Open, networked and connected learning: Bridging the formal/informal learning divide in higher education

Catherine Cronin

Centre for Excellence in Learning and Teaching, National University of Ireland, Galway, catherine.cronin@nuigalway.ie

Abstract

In the age of 'networked individualism' (Castells, 2004; Rainie & Wellman, 2012) students enter higher education as networked individuals with extant and diverse informal learning practices, networks and identities. While higher education institutions typically focus on Virtual Learning Environments (VLEs) as the primary online hubs for students, students themselves use a wide range of online tools and resources for communicating, coordinating, collaborating and learning, i.e. building their own Personal Learning Environments (PLEs). While institutions and academic staff tend to see institutional VLEs and learner-chosen PLEs as separate entities, learners do not (Reed, 2013). Students often find that their informal learning practices sit uneasily within the formal education environments within which they study. Open education, particularly open educational practices (OEP), is one way that the formal/informal learning divide in higher education may be bridged. Advocates of open education highlight its potential to make education more inclusive and equitable. However, some critiques of open education view such claims as utopian, ignoring the workings of systemic power and privilege. This paper explores the formal/informal learning divide in higher education, the complexities and different interpretations of open education, and potential benefits for students and educators in bridging the formal/informal learning divide, i.e. working together within higher education learning communities but also as nodes in "broad networks of distributed creativity" (J. Ito, 2011).

Keywords

formal and informal learning, open education, openness, networked learning, connected learning

Introduction

In his spare and beautiful poem 'Lightenings viii', Seamus Heaney (1991) writes of moving "out of the marvellous". The poem is based on an ancient Irish legend about monks at Clonmacnoise who were amazed to see a ship sailing in the sky above them. When the anchor line of the ship got caught, a crewman climbed down to release it. The monks, realising that the crewman could not breathe down below, in their world, released the anchor and the man returned to the sky/sea above. The legend highlights the existence of (at least) two realities, with beings in one world often unaware of, and unable to survive in, another. To those in one space or one reality, a particular object or practice may be everyday, ordinary, literally the air we breathe. But to those from another space or reality, these things may seem so marvellous, strange, or Other, that they feel they cannot breathe. Many students experience such a dissonance within higher education: between their informal, everyday and open learning practices and the formal, institutional and closed systems within education institutions. Ideally, students should have the option of choosing when, where and to what extent they wish to connect their various (online and offline) learning practices, identities and networks. When students' everyday learning practices are not even recognised or legitimised, the unintended lesson may be that there is a divide between formal and informal learning.

This paper, along with papers by Bell (2016) and Gogia (2016), forms the basis of a seminar at the Conference on Networked Learning 2016 entitled 'Synergies, differences, and bridges between networked learning, connected learning, and open education'. As outlined by Gogia (2016), these three pedagogical fields "share core assumptions about the importance of educational equality and access, self-determined and participatory learning, and authentic or relevant learning experiences" but they emphasize different aspects of learning. This paper begins by exploring the formal/informal learning divide in higher education and then considers why and how higher education institutions and educators can support students in 'navigating the marvellous', i.e.

ISBN 978-1-86220-324-2

building bridges between formal and informal learning practices, networks and identities. The focus of the paper then shifts to consider the extent to which open educational practices could play a role in this process. The concepts of openness in education and bridging formal/informal learning have been explored by scholars in the fields of networked learning and connected learning, as well open education. This paper will focus on the latter, but references and builds on research in each of these areas, seeking to highlight connections and synergies between them. In this paper as well as in our symposium, the intention is to build on existing research, propose ideas and connections, and stimulate discussion amongst scholars who identify with open education, connected learning, and networked learning.

Formal and informal learning in higher education

Higher education institutions are built on formal and established practices for learning, assessment and accreditation. Ubiquitously across higher education, these practices are supported by and configured within institutionally managed virtual learning environments (VLEs). It is increasingly evident that there are inherent tensions between the decentralized, participative and informal nature of the web and the individualized and formal nature of (and systems within) higher education (Clark, et al., 2009; Czerniewicz & Brown, 2013; Dohn, 2009; Waycott, et al., 2013; White, et al., 2014).

