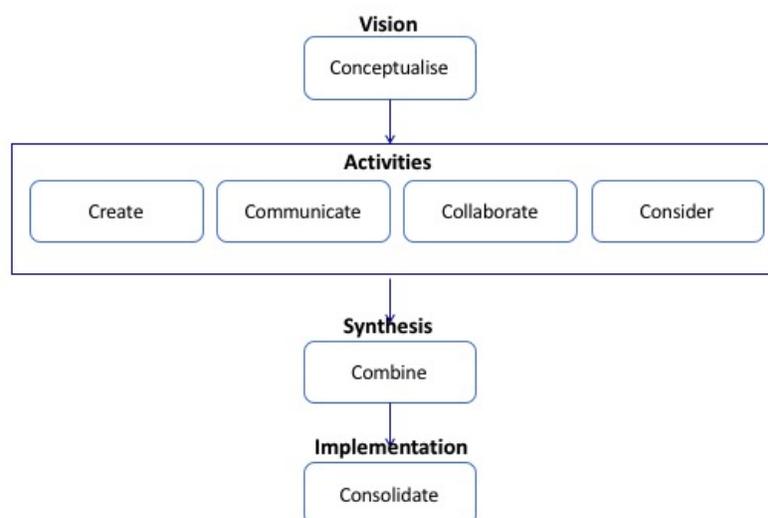


Figure 1: The 7Cs of Learning Design

The ICAP Framework

ICAP stands for Interactive, Constructive, Active, and Passive. It defines cognitive engagement activities on the basis of students' overt behaviours and proposes that engagement behaviours can be categorised and differentiated into one of four modes: Interactive, Constructive, Active, and Passive (Chi & Wylie, 2014). The ICAP hypothesis predicts that as students become more engaged with the learning materials, from passive to active to constructive to interactive, their learning will increase. Student engagement refers to whether students are:

- motivationally engaged (interested in content domain, pursue degree)
- behaviourally engaged (attend classes, do homework: broad behaviour)
- cognitively engaged (refers to use of strategies or to motivational constructs).

The SAMR Model

The SAMR model consists of four levels of technology integration (Puentedura, 2013):

- substitution: the technology provides a substitute for other learning activities without functional change
- augmentation: the technology provides a substitute for other learning activities but with functional improvements
- modification: the technology allows the learning activity to be redesigned
- redefinition: the technology allows for the creation of tasks that could not have been done without the use of the technology.

It provides a framework for designers to create optimal learning experiences. Learning activities that fall within the substitution and augmentation classifications are said to *enhance* learning, while learning activities that fall within the modification and redefinition classifications are said to *transform* learning. The particular value of the SAMR model is that it helps to make explicit the educational outcomes and level of transformation (or not) teachers aim to achieve as a result of the learning design process.

Impact on Research

Borgeman argues that the Internet can facilitate distributed, data-and information-intensive collaborative research (Borgeman, 2007a; Borgeman, 2007b). The open movement now provides researchers with access to literature in their field, a growing body of research data, and sophisticated research tools and services. They can collaborate with others around the world. Social and participatory media offer new mechanisms for researchers to communicate and disseminate their research and to engage in peer review and reflection. Borgeman argues that communication is the essence of scholarship, which is inherently a social activity, involving a wide range of public and private interactions within a research community (Borgeman, 2007a, Borgeman, 2007b). She argues that publication is part of a continuous cycle of reading, writing, discussing, searching, investigating, presenting, submitting and reviewing research. Today, digital technologies mean that researchers can communicate in a variety of more open ways with others and at a much larger scale than was possible before.

