

Examining the sustainability issues in UKOER projects:

Developing a sustainable OER ecosystem in HE

Li Yuan,* R. John Robertson, Lorna M. Campbell,*** Chris Pegler,******

* Learning Technology Advisor/Senior Researcher, JISC CETIS, Institute for Educational Cybernetics, University of Bolton.

** Research Fellow, JISC CETIS, Centre for Academic Practice and Learning Enhancement University of Strathclyde.

*** Assistant Director, JISC CETIS, Centre for Academic Practice and Learning Enhancement University of Strathclyde.

**** Senior Lecturer, Institute of Educational Technology, The Open University.

Abstract

The development of open educational resources (OERs) is becoming a strategic priority for governments and education institutions around the world, in response to funding cuts and rising costs in educational provision. In the United Kingdom, a government-sponsored Pilot Programme on Open Educational Recourses (JISC/HEA, 2009) was launched in 2009 with an initial budget of £5.7m. This paper reviews the key sustainability issues identified by the projects including the different approaches and models that have been adopted in order to sustain the continuing development and release of OER once funding has ended. The analysis also considers the challenges relating to the development and implementation of policies and processes for sustainable OER practice within institutions and among academics. The paper concludes by drawing on the experiences from the wider United Kingdom and international OER communities to develop a sustainable OER ecosystem model that can facilitate discussions on future development of OER initiatives.

Keywords

Open Education, Open Education Resources, Sustainability, UKOER, Ecosystem

Recommended citation:

Yuan, L.; Robertson, R. J.; Campbell, L. M. et al. (2010). Examining the sustainability issues in UKOER projects: Developing a sustainable OER ecosystem in HE. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU.

[Accessed: dd/mm/yy].<<http://hdl.handle.net/10609/5064>>

1. Introduction

In 2009, the higher education funding bodies of the four nations of the United Kingdom (England, Scotland, Wales and Northern Ireland) launched a multi-million pound Open Educational Resources (OERs) initiative (the UKOER) in United Kingdom higher and further education institutions, designed to make a wide range of on-line learning resources freely available, easily discovered and routinely re-used by both educators and learners worldwide. The programme was planned two phases and is jointly managed by the United Kingdom Joint Information Systems Committee, JISC and the United Kingdom Higher Education Academy, HEA (JISC/HEA, 2010). In the first, pilot phase of the programme (April 2009 – April 2010), the programme provided an initial £5.7m to fund 29 pilot projects in three different strands: *institutional, subject centre and individual*. Aimed at promoting, creating and sharing resources among academics and institutions, at both the national and international levels, the programme also seeks to build a professionally organised open resources infrastructure to support innovation in higher education. D'Antoni (2008) points out that the majority of OER programmes are currently undertaken on a project basis, raising the issue of sustainability for these projects as a major concern when the project funding runs out. As with other OER programmes and projects, one of the most important challenges facing the UKOER programme is how to ensure project sustainability once funding is ended. In order to achieve sustainable OER policy and practice in institutions and ensure universities could continue sharing materials at a similar pace beyond the funding period, the projects were encouraged to explore the various issues that might arise in relation to the release, access and reuse of teaching learning materials from universities. These included development and implementation processes and policies, intellectual property rights (IPR), institutional culture; technical requirements and data management issues (JISC, 2009).

Wiley (2007) has argued that the concept of sustainability in relations to OER initiatives comprises two elements: the sustainable production of OER and the sustainable sharing of resources. According to Wiley, OER projects need to find a way to sustain the production and sharing of open educational resources and a way to sustain the use and reuse of their open educational resources by end users in order to achieve sustainability. To make OER initiatives work and keep them for the long run, it is important to first gain and maintain a critical mass of active, engaged users, increase usability and improve quality of the resources created. There is growing interest in community-based approaches to produce content and promote sharing and use of resources. Therefore, promoting communities of practice is vital to the sustainability of OERs. It is also widely agreed (see for example, Friesen, 2009) that OER initiatives need to be embedded in institutions as processes or practices in which the production and reuse of OERs becomes a normal consequence of educational activities for academics. Furthermore, Robertson (2009) argues that the sustainability of OERs depends on how institutions will choose to manage and use their digital material in the future.

