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Reusing Resources: Open for Learning

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This special issue of JIME includes five chapters written for the book *Reusing Open Resources: Learning in Open Networks for Work, Life and Education* (Littlejohn and Pegler, 2014), a collection of edited chapters which aims to extend the discussion around resource reuse initiated in *Reusing Online Resources: A sustainable approach to e-learning* (Littlejohn, 2003), which was itself the subject of a series of commentaries in a special edition of JIME (http://www-jime.open.ac.uk/jime/article/view/2003-1-reuse-01). During the decade of research and practice that separates these two books our understanding of what reusable resources are, who might wish to reuse them, how reuse would be achieved and what motivates reuse and why it happens (or does not) has shifted. A growing interest in and use of open educational resources (OER) and open educational practice (OEP) has taken a grip within the world of education, supported by open licences. This represents only one area of openness relating to sharing resources (e.g. in the workplace, programmers may collaborate around open source code, or scientists share open data). Within and beyond formal work and education settings we also now see sharing of resources online as social objects (Engeström, 2005) becoming everyday activity for users of social networking sites such as Facebook (started in 2004) and Twitter (started in 2006). There is a dynamic flow of knowledge through social exchanges involving the creating, sharing and using of online open resources as everyday activity. But what does this mean for learning and learners?

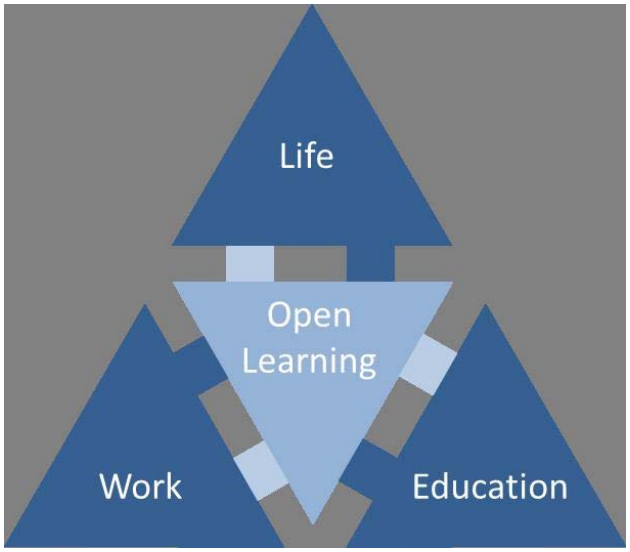
This special issue of JIME presents content from an edited book, *Reusing Open Resources*, which aims to review and question the relationship between reusing resources and learning, trying to gain insight into the future direction of open resources in education, work and lifelong learning. The chapters included in JIME are reproduced under an open license with permission from Routledge. We thank our editor Alex Masulis for being 'open' to an arrangement which represents our desire to make a large part of

the book open. That objective follows not only from the current debates on open licensing, but also from determination to build on the experience of the 2003 JIME special edition for the first book, which allowed comment around the themes to allow those ideas to reach a wider audience.

A framework for reusing open resources for learning

In Chapter 1 of *Reusing Open Resources* and in the structuring of the chapters we examine the interplay and exchange of open resources involving learners in education, in work and also in wider contexts (lifelong learning). Sometimes digital learning resources are perceived as educational content or online courses 'delivered' via the web. However, we are more concerned with understanding how learners engage with open, online resources in everyday contexts of education, work and life and what processes of learning are involved. Open resources are exchanged within and between these different contexts with significant erosion of the boundaries between areas where learning activity may occur. These inter-related contexts provide a framework for exploration of how open learning resources are reused for learning (Figure 1).

Figure 1. A framework for learning with open learning resources



Excerpt from Chapter 1:

"Open, online resources serve as a focal point for learning (either by a teacher or expert, or by learners themselves), rather than as 'learning materials' in the conventional sense. As learners gain expertise there is a qualitative change in the way they use resources to realise activities, moving from rule-based actions to fluid, self-directed activities (Dreyfus and Dreyfus, 2000). Therefore expertise is illustrated by the ways an individual uses the resources and how they relate to other people in their environment (Holland et al, 1998, p121; Edwards, 2010a, p25). The ability to know who to turn to for learning support becomes critical (Edwards, 2010a, p21). These online interactions around open, reusable

resources form a basis for new open learning practices."