Weller (2011: 31-32) refers to Boyer's definition of scholarship (Boyer, 1990) in terms of:

- *Discovery* – This is the creation of new knowledge in a specific area or discipline. This is often taken to be synonymous with research. This is probably closest to the public conception of scholarship, as universities are often the sites of significant breakthroughs.
- *Integration* – This is focused on interpretation and interdisciplinary work. It is moving away from the pure, 'genesis' research of discovery. Boyer states that it is 'making connections across the disciplines, placing the specialties in a larger context, illuminating data in a revealing way and often educating non-specialists'.
- *Application* – This is related to the concept of service and can be seen as engagement with the wider world outside academia, which might include public engagement activities as well as input into policy and general media discussions. This can also include the time spent peer-reviewing journal articles, grant applications and sitting on various committees.
- *Teaching* – Much of the interpretation of Boyer can be seen as an attempt to raise the profile of teaching. He argues that 'the work of the professor becomes consequential only as it is understood by others. Yet, today, teaching is often viewed as a routine function, tacked on'.

He lists three characteristics of digital scholarship: (i) openness and sharing as a default, (ii) digital and (iii) networked, a global network of peers to generate and share ideas (Weller, 2011). He considers what these mean for digital scholarship and argues that new digital technologies enable researchers to do things differently. He cites the way in which Twitter, for example, can enable researchers to have access to immediate expertise.

Cronin and MacLaren (2018), drawing on Anderson (2009) and Weller (2011), argue that open scholarship is characterised as a 'new type of education and scholarship context', which seeks to maximise social learning, media richness, participatory and connectivist pedagogies, ubiquity and persistence, open data and research, and connections. They quote Weller's argument that a definition of the open scholar encompasses open digital identity, open networking practices, use of open tools, and open publishing.

Blogging, in combination with social media sites such as Twitter and Facebook, enable research findings to be shared with a far greater audience. Furthermore, there are opportunities for community engagement, for example, peers can comment on blog posts, make suggestions for improvement or point to related research. Sites such as Twitter and Facebook enable researchers to be part of a community of peers, sharing ideas, asking questions, or posting research findings. Tools like Twitter provide a valuable back channel to face-to-face conferences where participants can comment on and reflect on conference presentations and link to related research.

Open practices are challenging traditional publishing models; i.e., the tradition of publishing in closed, peer reviewed journals. We are now seeing a spectrum of publishing models from closed to completely open. Just recently the 'Plan S' and 'cOAlition S' has been launched. This is a coalition of national research funders, with the support of the European Commission, which have committed to accelerate the transition to open access (European Commission, 2018). Our own institution, Dublin City University (DCU), recently launched Ireland's first Open University Press in partnership with University College London (UCL). Increasingly there is anecdotal evidence that some academics are choosing to publish their research openly and refusing to review papers for closed journals. An

interesting approach is Hybrid Open Access, which is a publishing model where some articles are made openly available, against the payment of an Article Processing Charge (APC), while other articles remain closed access, and the journal as a whole subscription-based. Matthias (2018) states that several funders have introduced Open Access mandates, requiring beneficiaries to make their research outputs openly available within a certain time frame.

Barriers and Enablers

Open Educational Resources (OER) and Massive Open Online Courses (MOOCs) continue to offer significant opportunities for opening up education and to potentially support social inclusion and widening participation (Conole, 2012). UNESCO (n.d.) argues that education is a fundamental human right and therefore should be freely available. Despite the potential, in reality OER are not being used extensively by students or teachers, and there is still a concern that MOOCs are predominantly being taken by those who are already educated. More critical conceptions of digital literacies are needed to better harness the potential of OER and MOOCs to achieve the goal of education for all (Brown, 2018b). OER and MOOCs are examples of disruptive innovations (Bower & Christensen, 1995), which are challenging existing educational provision. Arguably, this is good in that institutional leaders need to think hard about what a student will gain by attending their institution and what the unique student experience will be. Finally, the longer-term transformative impact of OER and MOOCs will be limited unless they are more deeply embedded in institutional strategies, promoting Open Educational Practices (OEP).

The current reality is that inertia still exists in many traditional educational structures and a hesitance to engage in new open practices is more common than we typically like to admit. For research-intensive institutions teaching is the poor sister, with research practices still being privileged and rewarded. Furthermore, there is a lack of understanding and clarity of how to recognise learning through OER and MOOCs. Models are emerging, such as: digital badges, certificates of participation or achievement, and recognition through organisations like the OERu,ⁱ but despite early lighthouse projects these are still in their infancy.