> The historically more certain boundaries — where information and communications were controlled by universities — is being lost. Institutions are struggling to make sense of how to operate in this changed and permeable space. The mind sets and frameworks of references that we have used hitherto are no longer adequate. Many boundaries have blurred: virtual and physical localities, professional and social lives, formal and informal learning, knowledge consumption and production. (Armstrong & Franklin, 2008, cited in Dabner, 2012)

Students come to higher education as already-networked individuals with extant informal learning practices, networks and identities (Castells, 2010; M. Ito, 2009; Rainie & Wellman, 2012). Yet students often find that these sit uneasily within formal education. The term 'digital dissonance' was coined by Clark, et al. (2009) to describe the tension experienced by young learners (age 11-16) around their use of tools and resources which are outside the framework of formal education. Hrastinski & Aghaee (2011) found similar tensions in their study of higher education students. This tension is particularly acute when learners' 'everyday' use of tools and technologies encounters a process of delegitimization within formal education. Josefsson, et al. (2015) noted the importance of flexibility within higher education, particularly the need to offer students support in managing their 'intersecting roles' – social, educational, and sometimes professional.

White, et al. (2014) found that when teachers in higher education expressed scepticism about the validity of non-traditional online tools such as Google or Wikipedia, students may experience "a tension between academia and learning". Discouragement, active or tacit, on the part of teaching staff about the academic use and validity of non-traditional online resources and social media may lead students to mask rather than reveal their informal learning practices. When students feel they must resort to "furtive thinking and behaviour" (White, et al., 2014) around open web tools and resources, opportunities are lost for discussing critical evaluation skills and helping learners to situate non-traditional resources and informal learning practices within larger frameworks – even to reflect on informal learning practices *as* learning practices.

Most students in higher education use social media and other web tools to find and share information and to communicate and coordinate with their peers, leaving traces of their academic journey in multiple online environments (Dabbagh & Kitsantas, 2012; Dohn, 2009; Hrastinski & Aghaee, 2011; Vivian, et al., 2014). Yet only certain forms of digital practice tend to be legitimized within higher education, and these typically focus on the logistics of study rather than practices which are "creative, collaborative, participatory" (Henderson, Selwyn, & Aston, 2015, p. 10). In their study highlighting the dichotomy between technology used in higher education and technology used by students, Czerniewicz & Brown (2013) conclude that developing an understanding of the technological habitus of students could help higher education to develop better pedagogical models.

Bridging the formal/informal learning divide

Educators who acknowledge the actual learning practices of students – the 'state-of-the-actual' as described by Selwyn and Facer (2013) – can help students to build bridges between their informal/personal and formal/institutional learning practices, networks and identities. Hall (2009) contends that facilitating such connections can help learners to develop confidence, to become active learners, and to develop different kinds

ISBN 978-1-86220-324-2

of relationships with tutors and lecturers. Hall proposed a 'fusion' of informal and formal learning practices in order to help learners to develop 'agile agency', i.e. the ability to develop new skills and literacies and apply them in a range of contexts (Hall, 2009). Building connections between formal and informal learning networks and spaces can enable individuals to "seek out appropriate personal connections between spaces, so that signals can be passed between networks, to inform action" (Hall, 2009, p. 31). In their study of student transition in higher education, Gale and Parker (2014) advocate a transformation of curriculum and pedagogy so as to value, affirm and embed students' diverse ways of doing and ways of being: "It is about how we structure the student learning experience in ways that open it up and make it possible for students to contribute from who they are and what they know." Through a fusion or integration of informal and formal learning, students can develop their identities (including online identities) as learners, see teachers as co-learners, and view learning as a partnership (Dabbagh & Kitsantas, 2012; Josefsson, et al., 2015; Hall, 2009; Henderson et al., 2015).

In recent years, some educators within higher education have designed and offered students opportunities to integrate their informal and formal learning practices, networks and identities (e.g. Cochrane, et al., 2013; Dohn, 2009; Josefsson, et al., 2015; Nicolajsen, 2014; Ryberg & Larsen, 2012; Veletsianos & Navarrete, 2012) via activities such as the use of social media and collaborative student production and peer editing. While many of these educators note the benefits of, and their commitment to, such pedagogical innovations, they also highlight challenges and tensions that may arise. Challenges for educators to consider include dealing with student ambivalence or resistance, consequences for students of 'context collapse', and on a more ontological level, conceptual discrepancies between Web 2.0 and higher education practices.

