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## **Are Open Educational Resources the future of e-learning?**

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**Abstract:** *Increased interest in more open approaches to learning, in particular Open Educational Resources is reflected in the programmes of international organisations, national initiatives and the actions of individual institutions. However, while some see OER as an indicator of the future of learning, others are much more sceptical and doubt their long-term success. This paper considers the vision of OER as part of future learning solutions in the society driven by technology and knowledge. Supported by an examination of specific national contexts and linked to research from relevant initiatives arguments in favour of using OER are outlined. These include their value in both developing and developed countries, and flexible ways of use in structured courses and in informal, learner-driven environments. This is balanced by highlighting concerns that relate mainly to current issues of certification, quality and intellectual property rights, but also potential problems such as the lack of instructor-learner interaction and the dominance of OER initiatives from English-speaking universities. The paper concludes that OER have an immense potential as long as the elements that contribute to their success are identified and harnessed, and barriers effectively dealt with.*

**Keywords:** Open Educational Resources, OpenCourseWare, Open Access, Higher Education, e-Learning

## Introduction

The levels of interest in various forms of open learning and open research in general have increased significantly in the last decade. More specifically the Open Educational Resources (OER) movement has drawn much attention. The most evident cause of this appears to be the Internet's proliferation in practically every area of human life, enabling instant communication and access to information all over the globe, opening up possibilities of learning more easily, remotely, and both independently and in collaboration with others. The empowering character of the Web 2.0 phenomenon (O'Reilly, 2005) further enables users to become not only recipients but also creators of content. Overall, thanks to the advancement in the area of Information and Communication Technology (ICT), online content can be accessed on various devices using different systems and tools. Changes in global demographics also continue to re-shape the economy, and the Western world is faced with the problem of an ageing society. These trends influence education and are discussed in recent reports of key-player organisations, for instance UNESCO and OECD on the global stage, the Inquiry into the Future of Lifelong Learning from NIACE in the UK, and the NSF in the US. Although some of the reports highlight the benefits of OER and recommend their use, eight years after the official adaptation of the term 'Open Educational Resources' by UNESCO (UNESCO, 2002), OER are still a topic of debate. Some perceive them as the epitome of future learning: open, free and accessible to all. To others, however, OER do not seem sustainable or of significant educational value. This article concerns the part that OER might play in helping address educational challenges and whether OER could become an inherent part of learning solutions in the near future. The main question posed is: *What role could OER play in the future of e-learning?* To get a better idea of the potential importance of OER in the future the authors first set a broader context in which OER are currently used, highlighting some of the issues relating to globalisation, digital divide and demographical changes that influence educational developments. This is followed by an outline of the best known OER definitions, initiatives and developments in the OER arena in the last decade, trying to establish the factors that contribute to the success of an OER repository using the example of OpenLearn United Kingdom Open University (UK OU) (Open Content Initiative, 2006) and discussing the future of OER research by showcasing the work of the OLnet project group. The discussion then proceeds to highlight the potential of OER in areas such as widening educational and digital participation, flexible learning and social justice, and then juxtaposing these against the problems of accommodating large numbers of culturally and linguistically diverse users, lack of certification, no instructor-learner interaction in OER environments, issues of quality assurance, IP and sustainability. The article aims to trigger discussion on what could be done to harness OER potential and avoid pitfalls, to expose the enablers and barriers both globally and in specific settings. The debate could lead to more research being undertaken in this field, which might eventually lead to improvements in design and policy-making. The arguments are presented based on a comprehensive yet succinct review of academic literature and recent organisational reports.