Socio-technical factors influencing the reuse of open resources for learning

While planning the book, we identified a number of socio-technical factors influencing open, online learning. We began by reviewing published and grey literature, where research and development work in open learning is located, identifying interconnected social and technological trends, described in Chapter 1 as follows:

"Socio-technical factors that influence open, online learning extend beyond the conventional boundaries of education. These factors generally are associated with social cohesion, socio-economic inclusion as well as technological and economic growth in society:

Changing societal expectations around open access to learning resources and courses

The focus of open education movements historically has been on using technologies to extend learning support to students who could not easily have accessed university education otherwise. For example UNESCO's Education for All initiative (UNESCO, 2014) has, for almost 25 years, been working towards providing 'quality, basic free-of-charge education for all', placing Open Educational Resources (OER) and open courses as central to achieving this ambition. Widening access to resources and courses or removing charges to ensure learning is free of charge (*gratis)* can be viewed as an extension of the open learning movement of the 20th century (Lewis, 1993) during which very large open universities, or mega-universities, were established, initially in the UK and later in India, South Africa, China and elsewhere (Daniel, 1996). However, resources and learning opportunities were offered only to conventionally registered students of the 'open' institution. More recent models of open education include learners who are not registered students at a single institution, extending participation in education. For example, by sampling open courses from across several sources, learners can gain an OERUniversity degree (http://wikieducator.org/OERu/Home). Alternatively learners can participate in stand-alone courses presented as a Massive Open Online Course (MOOC) or learn by reusing OpenCourseWare (OCW) (http://www.ocwconsortium.org/).

Significant financial support has been channelled into extending open education by benefactors such as the William and Flora Hewlitt foundation who provided $11m funding to help establish the MIT OpenCourseWare initiative (MIT, 2001; Vale & Long, 2003) have continued to invest in OER. The potential to translate resources into other languages, taking advantage of the *libre* nature of open educational resources, has resulted in translations of MIT OpenCourseware into 10 languages, including Spanish, Portuguese, Chinese, French, German, Vietnamese, and Ukrainian. Also support to teachers to help them adapt OER to different cultural teaching contexts, for example the Teacher Education in Sub-Saharan Africa (TESSA) and TESS-India projects (http://www.tess-india.edu.in/) have further increased the reuse of open resources

available. There is an appreciation that resources for open learning may not resemble conventional educational resources, not only in form and use, but in the level of unpredictability about how they will develop in the hands of others (McGill et al, 2013).

The high level of political and philanthropic support has given rise to expectations about what reuse of open resources can achieve in helping those who would otherwise be excluded from high quality learning activity. Whether these expectations take fully into account all problems that learners may encounter using open resources is a subject, which several of the chapters in this book address.

What has been achieved is that institutions, which would not formerly have been considered to be 'open' universities, including some of the most prestigious universities worldwide, are opening up courses as Massive Open Online Courses (MOOCs) or as Open CourseWare (OCW, http://www.ocwconsortium.org/). Other respected organisations are also releasing open resources, including some multinational companies, professional and government bodies as well as third sector organisations (McGill et al, 2013). Motivations to release resources range from providing professional development materials for members or employees to marketization and reputation building (Falconer, Littlejohn, McGill, & Beetham, 2012).

Reliance on financial support from universities, governments or philanthropists means that the long-term sustainability of these models of production of open resources is unclear (Falconer, McGill, Littlejohn, & Boursinou, 2013). Potentially successful examples range from payment or 'freemium' models (where basic resources are free but learners pay for additional services) to diversification of who creates and online learning resources and how these are released.

Diversification of how online, reusable learning resources are created and released

Perhaps the most startling difference between open learning online and conventional education is that online resources are not only created by teachers or experts. Resources are as likely to be created or adapted by learners themselves (Falconer, McGill, Littlejohn, & Boursinou, 2013; Weller, 2010). In fact learners now routinely learn through creating, adapting and sharing their own open resources, often as user generated resources across social networks (Beetham, McGill, & Littlejohn, 2009). There are many examples from everyday life, such as blogging or commenting on other people's blogs; uploading resources to social network sites such as Facebook; sharing media through social networks, for example videos in YouTube; micro-blogging through 'tweeting' or 'retweeting' in Twitter; filtering and sharing online resources via social bookmark sites like Delicious; using tools such as Scoop.it to source, discover, curate and share relevant resources. What we see is a less clear-cut distinction between teachers or experts and learners in terms of roles and division of labour with a shift in agency from the teacher to the learner (Beetham, Littlejohn, & McGill, 2010). This has arisen at a time when publication for a global audience, whether through a YouTube, SlideShare, Flickr or iTunes, has made it easier to share resources without attracting high costs. In fact, open sharing of resources has become an everyday activity.