Hylén (2007) suggests that two common approaches have been used by OER initiatives: the institutional model and the community model. Most institutional OER initiatives are based on initial government or philanthropic funding and need to look into different revenue models for the long term sustainability of their initiative. The community model builds on voluntary work and enthusiasts, in which sustainability is not so much a matter of financial resources but effort to keep

the community alive and help it grow. As the United Kingdom OER programme funded three strands: institutional, subject centre and individual, it is able to explore not only institutional approaches to OER initiatives but also community approaches within institutional contexts. This paper considers these institution-based approaches and how they propose to address long term sustainability with continued releasing of new OERs beyond the funding period.

2. Institutional Approaches to Sustainability

The sustainability of OER projects, was one of the top concerns of the UKOER programme, and it is expected that all funded projects would seek to develop sustainable practices so that universities are able to continue sharing materials at a similar pace beyond the funding period.

“Successful projects will also work to develop processes and policies to embed the practice of open educational resources release beyond the funded life of the project. We would expect to see clear evidence within proposals of an intention to do this. Bidders should also describe a business model supporting this process.” (JISC/HEA call, 2009)

The key phrase in this remit is that institutions are required: “...to embed the practice of open educational resources release beyond the funded life of the project”. Therefore the obligation is not just to develop and use new OERs but to develop an approach that ensures that new OERs will continue to be developed and released for open and shared usage.

Seven institutions were funded to develop existing teaching and learning resources into OERs that would be the equivalent of one undergraduate course (360 credits). All of the projects identified some issues related to OER sustainability and proposed different approaches to address them. Brief extract from the projects published proposals (JISC, 2009) indicate how they intended to address the issue of ongoing sustainability (see figure 1).

The figure 1 shows that all funded projects considered a long term commitment to develop a sustainable approach to support ongoing OER production and release. The projects not only sought to continue to produce and release new OERs but also made efforts to develop and modify institutional strategies and policies, provide staff training, establish guidance and support mechanisms to embed policy to transform academic practice and change culture within institutions, department and schools. In the next section, the manner in which these proposed approaches to sustainability have been implemented is further explored.

3. Sustainable issues in UKOER programme

Pegler (2010) has identified range of issues related to sustainable OER practice within institutions which support or prevent ongoing release and reuse OERs, including the following key areas:

- The time and effort required to move to sustainable OERs
- Building awareness of academic towards OERs
- Staff development
- Incentives for sector wide sharing
- Evidence of effectiveness in the use of OERs
- Easy use tools for dissemination and deposit
- OERs should be widely recognised as good for UKHE
- Policy and practice to encourage and offer reward to “Open” behaviour
- Support and advice on copy right
- Recognition of the multiple purposes of OERs and the value of raw learning resources
- Policy for potential risk management
- Guidance for OER news users and producers

McGill, Beetham, Falconer & Littlejohn (2010) argue that sustainability of OER depends on embedding open practices into institutional policies and services, and on encouraging open sharing in existing communities such as subject networks. In the UKOER programme, projects have adopted diverse approaches and models to support producing and reusing OERs across institutions beyond the funding period. Based on an analysis of the project final reports (JISC, 2010) and discussions from the programme events and meetings (CETIS, 2010), a number of important principles for sustainability appear to be emerging from the projects. These are presented here briefly:

- **Creating and modifying policies to promote the release and reuse of OERs:** All of the projects reviewed existing policy and strategy documents in relation to IPR, institutional repositories and learning and teaching resources; and several projects developed new OER-specific policy documents. One institution (see the Unicycle project) developed a policy which embedded OERs into teaching and learning practice. This requires staff to use OERs in their courses and release OERs when developing and delivering new courses. Some institutions (For example the BERLiN project) have developed policies to integrate OER practice into their professional reward and recognition schemes. These developments have been prompted by recognition that if OER development practices are viewed as an additional responsibilities, they are unlikely to be sustainable.
- **Developing guidance and support mechanisms for long term OER release:** While some projects (for example the Open Spires project) have adopted a centralised model of OER release by establishing a central OER support unit within an institution to provide technical and other supports for procuring and releasing OERs, others (such as the Unicycle project) have adopted a distributed model in which no additional staff were recruited and the responsibilities for producing OERs were assigned to representatives from different faculties. Many projects (for example the OTTER project) found that the most sustainable approach is to embed the OER development process into practice by empowering academics to release their own educational resources, rather than take on the financial burden of building a centralised team to make materials public. For example, the OTTER team developed the CORRE framework (OTTER, 2010) which provides a

systematic and replicable set of practices and procedures for the creation and management of OERs, designed to be sustainable after the project ends.