## **Global context: the need to open up resources to accommodate growing numbers of mobile lifelong learners**

The main demographic trends that have implications for education are an ageing society and growing numbers of people in the world. In some countries the society is ageing because of negative population growth rate, e.g. the population of Poland decreased by circa 170,000 between 1997 – 2006 which was caused directly by a drop in the number of births recorded (CSO, 2010). Higher life expectancy might be another cause – according to predictions the trend will continue globally and ‘by 2050 life expectancy is expected to exceed 76 years...the number of people in the world aged 60 or older will also rise from the current one-of-ten persons to be two-of-nine by 2050 [and] by 2050 the world is expected to have 8.9 billion people, an increase of nearly half over the 2000 population’ (United Nations, 1999:3-4). Increased human mobility levels can be observed in regions where several states agree on the right to travel freely, like the European Union where ‘free movement [is recognised as] a fundamental right for EU citizens’ (European Union, 2010) and covers the so-called Schengen area which comprises of the EU states as well as Norway, Iceland and Switzerland. In conflict regions triggers for mobility are slightly different but migration from war-torn or famine-plagued areas to those where people hope to build a better future has been happening for centuries and is not a new phenomenon. Nowadays migration can be observed not only at individual level but also at the level of organisations moving mainly from developed countries with high cost of labour to regions, which offer more attractive conditions for entrepreneurial activity such as lower taxes or production costs. Throughout the last few decades a shift has taken place from industrial and agricultural economy to economy based on services, information and technology, leading to the emergence of so-called ‘Information Society’, which refers ‘to the growing centrality to social and economic development of equipment, techniques and know-how initially referred to as information technology (IT)’ (Dutton, 2003:500). The shift resulted in the emergence of various jobs related to producing and manipulating information and knowledge (Dutton, 2003). Due to the demand for workforces with different skills and increased human and organisational mobility many individuals are faced with having to seek new career opportunities, hence the need to help people at various stages of their lives educate themselves, a trend described by some as lifelong learning, i.e. ‘learning in a variety of contexts [and focusing] mainly on adults returning to organised learning rather than on the initial period of education or on incidental learning’ (Schuller, Watson, 2009:2). Lifelong learning is thus becoming increasingly important both from the perspective of an ageing society – the workforce may need to work until later stages of their lives to generate pensions – as well as from the viewpoint of the knowledge society – people need more versatile skills and the ability to adapt to changing conditions. However, right of entry to education is much more likely in prosperous countries than poor countries (Tomasevski, 2006). Developing countries strive for primary education for all as a long-term goal, whilst developed countries aim for secondary education for all, followed by lifelong learning (Tomasevski, 2006). It can be argued that lifelong learning needs to be actively supported through easy access to online educational resources (Geser, 2007) or OER in order to help increased numbers of people study independently.

## **Open Educational Resources definitions and initiatives: from MIT to OpenLearn**

To fully understand how the potential of OER might be harnessed, let us focus on how the concept of OER is understood by the key organisations involved in the movement. The term OER was first formally used by UNESCO in 2002 and defined as the ‘open provision of educational resources, enabled by information and communication technologies, for consultation, use and adaptation by a community of users for non-commercial purposes’ (UNESCO, 2002). The William and Flora Hewlett Foundation who are heavily involved in funding various initiatives to promote OER stress that OER can include a variety of materials: ‘full courses, textbooks, streaming videos, exams, software, and any other materials or techniques supporting learning...[generally speaking]...free tools and content’ (The William and Flora Hewlett Foundation, 2010). According to OER Commons, OER ‘are all about sharing [as] a culture of sharing resources and practices will help facilitate change and innovation in education’ (OER Commons, 2007). OECD understands OER as ‘accumulated digital assets that can be adjusted’ (OECD, 2007:2), which means that content can be edited and re-uploaded. Regardless of the definition, the principle of OER is to make educational materials available freely and to all for non-commercial use. One of the most important milestones in the history of the OER movement is the Massachusetts Institute of Technology (MIT) OpenCourseWare (OCW) initiative which emerged from MIT’s attempts to position themselves within the e-learning environment in 1999 (MIT, 2010). Their activities attracted interest not only in the USA, but also in other countries and some universities, e.g. the Spanish-language Universia or CORE in China adapted the MIT OCW model translating the courses into their respective languages whilst others (like the UK OU’s OpenLearn) developed their own versions of OER. Whatever model was used, many joined in the OER efforts, mainly higher education institutions. Besides the MIT OCW other well-known OER initiatives include OpenLearn, Connexions, Open Learning Initiative and MERLOT. In Europe the largest OER initiative is OpenLearn set up by the UK OU in 2006 as the first ‘Open Content Initiative’ (McAndrew et al., 2009) in the UK, in which university teaching materials were provided online free of charge. OpenLearn operates as an open source learning environment and is ‘a hybrid of a repository, structured assets, a community, course-based tools, and personal learning tools’ (McAndrew et al., 2009:3). Over 8000 learning hours of material available at various levels and subject areas are organised as study units across twin websites: the LearningSpace, which provides course materials, learning tools and community forums for learners, and the LabSpace, which additionally allows material to be downloaded, edited and re-uploaded. The site has been very successful, celebrating its 10 millionth visit in January this year and there have so far been 13,000 new course registrations to the OU courses from amongst the visitors who first accessed OpenLearn (OU, 2010). Therefore the initiative seems to be benefiting both the users and University, complying with the OU’s egalitarian ethos to promote social justice by widening participation whilst promoting it as a provider of paid-for courses and formal certification, too (McAndrew et al., 2009). All this contributes to the sustainability of OpenLearn because, in accordance with the Open University’s Strategic Objectives and Priorities for 2007-08, it had a positive effect on the brand and profile of the university, helped strengthen the OU’s position as a leader, explorer and innovator in the area of education and OER, enabled the University to work with partners and helped in generating income from different sources (McAndrew et al., 2009).