Nevertheless, open sharing does not necessarily signify open, online learning. Another critical factor for open learning is the freedom and ability of learners to connect, not just with resources, but also with other people to draw from their knowledge and support (Ponti, 2013). Other people are available online to support learners or alternatively learners can support peers, providing sustainable models of online open learning (Ehlers, 2011; Littlejohn, Milligan, & Margaryan, 2012). This shift in the division of labour of learners and teachers calls for a reconceptualisation of learning-teaching roles (Candy, 2004; Fiedler, 2012). However, moving from conventional learning-teaching practice to new learning practices that extend beyond the boundaries of formal education has proved difficult (Blin & Munro, 2008). This problem is partly due to the deep-rooted values and cultures engrained in 'schooled societies' (Fiedler & Väljataga, 2011). Nonetheless, attempts to 'democratise' learning through opening access to resources without (at the same time) making effort to enable learners to self-regulate their learning could be ineffectual (Francis, 2013).

The escalation of social interaction around online, reusable learning resources

As the information requirements for operating effectively in professional or personal life become more complex, we increasingly make use of a multifarious mix of distributed expertise and resources. Some of these resources (now almost inevitably digital) are used as mediating artefacts or 'social objects' (Engeström, 2005; Knorr-Cetina, 2001), linking people as they work and learn. Working and learning in open networks in qualitatively different from conventional practice. For example, studies on medical workers' work and learning behaviours reveal that online patient records are critical mediating artefacts around which experts within different specialisms collaborate (Engeström, 2009). These resources create a basis for inter-professional learning within the medical professional, connecting doctors, nurses, social workers and ancillary medical professionals (Engeström, 2013). Health professionals relate to one another and exchange ideas using an online patient record as a mediating resource and a focal point for their learning. Other health professionals are a valuable resource to support learning. As learners interact with people with complementary knowledge, they have to have the ability to know who to turn to for learning support (Edwards, 2010a; Edwards, 2010b). This ability to know who to learn with is termed 'relational expertise'.

Science researchers have further opened up relational practices through use of open data and 'open notebooks' as a focal point for collaborative work and learning (Bradley, 2007). Fears around well-resourced competitors 'running away with findings' have not been founded (ibid). Rather, meta-level studies, which had previously been impossible, have now become a blossoming industry providing important evidence for work in areas as diverse as epidemiology, meteorology and astronomy. Thus, open datasets are online resources that are reused for learning. Progress in sharing open data has been slower in the social sciences, due partly to low interoperability of data, ethical concerns and a culture of individual working. Some social scientists are attempting to change this by opening up data, process and deliberations for example within open educational resources research, which presents particular problems because of the fluidity in access to and use of open resources by learners (McAndrew et al., 2012).

These examples illustrate that learning has moved from individual problem solving and *knowledge acquisition* (Schmidt, Norman, & Boshuizen, 1990) to *knowledge building* negotiated with others around tasks (Engeström & Middleton, 1996), sometimes by interpreting a common problem, then finding appropriate responses to those interpretations (Edwards, 2010a) to *knowledge creation* through social interactions around open resources (Paavola, Lipponen, & Hakkarainen, 2004).

Examples of learning through knowledge creation are also found in education contexts. In the Digital Storytelling course (ds106) at Mary Washington University in the US, not only registered students but open learners following the course create and contribute images, text and sound files, collaboratively creating rich digital archives with encouragement to actively remix and share the knowledge resources created. The course could be described as a hybrid of 'open' and restricted access; some learners are campus-based students in the course, while others, who are not formally registered students at the University, participate and contribute resources. These may be ds106 'alumni' who continue to actively engage, as learners and sometimes mentors, across different course presentations. Facilitating learning by registered students alongside non-registered learners has benefits for both (Levine, 2013).

In the PHONAR photography course at the University of Coventry in the UK, learners initiated their own open magazine as a way of extending their open sharing and making outputs from the course more visible (http://phonar.covmedia.co.uk/). This course has attracted 'professional mentors' from around the world who are experienced photographers wishing to contribute to the course. These are not faculty in the usual formal contractual sense, although they could be seen as having parallels with visiting speakers at a campus-based course. There is evidence from studies in work contexts that experts are motivated by attaining stature and respect within a community and that experts themselves gain knowledge from novices through working with them (Margaryan et al., 2009a; Margaryan, Littlejohn, & Milligan, 2009b). Another common feature of these examples is that participants learn through the involvement of those outside their usual sphere of work and learning. Capitalising on access to potentially massive numbers of people to support online open learning by drawing on the social, online interactions requires a rethink of the social organisation of learning (Anderson, 2008).