Each of the examples noted above entails a level of openness, i.e. moving beyond the bounds of the classroom and the VLE. Open educational practices permit permeability across learning spaces, and across the boundary between formal and informal learning. However, interpretations of openness in education are multiple and open education itself is fraught with challenges. The following section provides an overview of openness in higher education, exploring the various interpretations of both 'openness' and 'open education'. In the discussion section that follows, links with both networked learning and connected learning also are highlighted.

Openness in higher education

Education is about sharing knowledge, thus openness is inherent in education. But what exactly is 'open education'? According to the Open Education Consortium (n.d.): "open education encompasses resources, tools and practices that employ a framework of open sharing to improve educational access and effectiveness worldwide". The claimed benefits of open education are numerous and diverse, including making education more inclusive, equitable, effective, relevant and critical (Lane, 2009; Veletsianos & Kimmons, 2012; Wiley & Hilton, 2009). However, open education narratives and initiatives have evolved in different contexts, with differing priorities, so open education often means subtly or substantively different things to different people. Claims for and critiques of open education initiatives can be assessed only if their respective definitions and interpretations of openness are made clear.

Interpretations of 'openness' and 'open education'

Four interpretations of openness and open education, within the context of higher education, can be identified across the literature. These relate to admission, cost, usage rights and educational practices. Following is a summary of these four interpretations, followed by a discussion of some of the nuances in interpretations, as well as critiques of open education.

i) Open admission

The first interpretation of open education is open admission to formal education. At this most basic level, the qualifier 'open' refers to the elimination of entry requirements for institutional-based learning, as in 'open university'. No prior educational attainment is required for entry to open universities, although course fees generally apply. Currently there are twenty-nine universities that define themselves as open universities (Wikipedia, open universities). The first of these was the UK Open University, founded in 1969 with this mission: "to be open to people, places, methods and ideas" (MacKenzie, Postgate, & Scupham, 1975). Open universities often make educational resources available to the public for free, historically via television and radio and more recently via the internet. This is an example of the second interpretation of open education.

ii) Open as free

ISBN 978-1-86220-324-2

The second interpretation of open education describes educational resources that are available at no cost to the user. This level of openness can be seen as an extension of the idea of public libraries and the internet as free and open resources for all. Under this interpretation of openness and open education, a vast array of online resources and courses are considered open, e.g. YouTube videos, TED Talks, Khan Academy screencasts, iTunes podcasts, Massive Open Online Courses (MOOCs), etc. (Moe, 2015). These educational resources are available online, for free, to anyone interested in and able to access them. In some cases (e.g. many MOOC providers), users are required to register or otherwise provide personal information such as a name and email address. In such cases, while the resources are technically free, users bear an opportunity cost (Hodgkinson-Williams & Gray, 2009). Although free online educational resources may be accessed and used by anyone with access to the internet, their use is subject to copyright restrictions unless resource creators provide explicit permission for reuse of the original works. Many open education advocates thus consider 'open as free' to be a limited interpretation of openness (Wiley, 2009; Winn, 2012).

iii) Open educational resources (OER)

According to the Open Education Consortium, openness is not simply a matter of access, but "the ability to modify and use materials, information and networks so education can be personalized to individual users or woven together in new ways for large and diverse audiences" (OECD Centre for Educational Research and Innovation, 2007). This change in the conception of openness is often described as the difference between open as *gratis* (free of cost) and open as *libre* (enabling legal re-use) (Winn, 2012). Open education resources, or OER, are resources that expressly enable reuse through release into the public domain or through the use of open licensing. Open licensing means that resources can be altered, reused and/or repurposed to suit requirements within specific contexts, depending on the exact terms of the license (Wiley, 2010). The roots of OER run deep: learning objects in the 1980s (Wiley, 2008), reusable learning objects or RLOs in the early 1990s (Friesen, 2004), standards for exchanging learning content within higher education in the late 1990s (Wikipedia, IMS Global), the launch of Open Courseware (OCW) by MIT in 2001, and the subsequent expansion of open courseware initiatives (Open Education Consortium, n.d.). In 2002 the term Open Educational Resources (OER) was coined (Adams, et al., 2013) with the original ambition of legitimising the process of sharing educational resources by and among academic staff and institutions. Creative Commons licenses (first established in 2001) are the primary vehicle by which creators of OER openly license their work, although resources also may be released in the public domain (http://wiki.creativecommons.org). Thus while openness in OER is focused on freedom, the degrees of freedom available within a particular open license can vary (Lane, 2009). The definition of OER has broadened considerably since it was first coined, with the focus no longer on formal education only (i.e. teachers and institutions as primary creators and users), but on all learners as potential creators and users. Multiple studies have shown a relatively low, but increasing, level of awareness and acceptance of open educational resources (OER) among academic staff in higher education (Allen & Seaman, 2014; National Forum for the Enhancement of Teaching & Learning in Ireland, 2015; Reed, 2013; Rolfe, 2012). Overall, however, the focus of OER is on educational content rather than process. This leads to consideration of a fourth interpretation of openness and open education: OEP.