An IPTS commissioned report, *OpenCred* (Witthaus, Inamorato dos Santos, Childs, Tannhauser, Conole, Nkuyubwatsi and Punie 2016), looked at models for recognition of non-formal learning through MOOCs. However, this work is still on the fringe of mainstream Higher Education. Another significant barrier is around pedagogies. Firstly, most OER and MOOCs do not make the underlying pedagogy explicit. The key point is that content is not neutral. Secondly, it is not clear what pedagogies are most appropriate for specific types of learners in particular educational contexts to support open learning. In terms of OER the following remain barriers to uptake: (i) the pedagogies of OER are not clear, (ii) the difficulty of repurposing, (iii) the lack of clarity of perceived benefits for specific disciplines, and (iv) a culture of academics wanting to create their own resources and reluctance to share more widely. For MOOCs we need to go beyond the two common extremes that continue to be widely cited—namely, xMOOCs – which are usually described as be linear, individually focused and didactic and cMOOCs – which are about learning in a networked, social context, promoting connectivist learning. Conole (2016) argues that this dichotomy is too simplistic and puts forward a 12-dimensional scale to describe MOOCs, to help better understand the many facets of this rapidly evolving subset of the openness movement. Finally, many academics remain

skeptical of the benefits of engaging with OER and MOOCs and more is needed in terms of engaging them in the pros and cons of wider implementation in their own disciplines.

A number of strategies can help embed open education through new digital technologies into practice. Firstly, incentives and rewards can be put in place both nationally and institutionally to celebrate the development of open practice innovations and technology-enhanced learning interventions. Secondly, appropriate CPD opportunities and support can be provided. This can include: workshops, learning and teaching conferences, show and tell sessions, informal brown bag lunchtime sessions to share practice (where academics discuss their teaching in an informal setting over lunch), learn about fairs (displaying learning and teaching innovations), and learn about guides on using different digital technologies, to name but a few. A key point is that such CPD needs to challenge the existing pedagogical beliefs underlying current educational practices. Thirdly, given the increasing importance of digital technologies in education, it is important to have senior management fully engaged, and those who have a good understanding of the potential of open practices and the implications for their institutions. The recent UK Teaching Excellence Framework (TEF) despite being criticized (*Times Higher Education*, 2018), is clearly an important driver for promoting and rewarding teaching. Fourthly, in the context of such external and institutional measures of teaching excellence open practices should be an integral part of the metrics. Fifthly, a pragmatic approach to promoting open practices should be adopted. Starting with helping academics make better use of OER within the core features and tools of the institutional Learning Management System (LMS) or Virtual Learning Environment (VLE). Evaluation of VLEs consistently shows that they are primarily used as content repositories (Farrelly, Raftery & Harding, 2018); relatively little use is made of the tools to promote open communication and collaboration, or more innovative assessment approaches.

For campus-based institutions more needs to be done to ensure the seamlessness between virtual and physical spaces. The Spaces for Knowledge Generation project (2011) has developed a set of seven principles for designing technology-enhanced learning spaces. Institutions also need to have in place policies on students bringing their own devices and should recognize the increasing importance of mobile devices for supporting learning anywhere and anytime. This also means approaches such as the flipped classroom (Reich, 2012) can be adopted, where students engage with content in advance, freeing up the classroom sessions for more active learning. Also, there is the increasing importance of social media to enable students to interact with their peers, their tutors and the wider community. Finally, one of the key benefits of involving students in promoting open practices is that they can provide a fresh perspective. Furthermore, as they are actively engaged with learning they can often provide novel insights into what is needed to open up the curriculum.