New social organisation of learning with open resources

Learning in social networks, with potential access to massive numbers of people, allows reconceptualisation of the social organisation of learning in terms of structure, composition, spatiotemporal cohesion, communication systems and leadership. One of the most visible recent attempts at a new social organisation of learning in education is Massive Open Online Courses. Some MOOC designs are based on networks driven primarily from the bottom up (OBHE, 2013). These structures are anarchic and require learners to have well-developed digital literacies (Kop & Fournier, 2011; Kop, Fournier, & Mak, 2011) and self-regulation abilities (Milligan, Littlejohn, & Margaryan, 2013). These decentralised structures sit uncomfortably in the top-down hierarchies found in educational institutions (Dron & Anderson, 2010). Other MOOC designs are based on classroom-based courses (Vale, 2013). Conventional, online course designs are more familiar to learners and faculty and fit more easily within university organisational

structures. However, some designs have been slated for missing opportunities for social participation and knowledge creation within the diverse range of participants (OBHE, 2013).

Empirical research around sense making and the 'collective' conscious demonstrated how social software provides an extra dimension to learning, in addition to conventional interactions between learners, teachers and knowledge resources (Dron, 2007). Learners co-operate within different constructs, such as groups, networks and with the collective (Dron & Anderson, 2010). Their cooperation is dependent on processes of discovery, synthesis and sharing of fragmented scientific and instrumental knowledge. As learners build knowledge openly, the knowledge changes and diversifies (Kaschig, Maier, Sandow, & Thalmann, 2010). The significance of this form of learning is that it brings together the individual with the collective in ways that are impossible with conventional (closed) learning approaches and systems (Littlejohn, Milligan, & Margaryan, 2012). Early attempts to inform and guide the formation and operation of social structures for learning have been through learning analytics to provide users with a level of organisation, empowerment and transparency (MacNeill, 2012). Systems and tools based on analytics provide an organising focus for learning, helping to connect each learner with the people and resources that are important for learning, thus developing a personal view of learning which (in turn) relates to the other's learning (Littlejohn, Milligan, & Margaryan, 2012).

Concerns around analytics have been expressed chiefly in three ways. Firstly the use of analytics is a form of surveillance which requires the learner to have a sophisticated understanding of how and when to manage online identity or identities (Dron, 2007). There are legitimate questions about how informed acceptance of terms for engagement with open courses may be. Secondly, there is a perceived over-simplification of the application of analytics that tends to equate types of systems with users and stakeholders and a given (assumed) power relation (Berendt, Vuorikari, Littlejohn, & Margaryan, 2013). Typically analytics systems display aggregates of learner behaviours in ways that primarily address teachers' needs for evaluating performance. Thirdly, learning involves human interactions with the environment mediated by expertise, extending beyond the rational decision-making afforded by systems based on Artificial Intelligence (Edwards, 2010b). Therefore, systems cannot replace human expertise.

Removing conventional controls and boundaries around learning environments and sites

Online, open learning through knowledge creation challenges conventional controls and boundaries (Paavola, Lipponen, & Hakkarainen, 2004). For example in open education where learners work together to build knowledge in massive open online courses (MOOCs), formal learning activity is transformed as a direct consequence of the activity of learners themselves. It becomes less appropriate to talk about students within open education environments and more relevant to talk about open learners and open learning engaging with open resources from diverse sources. That there have been other movements, outside education, based on open online activity: open source; open science; open data; open innovation; open research, emphasises the role that open knowledge building plays in a wider shift in societal expectations and behaviours.

Open, online learning extends across parts of everyday life or work practice which learners may not regard as learning at all. For example the textile crafts site Ravelry (http://www.ravelry.com) with over 3.7 million users (by the end of 2013) is centred on a user-generated repository of patterns, projects and discussions within which users create and share information about projects, techniques and practices. Users can conduct research, solicit and offer advice on techniques or photographs of practice examples, sharing outcomes form what is often a solitary craft activity with a wider online community to obtain feedback and support; a learning model similar to open studio working (Brown & Adler, 2008).

As policymakers consider the mechanisms that have to be put in place for open learning to have sustained impact, there is a recognition that organisations that provide formal education have to radically open up through strategic commitments to reforming and developing new infrastructures (Redecker et al., 2011)."

The structure of the book

In the book these five socio-technical trends provide a set of underlying principles to examine the reuse of open, online resources for learning. The book has 11 chapters, structured around the framework for reusing open resources for learning across the contexts of education, work and life. We draw on ideas from twenty-four contributors across ten countries, with interests spanning *Education, Learning Science, Psychology, Computer Science* and *Information Science* offering perspectives from *open learning*; *professional learning; technology-enhanced learning*; *lifelong learning policy; social organisation of learning; trust, privacy and disclosure; to socio-technical systems*. In the selection of chapters for this JIME special issue we have tried to represent the spread of the ideas and opinions represented in the book. We hope this special issue will seed debate and that you will contribute your own ideas to enable us to build collective knowledge around the reuse of open resources for learning.

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