iv) Open educational practices (OEP)

While open licensing and OER focus on making educational content more accessible, some educators seek to move beyond a content-centred approach, shifting the focus from open educational resources (OER) to open educational practices (OEP) (Deimann & Sloep, 2013; Ehlers, 2011; Geser, 2007; Lane & McAndrew, 2010). Open educational practices have been defined broadly by Beetham, et al. (2012) as practices which include the creation, use and reuse of OER; open learning; open/public pedagogies in teaching practice; open sharing of teaching ideas; open scholarship; open access publishing; and the use of open technologies. In 2007 an international meeting of open education participants produced the Cape Town Open Declaration (www.capetowndeclaration.org) with three main strategies: (i) further creation, use and distribution of OER; (ii) changes in policy to support open, participatory culture; and (iii) changes in relationship between teachers and learners, in support of open educational practices (Winn, 2012). As early as 2007 then, the commitment to strengthen and expand the use of OER was accompanied by a commitment to openness in teaching and learning. Advocates of OEP define open education as inclusive of but more than open content: learners and teachers share the processes of knowledge creation (Lane & McAndrew, 2010). As powerfully summarised by Farrow (2015), by democratizing educational processes "open education allows a greater plurality of voices to be heard and to contribute, and the experiences of groups who are often marginalized may be better heard: perhaps this is what we should really mean when we refer to education as 'open'."

Theorising openness

ISBN 978-1-86220-324-2

As outlined above, 'openness' and 'open education' have multiple and sometimes contradictory interpretations. Only the latter two interpretations (OER and OEP) are considered to be 'open' within the open education community (Wiley, 2009). For example, most institutional or xMOOCs use interpretation *ii* above, i.e. resources are made available for free but without open licenses. Such claims to be open have been defined by both Thorne (2009) and Watters (2012) as *openwashing*, a practice akin to greenwashing, i.e. having the appearance of open-source or open-licensing for marketing purposes, while continuing proprietary practices. Connectivist or cMOOCs, on the other hand, typically practice openness as identified in interpretations *iii* and *iv* above, i.e. openly licensing all materials, encouraging participants to do the same, and generally using open educational practices. When considering claims or critiques about openness in education, it is essential to identify which assumption of 'open' is being used to make the case.

A growing body of critical work regarding open education advocates a critical analysis and theorization of openness. Knox (2013a), for example, notes the lack of "critical studies of the pedagogical and educational rationales that underpin OER, and the open education movement itself". Knox notes, correctly, that openness is typically perceived in terms of access to information and resources. Knox (2013b) contends that this dominant interpretation of "open as access" masks underlying assumptions of instrumentalism and essentialism, i.e. potentially masking the ways in which networks, systems and codes of open education might affect, or transform, the learning process. There has, perhaps, been an over-emphasis on removal of barriers rather than examining the practices of teaching and learning that might come about. Knox's critique can be seen to address the first three interpretations of openness outlined above, rather than OEP where the focus is also on process, practices and pedagogy. Knox identifies three distinct problems in the open access-oriented approach to open education: diminished focus on institutional guidance and pedagogical expertise; ever closer alignment between businesses and education; and the assumption of a rational, innately self-directed and autonomous learner, thus shifting responsibility away from the institution (Gourlay, 2015; Knox, 2013b). The latter aligns closely with analysis by Cottom (2015) who notes that many MOOCs, for example, appear to conceive of learners as "roaming autodidacts – self-motivated, able learners that are simultaneously embedded in technocratic futures and disembedded from place, culture, history and markets". The roaming autodidact is almost always conceived as western, white, educated and male. Some open education narratives are thus viewed as utopian fantasies of democratisation, where the working of systemic power and privilege around gender, race, culture, class and sexuality is somehow suspended (Cottom, 2015; Gourlay, 2015). Exercises of power are inherent in all of the micro-practices of education.