- **Creating communities of practice:** Many projects identified that encouraging academics to engage with or stay engaged with OER activities is central to the sustainability of OER within institutions. One of the approaches adopted by some projects, therefore, was to develop communities of practice among academics to support the sharing of practice and content with others through OERs (McGill, Beetham, Falconer & Littlejohn, 2010).
- **Developing new business models to make effective use of OERs:** although business models associated with OERs are tricky and are still in their infancy, some institutions (see BERLiN project) have started to explore the benefits of OERs to higher education and use OERs as the basis of developing new courses and new partnerships nationally and internationally. Some institutions involved in the UKOER project have also developed international partnerships to generate feedback on the wider usefulness of OERs. For example, partnerships in the OER Africa programme (for example the BERLiN project) have helped to improve the quality of OER provision and support more effective reuse locally. It has also helped the British institutions to gain a better understanding of technical and educational issues in different social and culture contexts through collaboratively developing and reusing OERs.
- **Removing technological barriers to make OER release and reuse easier:** Technical challenges relating to development of OERs and to their hosting, discoverability and tracking can be very real obstacles to achieving sustainable practice among academics. It is therefore important to make OER tools and platform easy to use and access. Most projects have used technology and platforms that their institutions already use or that academics are familiar with (CETIS, 2010). Some projects also developed specific tools to empower non-technical teaching staff to create highly interactive and accessible multimedia learning materials. One example of this is Nottingham's open source e-learning development tool Xerte Online Toolkits (BERLiN project, 2010) Leeds Metropolitan University's Unicycle project also developed an OER submission widget which allows an academic to drag and drop a resource onto the widget on their desktop, enter essential metadata and the item gets sent to their institutional repository (Unicycle, 2010).
- **Encouraging wider participation and provision of staff training on OERs:** A number of projects made the release and reuse of OERs become more sustainable within the institutions through engaging with a range of staff, raising awareness, creating a workable model and attempting to change academic working practice and culture (McGill, Beetham, Falconer & Littlejohn, 2010). For example some institutions incorporated the development of OERs into their Postgraduate Certificate in Learning and Teaching in HE curriculum so that OERs become a part of their professional development requirements. Staff training also helped academics identify OER related IPR issues and promoted awareness of copyright (Unicycle, 2010).

It is notable that all of the UKOER projects have put considerable efforts to find ways to continue producing OERs beyond the funding period through embedding OERs into process and practice, reviewing institutional policy and developing new mechanisms to enable, support and encourage sustainable production and sharing of resources. However, the challenge of working

through sustainability issues related to OERs cannot be fully addressed through a single funding programme over a short period of time. It is expected that UKOER2 will take what has been learned from the pilot programme further and explore new approaches and models to ensure producing OERs can become an integral part of an academic's teaching responsibilities and a significant aspect of delivering the educational mission of institutions.

4. Developing a Sustainable OER ecosystem

The OER Foundation (2009) argues that a sustainable ecosystem requires that the elements of the system are continually engaged in a set of relationships with every other element constituting the environment in which they exist. Robertson, Mahey & Allinson (2008) adopted the ecological approach to express a comprehensive view of the interactions of repositories and services that addresses cultural, political and financial influences as well as technical protocols. Such an approach helps to capture the dynamics of a complex system that has continually evolving processes, and indicates where change is occurring in order to facilitate communication and understanding between repository managers, implementers, developers, users and funding agencies. Similarly, the ecological metaphor offers an alternative way to analyse and examine the development of OER initiatives and the “elements”, “relationships” and “interactions” required for sustainable OER ecosystems.

In an ecological view, OER ecosystems can be studied at many levels including the macro or global education level, the meso or national educational system level and the micro or institution level. The main entities in all of these levels include individuals (educators and learners), institutions (organisations and communities) and funding agencies and governments. A sustainable OER ecosystem can only be achieved by all of these elements continually engaging with the others within and outside their systems, enabling them all to realise the tangible benefits of supporting learning in all educational settings including formal and informal.