## **Future research with OER: the importance of further research and the work of OLnet**

The initial priority of the OER community has been in establishing sufficient base of open materials and a shared understanding. Having established a critical mass of activity there has now been a move towards research on how learners use OER to support their learning, how educators and institutions produce and re-use OER, and how designers may improve the tools to support that. The Open Learning network (OLnet), based across two institutions the UK OU, and Carnegie Mellon University (CMU) in the United States of America, is supported by a grant from the William and Flora Hewlett Foundation to research worldwide the design, use, reuse and sharing of OER (OLnet, 2010). In particular OLnet is exploring effective methods of researching the use and impact of OER, in line with the main research question ‘How can we build a robust evidence base to support and enhance the design, evaluation and use of OER?’ (OLnet, 2008:5). OLnet ‘is attempting to apply modern practices in the use of technology as a means of supporting and enabling practitioners to find, share, represent and discuss ideas and experiences’ (Conole et al., in press:1). However, the open nature of OER does not make the research process any easier but that in itself makes that research even more necessary and so OLnet aims to conduct investigations, ‘build structures and activities to nurture the growing pool of OER and associated services [by] aggregating data, sharing evaluation know-how, and mediating dialogue and debate within the community’ (OLnet, 2008:3).

## **The potential of OER versus the barriers**

**Widening participation and bridging the digital gap vs. dealing with cultural and language diversity:** A great advantage of OER seems to lie in their potential to widen participation in education worldwide, particularly at higher education level or as a supplement in lifelong learning but in order for that to happen another barrier needs to be dealt with, which concerns ‘digital inclusion’, so the use of, attitude and access to, and skills in ICT (Helsper, 2008). Once the access problem is solved, with the right design OER could help learners develop generic digital skills. What constitutes the ‘right’ design though? If user needs and learning goals differ significantly how do we design an OER that could be universally applicable and understandable? Particularly faced with forecasts on higher education, according to which the student population will be more diverse, internationalised and with more mature students or those studying part-time (OECD, 2008; OECD, 2009a), coming up with the ‘right’ design might be a challenge. At present most OER are produced by institutions from Western English-speaking countries. As some notice because of language and cultural differences that might ‘consign less developed countries to the role of OER ‘consumers’ of – rather than contributors to – the expansion of knowledge’ (D’Antoni, Savage, 2009:75). If the predictions of CERI are right and despite the expansion of European and Asian higher education ‘North America will continue to hold a clear advantage especially with regard to research’ (OECD, 2009a:14) that problem may become more apparent. Suggested solutions involve engaging academics in translating OER (D’Antoni, Savage, 2009) and ‘localisation’ (Connolly et al., 2007), which e.g. Universia opted for in translating the MIT OCW and gradually adapting it to local contexts. The problem of English-speaking OER scene domination could also be perceived as an opportunity for others to produce their own OER to advocate