As Edwards (2015) suggests, deconstructing openness is a worthwhile educational goal. How then to define 'open' education in any meaningful way? In general usage, the word 'open' has multiple definitions (oxforddictonaries.com). One definition is as a descriptive adjective, i.e. open defined as 'available', 'accessible', or 'receptive'. In this case, open is not a binary construct; one can discuss a continuum of openness, i.e. the degree to which, or the conditions under which, something is open. However, another definition of open is as a state. In this case open *is* a binary construct, defined in relation to its opposite: e.g. not closed, not blocked, or not restricted. So which definition is correct when discussing open education, open educational resources (OER), or open educational practices (OEP)? In practice, both definitions are used. Again, it is important to identify the definition being used in order to understand and assess any claim or critique of openness. Wiley (2009) rejects the open/closed dichotomy, espousing the continuous construct: "A door can be wide open, completely shut, or open part way. So can a window. So can a faucet. So can your eyes. Our common-sense, every day experience teaches us that 'open' is continuous." Alternatively, Edwards (2015, p. 253) rejects the binary as well as the continuous constructs of openness, noting that selectiveness and exclusions are inherent in all curricula and pedagogical approaches, whether digital or face-to-face. Edwards instead identifies the interplay of openness and closed-ness in all educational practices: "An important question becomes not simply whether education is more or less open, but what forms of openness are worthwhile and for whom; openness alone is not an educational virtue."

In summary, while many claims for open education are straightforward (e.g. increased access, democratic practices, equity), open education in practice is complex. In considering any open education narrative – be it an initiative or a critique – it is essential to explore its assumptions and objectives, as well as the often-subtle workings of power and politics.

Discussion

Open educational practices facilitate permeability across the formal/informal divide, offering the potential for learners to connect their interests, as well as their existing networks and identities, with their formal learning activities and assessment. However, 'open' and 'open education' are broad signifiers. Many people equate openness either with 'free education' or with an instrumental approach to education that focuses simply on access to resources. Highlighting four distinct interpretations of openness in education reveals the importance of clarifying these terms. The fourth and broadest interpretation of openness – open educational practices (OEP) – provides the greatest potential for democratising education and facilitating learner agency and autonomy.

Conceptions of openness underlie not only open education theory and practice, but also networked learning and connected learning. This paper, along with papers by Bell (2016) and Gogia (2016), forms the basis of a seminar at the Networked Learning Conference 2016 entitled 'Synergies, differences, and bridges between networked learning, connected learning, and open education'. The three pedagogical fields overlap considerably but offer different perspectives on and emphasize different aspects of learning. Connected learning leverages both formal and informal learning, enabling learners to build their own personal learning environments connecting their interests, peer networks and academic accomplishments (M. Ito, et al., 2012). Although its roots are in the primary and secondary education sectors, connected learning principles and pedagogies increasingly are being adopted in higher education, where initiatives focus on learner autonomy with students as co-creators of both learning spaces and knowledge (e.g. Connected Courses, VCU ALTlab, DS106, Domain Of One's Own). Open educational practices and open web tools are essential in each of these initiatives. Networked learning is defined as "learning in which information and communications technology (ICT) is used to promote connections: between one learner and other learners, between learners and tutors, between a learning community and its learning resources" (Goodyear et al., 2004, p. 2). Networked learning draws from both experiential learning theory and critical pedagogy in considering learning and knowledge construction to be located in the connections and interactions between learners, educators and others, i.e. a social, relational phenomenon (Ryberg, et al., 2012). There are clear overlaps between open educational practices and networked learning when learners are supported in making network connections beyond the bounds of a specific learning community and when learners and teachers share the processes of knowledge creation.