The ecology approach provides a useful framework for analysing and examining the development of sustainable OERs in the United Kingdom context. As the OER foundation (2009) argues this provides the necessary elements and environment required for individuals and institutions interacting within a particular educational system to identify paths, connections and supporting activities to the establishment of a sustainable OER ecosystem. Figure 2 illustrates how government agencies and funding bodies, institutions, subject centres and individuals are engaging in the production and reuse of OERs within the particular educational system and articulates the key interactions, dependencies, and influences in order to address social, organizational, cultural and technical issues to achieve sustainable. In the future it seems clear that higher education institutions will need to improve efficiencies through OERs, e.g. reduction in cost and improvements in quality. Educators and learners will need to participate in communities of practice where OER development and reuse becomes a normal consequence of educational activities. A content infrastructure needs to be established through developing OERs that support informal and formal education and catalyse innovations in higher education. This meso – level OER ecosystem will rely for success on the sustainability of OER projects at the micro level (institutions, subject centres and individuals) and, if successful, will eventually foster the global sustainable OER ecosystem at macro level. As higher

education systems in most countries are largely publicly-funded, OER sustainability in this sector would benefit significantly by using national funding models both as an incentive and as a steering device that will enable institutions, communities and individuals to explore how best to achieve self-sustainable OER ecosystems.

Conclusion

Sustainability is clearly a key issue for OERs, especially, those external funded projects. The UKOER pilot programme has provided an opportunity for institutions to review policies and supporting mechanisms, and embed processes into the academic practices in order to continue releasing OERs beyond the lifetime of the funded project. During the pilot programme, different approaches and models have been adopted by the funded project to address the issues related to sustainable OERs. There is little doubt that OERs will move into the mainstream of higher education and that the need for sustainability of OERs will require institutions to respond to this strategic challenge. In the long term however, there is a need to develop sustainable OER ecosystems where institutions can address their own business needs around OERs. At the same time, they must begin to shift from institution-based to community-based approaches in order to cultivate communities of practice where OER development and reuse becomes an integral part of everyday educational activities.

Figures

Institution	Project title	Project overview	Approaches to Sustainability
Coventry University	Open Content Employability Project	Delivering a minimum of 360 CATS points of undergraduate open education resources. Developing the experience, policies and processes on which to build an open content culture.	Developing policies and procedures to help embed an open content culture within Coventry University; developing culture of open content deposit and use within the university.
Exeter University	Open Exeter	Using of appropriate new technologies and contextually located within a rich array of learning materials. marketing Exeter's education 'brand' through increasing international intake and the availability of OER	OER will thereby become an integral component of curriculum design and delivery; Harnessing existing professional support staff with expertise in IT, databases, education, and IPR to create sustainable working practices.
Leeds	Unicycle	Identifying materials of value to other	Integrating OER development into the

Metropolitan University		institutions and partners and release them under an open license.	University's sustainable planning cycle to ensure future funding.
Leicester University	OTTER	Enabling, piloting and evaluating systems and processes designed to enable individuals, teams and departments to release high quality open educational resources (OERs) for free access, reuse and repurposing by others, in perpetuity.	Developing a sustainable model for the release of existing learning materials as OERs at team, departmental and institutional levels.
Nottingham University	BERLiN	Providing guidance and advice, which will benefit the whole of the United Kingdom sector by disseminating the project experiences, exploring the issues raised in the wider take-up and development of an OER.	OER as a catalyst for change in the practice of academics from all parts of the University.
Oxford University	Open Spires	Making a range of audio and video podcasting material available through the web and other channels. The material will be open for reuse and redistribution by third parties globally.	Supporting academics to use the decentralised content creation workflows developed by the central podcasting service developing appropriate development support materials for staff and documented workflows for cultural change to ensure that considerations of open release become part of the digital content creation cycle at Oxford University
Staffordshire University	OpenStaffs	Depositing high quality educational resources, in different formats and develop policies and procedures to retrieve and repurpose learning objects internally and externally	Key to sustainability will be the automated integration and embedding of the process into the day to day provision of access to learning and teaching materials across the University and will be in line with the quality mechanisms inherent in the TSL Policy.