their cultures. From the designer perspective, OER settings are great tool-testing fields, which might subsequently lead to improving the design. By promoting OER institutions could contribute to combating social injustice as there appears to be a link between social disadvantage and digital exclusion in some 'Information Societies', e.g. Britain (Helsper, 2008). Discrepancies in digital engagement can be observed between those in less developed rural regions and highly networked urban areas (Helsper, 2008; Wilson, 2008), which might result in fewer possibilities for education and employment. Digital engagement and related opportunities could be more effectively promoted with the right provision of OER. Developing countries in particular, however, are affected by a lack of network access and equipment, least to say ICT skills. OER might be of long-term value there because their promotion would be closely linked to promoting digital access *as well as* access to education, even if education is not pursued formally but as unstructured learning from an OER. Some OER are already distributed in print in regions with scarce digital access, e.g. in Sub-Saharan Africa through TESSA Project (Thakrar et al., 2009). Although 'the impact of technologies has not been as transformative in education as...in other industries' (Conole et al, in press:2), generally higher education students in OECD countries 'show high levels of technology adoption' (OECD, 2009b:7). Whatever the impact, educational and digital access seem to be interlinked, hence the importance of widening both in developed and developing countries.

**Flexible learning vs. lack of certification and instructor-learner interaction:** Following the expansion of the Web in the last two decades, general ways of communicating and sharing information have changed enormously. Higher education students are 'heavy users of digital media' (OECD, 2009b). This trend along with rapid technological progress is likely to continue (OECD, 2009b:33) hence enriching the student experience with OER seems a logical step. Bearing in mind that learning is happening increasingly in mobile ways, 'mediated by networked computing and communications technologies' (NSF, 2008:12), directed by learners using various sources, the American NSF Task Force on Cyberlearning sees great potential in sharing resources between interdisciplinary academic and professional communities (NSF, 2008). However, some claim that if a course cannot be certified, it will not be successful in the long term. Then again the whole point of OER consists in the flexibility they offer the learners and the choice of either pursuing a course independently or, as in the case of OpenLearn or OLI, giving the learner the option of formal enrolment should they wish to gain a qualification. Another counterargument could be that if something can be obtained cost-free, people may cease to purchase educational materials or courses. Studies show, however, that OER can act as an advertisement and attract learners to paid-for courses (McAndrew et al., 2009) although more time is needed to observe clear patterns in this area. Some might claim it is unfair to provide knowledge cost-free if knowledge is a commodity but others argue that especially publicly-funded institutions 'should leverage taxpayers' money by allowing free sharing...of resources' (OECD, 2007:3). Further criticism of OER relates to the lack of instructor-learner interaction but some OER allow learners to interact with other users, e.g. OpenLearn, which provides collaboration tools so users can study either independently, like so-called voluntary students who are 'motivated by assessment, will work through tasks [or social learners who] want to explore tools, connect with other people and construct their own interpretations' (McAndrew et al., 2009:61).

**Justice, inclusion and diversity: predictions of key players vs. sustainability of OER:** In the Communiqué from the 2009 World Conference on Higher Education UNESCO asserts the ‘need for greater information, openness and transparency regarding the different missions and performance of individual [higher education] institutions’ (UNESCO, 2009:3), stressing that, in relation to access, equity and quality, ‘the knowledge society needs diversity in higher education systems, with a range of institutions having a variety of mandates and addressing different types of learners [and] ODL approaches and ICTs present opportunities to widen access to quality education, particularly when [OER] are readily shared by many countries and higher education institutions’ (UNESCO, 2009:3). CERI predict that ‘challenges will arise linked to the possible social exclusion of groups not involved in higher education’ (OECD, 2008:14) and discuss issues relating to students with disabilities observing a significant increase in their participation in higher education recently and suggesting that ‘greater responsiveness to diversity, which the approach to diversity exemplifies, should become more widespread in the interests of all students’ (OECD, 2008:17). It is worth contemplating how various OER initiatives might contribute to making higher education more accessible and inclusive. OECD recognises ‘globalisation, an aging society, growing competition between higher educational institutions both nationally and internationally, and rapid technological development’ (OECD, 2007:1) as some of the issues higher education will have to deal with, identifying OER as a potential solution in helping ‘expand access to learning for everyone, but most of all for non-traditional groups of students, and thus widen participation in higher education (...) [promote] lifelong learning (...) and bridge the gap between non-formal, informal and formal learning’ (OECD, 2007:1). The principles of the OER movement comply with six out of seven actions proposed in the Manifesto of European Ambassadors for Creativity and Innovation in 2009, i.e.: to ‘invest in knowledge, reinvent education, reward initiative, sustain culture, promote innovation and think globally’ (European Union, 2009:2-3). However, long-term sustainability of OER initiatives is a debated topic due to the cost OER production involves but there can be various approaches to and mixed models of financing it, for instance the ‘co-production’ model in which users collaborate to produce materials voluntarily or the ‘membership’ model functioning through payments from paying members or fundraising (OECD, 2007).