Conclusion

Higher education institutions are being challenged to consider new relationships with students and with knowledge creation. By recognising that productive learning takes place both within and beyond the classroom and the VLE, educators can help students to bridge the formal/informal learning divide in higher education. Building such bridges can help students to develop and deepen their learning practices, to expand their personal learning networks, to use online tools more critically, particularly in the context of their chosen fields of study, to see teachers as co-learners, and to view learning as a partnership. Furthermore, students can have the opportunity – within and with the support of their higher education institutions – to develop their identities as scholars and as citizens in networked publics. Educators who commit to this endeavour are, in many senses, "building the raft while swimming" (Floridi, 2014, p. 8), as the wider sociotechnological context within which higher education operates is changing rapidly. Mutuality is key, as is connecting across different pedagogical fields in which such issues are being addressed, e.g. networked learning, connected learning and open education. Open educational practices that respect and empower learners as co-producers of knowledge can help students to bridge the formal/informal learning divide, building a new culture of learning which embraces both.

References

Adams, A., Liyanagunawardena, T., Rassool, N., & Williams, S. (2013). Use of open educational resources in higher education. British Journal of Educational Technology, *44*(5), 149–150.

Allen, I. E., & Seaman, J. (2014). Grade Change: Tracking Online Education in the United States, 2013. Babson Survey Research Group and the Sloan Consortium. http://onlinelearningconsortium.org/survey_report/2013-survey-online-learning-report/ [viewed 29 September 2015]

Beetham, H., Falconer, I., McGill, L., & Littlejohn, A. (2012). Open practices: Briefing paper (Briefing paper). JISC. https://oersynth.pbworks.com/w/file/fetch/58444186/Open%20Practices%20briefing%20paper.pdf [viewed 15 September 2015]

Bell, F. (2016, forthcoming). (Dis)connected practice in heterotopic spaces for networked and connected learning. Proceedings of the 10th International Conference on Networked Learning 2016.

Castells, M. (2010). The Rise of the Network Society (2nd ed., Vol. 1). Hoboken: Wiley-Blackwell.