Figure 1 - Institutional approaches to Sustainability

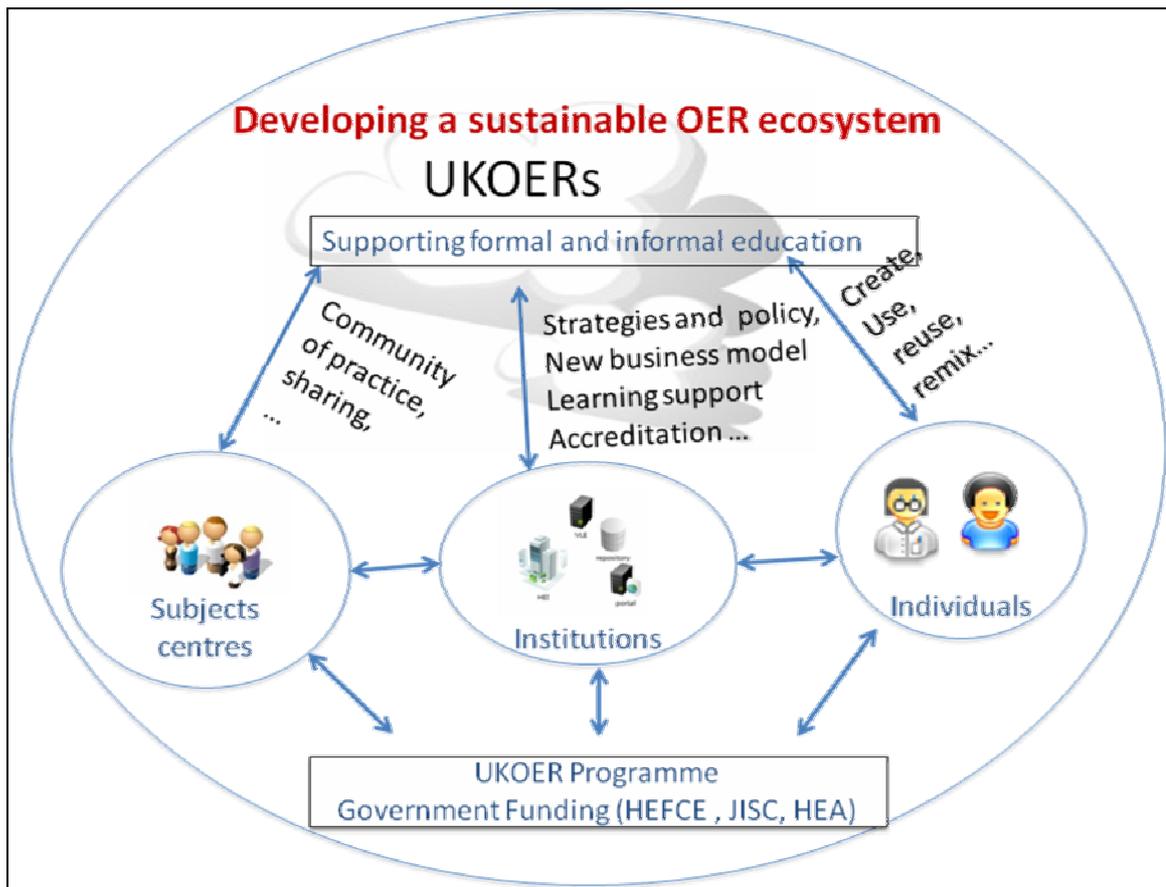


Figure 2 - A sustainable OERs ecosystem

Bibliographic references

- CETIS, (2010). *Open Educational Resources*. Retrieved from, <http://jisc.cetis.ac.uk/topic/oer>
- Cooke, R. (2008). *On-line Innovation in Higher Education*. Retrieved from <http://tinyurl.com/5vt5lo>
- D'Antoni, S. (2008). *Open Educational Resources. The way forward. Deliberations of an international community of interest*. Retrieved from <http://learn.creativecommons.org/wp-content/uploads/2008/03/oer-way-forward-final-version.pdf>
- Friesen, N. (2009). *Open Educational Resources: New Possibilities for Change and Sustainability*. Retrieved from <http://www.irrodl.org/index.php/irrodl/article/view/664>
- JISC, (2009). *Open educational resources programme*. Retrieved from <http://www.jisc.ac.uk/oer>
- Hylén, J. (2007). *Open Educational Resources: Opportunities and Challenges*. Retrieved from <http://www.oecd.org/dataoecd/5/47/37351085.pdf>

McGill, L., Beetham, H., Falconer, I., & Littlejohn, A. (2010). *UKOER Pilot Programme Synthesis And Evaluation Report*. Retrieved from

<http://www.caledonianacademy.net/spaces/oer/index.php?n=Main.PilotProgrammeSynthesisAndEvaluationReport>

Pegler, G. (2010). *How can we achieve sustainability in OER?* Retrieved from

<http://www8.open.ac.uk/score/print/oer-and-sustainability-leeds-manifesto-draft>;

Robertson, J. (2009). *Open Education: project or process and practice?* Retrieved from

<http://blogs.cetis.ac.uk/johnr/2009/09/09/open-education-project-or-process-and-practice/>

Robertson, J., Mahey, M., & Allinson, J (2008). *An ecological approach to repository and service interaction*. Retrieved from <http://ie-repository.jisc.ac.uk/272/1/Introductoryecologyreport.pdf>