**The educator perspective: availability and experimentation vs. quality and Intellectual Property:**

Educators from around the world can use OER to upgrade their courses but OER are of particular value in countries or at universities where educational resources are scarce or not easily accessible, for instance at new universities in Turkey (Higher Education Council of Turkey, 2009). Instructors can apply OER materials in their teaching and (potential) students can use them to decide which courses to sign up for. OER and OCW might not give formal educational qualifications but act as a supplementary element in helping people gain knowledge through either instructor-led or independent studies (Wilson, 2008). However, according to a recent UNESCO report the issue of quality assurance seems to be a concern especially to users of OER initiatives that are open to contributions from anyone, so-called ‘‘grassroots’ OER initiatives’ (D’Antoni, Savage, 2009:67). The concept of quality itself is problematic since high quality can mean something different in different contexts, despite peer review processes or reputation management systems adopted to manage quality within these initiatives (D’Antoni, Savage,



2009:67). The report suggests establishing university consortia to guard quality standards but, as the authors rightly ask, would it not impose constraints on the open content use? Further controversy concerns shared ideas and Intellectual Property (IP). Academics do not object to their material being used but fear that others may falsely appropriate their ideas or even copyright them (D'Antoni, Savage, 2009:71). To solve that problem Creative Commons was established, offering different types of IP licenses so that the work of authors who created OER can be acknowledged but used freely.

### **Conclusions: OER as an important element of the future for learners, educators and institutions**

Are OER the future of (e-)learning? Both from learner and educator perspectives OER can be used flexibly, in formal contexts as a supplement (Wilson, 2008), informally in independent learning or in collaboration with others – depending on learning needs, motivations and contexts. Because of this flexibility and literally unlimited possibilities of use OER certainly have the potential to become an important part of the future e-learning landscape. The level of interest that OpenLearn has attracted is in itself evidence of further adoption by users and institutions and even some of the most traditional universities in the world, for example Oxford University in the UK, are opening up their educational materials in recognition of the opportunities that OER initiatives present. While the barriers to OER cause some difficulties and improvements undoubtedly need to be implemented, the world needs a more open approach to learning to meet demographic challenges and the changes in information access. Although OER might not be an immediate solution to the world's problems, there is immense potential and promise in OER to operate in combination with the promotion of digital and online access in addressing major social problems. Today's society has been branded the 'learning' society reflecting the need for people to be versatile and keep learning continuously since there is little chance they will remain in the same profession or enterprise for their entire life. Hence it is important to promote the cross-disciplinary character of OER. In the context of Web 2.0-type applications, OER can function as more than course content repositories and provide free knowledge management applications and discussion group spaces. Their openness suggests a role as advocates promoting cross-cultural understanding and diversity. Initially conceived to promote educational materials at university level to all irrespective of location, OER can be an important component in the set of solutions implemented to widen access to knowledge and promote inclusion in education, helping those who might otherwise not be able to gain either. A strength of OER is the value not only from the humanitarian viewpoint of idealists who strive to make the world a better place but also from the practical perspectives of those whose task is to tackle the problems caused by the growing and migrating masses of culturally diverse humans. It is therefore essential to continue the debate, raise awareness and conduct further research in the field of OER so that sustainable OER production models can be established, barriers effectively dealt with and the elements that make a successful OER identified and harnessed.

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