ISBN 978-1-86220-324-2

Clarke, W., Logan, K., Luckin, R., Mee, A., & Oliver, M. (2009). Beyond web 2.0: Mapping the technology landscapes of young learners. Journal of Computer Assisted Learning, *25*(1), 55-69.
Cochrane, T., Buchem, I., Camacho, M., Cronin, C., Gordon, A. & Keegan, H. (2013). Building global learning communities. Research in Learning Technology, 21.
Cottom, T. M. (2015). Intersectionality and critical engagement with the internet (SSRN Scholarly Paper No. ID 2568956). Rochester, NY: Social Science Research Network. http://papers.ssrn.com/abstract=2568956 [viewed 22 August 2015]
Czerniewicz, L., & Brown, C. (2013). The habitus of digital 'strangers' in higher education. British Journal of Educational Technology, *44*(1), 44–53.
Dabner, N. (2012). 'Breaking ground' in the use of social media. The Internet and Higher Education, *15*(1).
Dabbagh, N., & Kitsantas, A. (2012). Personal Learning Environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning. The Internet and Higher Education, *15*(1), 3–8.
Deimann, M., & Sloep, P. (2013). How does open education work? In A. Meiszner & L. Squires (Eds.), Openness and Education (Vol. 1, pp. 1–23). Emerald Group Publishing.
Dohn, N.B. (2009). Web 2.0: Inherent tensions and evident challenges for education. Computer-Supported Collaborative Learning, *4*, 343-363.
Edwards, R. (2015). Knowledge infrastructures and the inscrutability of openness in education. Learning, Media and Technology, *40*(3), 251-264.
Ehlers, U.-D. (2011). Extending the territory: From open educational resources to open educational practices. Journal of Open, Flexible, and Distance Learning, *15*(2), 1–10.
Farrow, R. (2015). Open education and critical pedagogy. Learning, Media and Technology. DOI: 10.1080/17439884.2016.1113991.
Floridi, L. (Ed.) (2014). The Onlife Manifesto: Being Human in a Hyperconnected Era. London: Springer.
Friesen, N. (2004). Three objections to learning objects and e-learning standards. In R. McGreal (Ed.), Online Education Using Learning Objects (pp. 59–70). London: Routledge.
Gale, T., & Parker, S. (2014). Navigating change: A typology of student transition in higher education. Studies in Higher Education, *39*(5), 734–753.
Geser, G. (2007). Open Educational Practices and Resources: OLCOS Roadmap (p. 150). http://eric.ed.gov/?id=ED498433 [viewed 4 June 2015]
Gogia, L. (2016, forthcoming). Collaborative Curiousity: Demonstrating relationships between open education, networked learning and connected learning. Proceedings of the 10th International Conference on Networked Learning 2016.
Gourlay, L. (2015). Open education as a 'heterotopia of desire'. Learning, Media and Technology, *40*(3).
Hall, R. (2009). Towards a fusion of formal and informal learning environments: The impact of the Read/Write web. Electronic Journal of E-Learning, *7*(1), 29–40.
Heaney, S. (1991). Lightenings viii. Seeing Things. London: Faber & Faber.
Henderson, M., Selwyn, N., & Aston, R. (2015). What works and why? Student perceptions of 'useful' digital technology in university teaching and learning. Studies in Higher Education. http://www.tandfonline.com/doi/full/10.1080/03075079.2015.1007946 [viewed 1 October 2015]
Hodgkinson-Williams, C., & Gray, E. (2009). Degrees of openness: The emergence of OER at the University of Capetown. International Journal of Education and Development Using Information and Communication Technology, *5*(5), 101–116.
Hrastinski, S., & Aghaee, N. M. (2011). How are campus students using social media to support their studies? An explorative interview study. Education and Information Technologies, *17*(4), 451–464.
Ito, J. (2011, December 5). In an open-source society, innovating by the seat of our pants. The New York Times. http://www.nytimes.com/2011/12/06/science/joichi-ito-innovating-by-the-seat-of-our-pants.html?_r=3& [viewed 2 Sep 2015]
Ito, M. (2009). Hanging Out, Messing Around, and Geeking Out. Cambridge, MA: MIT Press.
Ito, M., Gutiérrez, K. D., Livingstone, S., et al. (2012). Connected Learning: An Agenda for Research and Design. Digital Media and Learning Research Hub. http://clrn.dmlhub.net/publications/connected-learning-an-agenda-for-research-and-design [viewed 21 September 2015]
Josefsson, P., Hrastinski, S., Pargman, D., & Pargman, T.C. (2015). The student, the private and professional role: Students' social media use. Education and Information Technologies, 1-12.
Knox, J. (2013a). The forum, the sardine can and the fake: Contesting, adapting and practicing the Massive Open Online Course. Selected Papers of Internet Research, *3*(0). http://spir.aoir.org/index.php/spir/article/view/795 [viewed 3 June 2015]