Wiley, D. (2007). *On the Sustainability of Open Educational Resource Initiatives in Higher Education*. Retrieved from <http://www.oecd.org/dataoecd/33/9/38645447.pdf>

Institutional OER projects and websites

Building exchanges for research & learning in Nottingham (BERLiN)

<http://www.jisc.ac.uk/whatwedo/programmes/elearning/oer/berlin.aspx>

Open content at Oxford University

<http://www.jisc.ac.uk/whatwedo/programmes/elearning/oer/openspires.aspx>

Open content employability project

<http://www.jisc.ac.uk/whatwedo/programmes/elearning/oer/ocep.aspx>

Open Exeter

<http://www.jisc.ac.uk/whatwedo/programmes/elearning/oer/openexeter.aspx>

Open, transferable & technology-enabled educational resources (OTTER)

<http://www.jisc.ac.uk/whatwedo/programmes/elearning/oer/otter.aspx>

OpenStaffs

<http://www.jisc.ac.uk/whatwedo/programmes/elearning/oer/openstaffs.aspx>

Unicycle

<http://www.jisc.ac.uk/whatwedo/programmes/elearning/oer/unicycle.aspx>

About the authors

Li Yuan

Learning Technology Advisor/Senior Researcher, JISC CETIS, Institute for Educational Cybernetics, University of Bolton.

Dr Li Yuan is a Learning Technology Advisor for JISC CETIS and a senior researcher within the Institute for Educational Cybernetics, the University of Bolton. Li is currently involved in supporting the JISC/HEA Open Educational Resources programme and the JISC Distributed Virtual Learning Environment (DVLE) programme. Her main interests include open educational resources, learning design, digital repositories and ICT policy and practice in Education. Prior to joining IEC, she was a research fellow in the School of Education, Queen's University of Belfast, where she worked on the General Teaching Council for Northern Ireland's (GTCNI) digital repository project.

JISC CETIS, Institute for Educational Cybernetics
University of Bolton
Deane Road, Bolton, UK, BL3 5AB
lyuan@bolton.ac.uk

R. John Robertson

Research Fellow, JISC CETIS, Centre for Academic Practice and Learning Enhancement University of Strathclyde.

John Robertson works for CETIS (Centre for Educational Technology and Interoperability Standards) - one of the Innovation Support Centres in the United Kingdom funded by JISC (Joint Information Systems Committee) to: represent Further and Higher Education in the development of relevant standards and specifications and provide guidance and support for JISC programmes. John currently supports JISC's work in Open Educational Resources. A librarian by training, his professional background is in development and support projects around the management of digital assets, repositories, digital libraries, and metadata; he also has an ongoing interest in the role of community and personal formation in education.

JISC CETIS, Centre for Academic Practice and Learning Enhancement
University of Strathclyde
50 George Street
UK, G1 1QE
robert.robertson@strath.ac.uk

Lorna M. Campbell

JISC CETIS, Centre for Academic Practice and Learning Enhancement University of Strathclyde.

Lorna M. Campbell is one of the CETIS Assistant Directors with responsibility for the area of systems and content. Her main areas of interest include open educational resources, repositories,

metadata and resource description and management within the teaching and learning sector. She has worked in learning technology since 1997 and has participated in a wide range of learning technology interoperability standards bodies. She is currently based at the University of Strathclyde in Glasgow.

JISC CETIS, Centre for Academic Practice and Learning Enhancement
University of Strathclyde
50 George Street
UK, G1 1QE
lmc@strath.ac.uk

Chris Pegler

Senior Lecturer, Institute of Educational Technology, The Open University.

Chris develops and leads online courses within the Open University's MA in Online and Distance Education and during 2009/2010 was Academic Director of the national Support Centre for Open Resources in Education (SCORE) www.open.ac.uk/score supporting OER practice across higher education. Her main research area is reuse of digital resources, including OER and learning objects. Chris is interested in all aspects of eLearning and founded/leads the OU's 400-strong eLearning Community initiative. She is co-editor (with Professor Allison Littlejohn) of the Routledge book series *Connecting with eLearning*, within which she has co-authored *Preparing for Blended eLearning* and *The Educational Potential of ePortfolios*.

Institute of Educational Technology
The Open University
Walton Hall Milton Keynes
UK, MK7 6AA
c.a.pegler@open.ac.uk



This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on <http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en>.