Conclusion

This paper has critiqued the emergence and development of the open education movement and considered the implications for, and impact on, learning, teaching and research. Despite early naïve optimism surrounding the potential of OER and MOOCs, the new reality of today's educational landscape is that digital technology has enabled new open practices; we are seeing a blurring of boundaries: formal/informal learning, learner/teacher roles, and virtual/face-to-face educational contexts. Open practices, particularly when framed in wider national and institutional policy initiatives, enable learners, teachers and researchers to be part of a global community of peers.

However, the question remains whether open practices will replace traditional educational offerings. In reality, it is more likely that there will be a spectrum of offerings from free OER and MOOCs right through to the Oxbridge one-to-one tutorial model. This spectrum means that students will be offered a rich range of educational experiences and they can make their choices based on the ways in which they perceive how they prefer to learn. In many respects this point recognises that despite our best efforts the learner is the one who ultimately chooses their own learning design or pathway. Building on this point we are also likely to see further unbundling of educational provision, where in the future learners may choose to pay or at least select specific components of learning such as: resources, support, guided learning pathways or accreditation (McCowen, 2017). Importantly, the language of openness and open practices can be used to conceal and/or promote *laissez faire* neo-liberal agendas related to promoting an open and global market for Higher Education (Brown, 2017). The point is that the openness movement is not entirely benign and some of the powerful change forces from a neo-liberal perspective may see students in the future choosing not to complete a full degree; instead, for better or worse, they may pay for: high quality resources, a guided learning pathway, support or accreditation.

While Olcott (2013) describes open education as a continuum, and Cronin (2017) suggests four different levels of open practices from nano to macro, we would argue that openness is fluid, constantly evolving and better understood using the metaphor of a kaleidoscope where different shapes, colours and patterns come together as visually attractive images but often unpredictable ways as a result of competing and co-existing perspectives. In order to critically read these perspectives and the images they produce when mixed together a type of double vision is required combining both a political and pedagogical lens. This bifocal lens endeavours to strike a balance between the language of opportunity, firmly anchored in the mission of equity and opening access, set against a deeper level of critique. On the one hand open education provides a real opportunity to reduce costs, enhance quality and address increasing global demand for higher education. On the other hand, arguably, the openness movement inhabits and traverses the contested terrain of globalisation, fast capitalism and neo-liberalism (Brown, 2016). In terms of our three case studies in the section on the impact of openness on learning, this kaleidoscope metaphor can be used to interpret:

- OER being seen as free resources through to OER as more of a new form of Open Educational Practice
- MOOCs as a marketing device through to MOOCs being a vehicle for transformation and innovation
- E-text books as a mechanism to reduce costs through to e-text books enabling new forms of pedagogy and innovative use of digital technology.

The important point is that from this multi-dimensional view of openness the movement can be seen as anchored in the principles outlined earlier in this paper but also a vehicle for promoting competing *laissez-faire* principles of individual freedom and the ultimate goal for some of an unrestricted global market for higher education. These competing worldviews raise some important questions: Who is telling the openness story and why? How are they telling the openness story? Whose story is not being told?

Finally, we have shown in this paper that OER and MOOCs are important as they get us to think more about the learner experience and they challenge traditional educational offerings. However, more needs to be done to increase the uptake and use of OER and MOOCs anchored within sound pedagogical models. We need to more deeply understand what new digital literacies are needed to harness the open practice affordances of new digital technologies, particularly in terms of achieving the goal of education for all. There remains a distinct lack of discourse on OER and MOOCs at the policy and strategy level and this urgently needs to be addressed if we are to truly promote the openness agenda. We also need to focus more on the development of senior educational leaders with an understanding of digital technologies and a vision for OEP. There are also financial implications; institutions need to understand why they are investing in OER and MOOCs and how to evaluate their efforts. Importantly, we are teaching students for an uncertain future, to do jobs that in many cases do not even exist today. Therefore, we need to go beyond knowledge recall to develop the skills and competencies they need for life-long learning in the 21st Century to be critical thinkers, critical consumers and critical citizens.

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Note

ⁱ <https://oeru.org/>