Knox, J. (2013b). Theorising open technologies: Concealments and exposures. Presented at the Researching Work and Learning Conference (RWL8), University of Stirling: UK.
Lane, A. (2009). The impact of openness on bridging educational digital divides. The International Review of Research in Open and Distance Learning, *10*(5).
Lane, A., & McAndrew, P. (2010). Are open educational resources systematic or systemic change agents for teaching practice? British Journal of Educational Technology, *41*(6), 952–962.
MacKenzie, N., Postgate, R., & Scupham, J. (1975). Open learning: systems and problems of post-secondary education; 1975 (p. 498). Paris, France: UNESCO.
Moe, R. (2015). The brief & expansive history (and future) of the MOOC: Why two divergent models share the same name. Current Issues in Emerging eLearning, *2*(1).
National Forum for the Enhancement of Teaching and Learning in Ireland. (2015). Learning resources and open access in higher education institutions in Ireland: Focused Research Report No. 1. http://www.teachingandlearning.ie/wp-content/uploads/2015/07/Project-1-LearningResourcesandOpenAccess-1607.pdf [viewed 21 September 2015]
Nicolajsen, H.W. (2014). Changing the rules of the game: Using blogs for online discussions in higher education. In Hodgson, V., de Laat, M., McConnell, D., & Ryberg, T. (Eds.), The Design, Experience and Practice of Networked Learning. (pp. 149-164). New York: Springer.
OECD Centre for Educational Research and Innovation. (2007). Giving Knowledge for Free: The Emergence of Open Educational Resources. Paris: OECD.
Open Education Consortium. (n.d.). About the Open Education Consortium [blog]. http://www.oeconsortium.org/about-oec/ [viewed 20 September 2015]
Rainie, L., & Wellman, B. (2012). Networked: The New Social Operating System. Cambridge: MIT Press.
Reed, P. (2013). Hashtags and retweets: Using Twitter to aid community, communication and casual (informal) learning. Research in Learning Technology, *21*.
Rolfe, V. (2012). Open educational resources: Staff attitudes and awareness. Research in Learning Technology, *20*.
Ryberg, T., Buus, L. & Georgsen, M. (2012). Differences in understanding of networked learning theory: Connectivity or collaboration? In L. Dirckinck-Holmfeld, V. Hodgson & D. McConnell (Eds.), Exploring the Theory, Pedagogy and Practice of Networked Learning. (pp. 43-58). New York: Springer.
Ryberg, T., & Larsen, M.C.R. (2012). Tales from the lands of Digital Natives – A journey to Neverland. Proceedings of the 8th International Conference on Networked Learning 2012.
Selwyn, N., & Facer, K. (2013). The Politics of Education and Technology: Conflicts, Controversies, and Connections. Basingstoke, England: Palgrave Macmillan.
Thorne, M. (2009, March 14). Openwashing [blog]. Retrieved from http://michellethorne.cc/2009/03/openwashing/ [viewed 20 September 2015]
Veletsianos, G., & Kimmons, R. (2012). Assumptions and challenges of open scholarship. The International Review of Research in Open and Distance Learning, *13*(4), 166-189.
Veletsianos, G., & Navarrete, C. (2012). Online social networks as formal learning environments: Learner experiences and activities. The International Review of Research in Open and Distributed Learning, *13*(1).
Vivian, R., Barnes, A., Geer, R., & Wood, D. (2014). The academic journey of university students on Facebook: An analysis of informal academic-related activity over a semester. Research in Learning Technology, *22*(0).
Watters, A. (2012, March 26). Openwashing [microblog]. https://twitter.com/audreywatters/status/184387170415558656 [viewed 20 September 2015]
Waycott, J., Sheard, J., Thompson, C., & Clerehan, R. (2013). Making students' work visible on the social web: A blessing or a curse? Computers & Education, *68*, 86–95.
White, D., Connaway, L. S., Lanclos, D., Hood, E. M., & Vass, C. (2014, February 25). Evaluating digital services: A Visitors and Residents approach. http://www.jiscinfonet.ac.uk/infokits/evaluating-services/
Wiley, D. (2008). The learning objects literature. In J. M. Spector, et al. (Ed.), Handbook of Research on Educational Communications and Technology (3rd ed., pp. 346–352). New York: Taylor & Francis.
Wiley, D. (2009, November 16). Defining 'open' [blog]. http://opencontent.org/blog/archives/1123 [viewed 4 June 2015]
Wiley, D. (2010, August). Openness as catalyst for an educational reformation. EDUCAUSE Review, *45*(4), 14–20.
Wiley, D., & Hilton III, J. (2009). Openness and the future of higher education: The International Review of Research in Open and Distance Learning, *10*(5).
Winn, J. (2012). Open education: from the freedom of things to the freedom of people. In H. Stevenson, L. Bell, & M. Neary (Eds.), Towards teaching in public: reshaping the modern university. London: Continuum.

Acknowledgements: Sincere thanks to Frances Bell, Laura Gogia and Jeffrey Keefer for collaboration in the genesis of this paper (and symposium) and for collaborative reviewing and sparking conversations over several months, and to Dr. Iain MacLaren for support, advice and encouragement throughout the research process.

Catherine Cronin is an educator, researcher and Ph.D. candidate at the Centre for Excellence in Learning and Teaching at the National University of Ireland, Galway. Catherine's background is in Engineering (BSc Mechanical Engineering, MEng Systems Engineering) and Arts (MA Women's Studies) and she has a long record of teaching in higher education as well as in the community in Ireland, Scotland and the USA. Catherine's work focuses on open education, digital identity practices and exploring the border between formal and informal learning. https://catherinecronin.wordpress.com/about/