



INTERNET DISCUSSION FORUM
OPEN EDUCATIONAL RESOURCES FINDINGS FROM AN OECD STUDY
13 November – 1 December 2006

OECD study of OER: forum report

ALEXA JOYCE

INTRODUCTION

In August 2005, the OECD Centre for Educational Research and Innovation (CERI) initiated a study to investigate Open Educational Resource initiatives in tertiary education, with support from the William and Flora Hewlett Foundation. The term, ‘Open Educational Resources’ (OER), refers to web-based materials, offered freely and openly for use and re-use in teaching, learning and research. The OER movement offers universities and colleges a considerable opportunity to share their scholarship and knowledge – but it also presents many challenges. The objective of the study was therefore to survey the range of current OER initiatives, and to clarify and analyse critical issues facing institutional providers of OER, in particular addressing four questions:

- How to develop sustainable cost/benefit models for OER initiatives? There is a need to define business models for OER. Most current initiatives rely on donor financing and are not sustainable in the long term.
- What are the Intellectual Property Rights issues linked to OER initiatives? Issues include striking a balance between ‘openness’ versus control over intellectual property, defining legal frameworks for OER initiatives, and issues connected to distribution and equity.
- What are the incentives and barriers for universities and faculty staff to deliver their material to OER initiatives? This has both an individual and organizational dimension, and significant policy implications at all levels.
- How to improve access and usefulness for the users of OER initiatives? This brings together many issues, including assessing the quality of resources, adapting resources to new contexts, and technology requirements and barriers.¹

OECD/CERI carried out an exercise to map the scale and scope of current OER initiatives. Web surveys, both open and targeted at specific institutions and individual faculty members, were also launched. The targeted survey was followed by more detailed interviews and site visits to a limited number of institutions, to gain insight into why they had become involved in the OER movement and how they had responded to the issues outlined above. Finally, an ‘expert group’ was convened periodically to discuss both the conceptual issues and the progress of the study.

¹ For more background to the OECD/CERI OER study, see “Open Educational Resources: opportunities and challenges”, available at <http://www.oecd.org/dataoecd/1/49/36243575.pdf>.

Throughout, OECD/CERI has worked in close co-operation with the UNESCO International Institute for Educational Planning (IIEP), which has a complementary project on OER. Since October 2005, and also with support from the Hewlett Foundation, IIEP has been working to raise awareness of the concept of OER and to explore key issues, through online discussions. The first Internet discussion forum took place in late 2005. Discussions have continued throughout 2006 in a more informal Community of Interest.²

In late 2006, the IIEP international Community of Interest on OER was joined by members of the OECD expert group and other interested individuals to discuss the initial findings of the OECD/CERI study. The group of over 600 participants from 98 countries had the opportunity to not only preview the findings and conclusions of the report, but also to comment upon and offer input to the final version. The discussion was organized in three, week-long sessions, each focusing on a different aspect of the report:

- Week 1 (13-19 November): What do we know about users and producers of Open Educational Resources?
- Week 2 (20-26 November): Why are individuals and institutions using and producing OER?
- Week 3 (27 November – 1 December): What are the policy implications and most pressing policy issues arising from the OECD OER study?

The specific aims of the forum were to:

- identify additional OER studies and research activities, as well as initiatives and projects not included in the original draft of the report;
- obtain feedback on the motivations of institutions and individuals involved in the production of OER;
- understand institutional policies geared to remove barriers and obstacles for OER production and use;
- identify and classify responses to policy issues by level – from the institutional to the international.

MAPPING OF OER

The Background Note for the first week's discussion,³ conveyed the range of post-secondary Open Educational Resources now available around the world:

- Over 2,500 open access courses are available from over 200 universities, following the 'opencourseware' model popularized by the Massachusetts Institute of Technology. They include courses from seven institutions in the USA, the 176 members of the China Open Resources for Education (CORE) consortium, the ten universities participating in the Japanese OCW Consortium and the eleven member universities of the ParisTech OCW project.
- Non course-based OER – from individual learning objects to open access textbooks and journals – are also available through an ever-growing number of online communities, portals and repositories. Notable large-scale examples include Wikipedia, Math World, Rice University Connexions, Textbook Revolution, MERLOT and ARIADNE.

² For more information about the initial forum and subsequent community discussions, see http://www.unesco.org/iiep/virtualuniversity/forumshome.php?queryforums_id=3.

³ Available at http://www.unesco.org/iiep/virtualuniversity/forumsfiche.php?queryforumspages_id=26.

- Some organizations are seeking to translate English-language resources (which, at the moment, account for most of the worldwide corpus of OER) into other languages, including Spanish, Portuguese, Chinese and Thai.

Participants were invited to add to the list of initiatives identified by the OECD study.⁴ This exercise raised an important issue – it highlighted the different understandings among participants of what constitutes an Open Educational Resource. Some of the initiatives identified could not be accepted as truly ‘open’ by all in the group.

Characteristics that sparked debate included:

- *Preconditions to access*: some projects require users to fulfil certain requirements in order to access the materials, such as membership of a specific organization or residency of a particular region or country.
- *Restrictive licensing*: some so-called open materials are legally restrictive in terms of adaptation, re-use and redistribution. They may be released under normal copyright, for example, or be licensed under Creative Commons with the ‘no derivatives’ restriction.
- *Closed media formats*: there is widespread use of file formats based on proprietary, closed standards which cannot be easily edited or reused elsewhere.

It was noted that most of the resources identified in the OECD study are English language due, in part, to the main survey and discussion of findings being organized in English. It was suggested that future work in this area should focus on resources in other languages in order to reach out to a wider community.

In addition to providing examples of OER projects, the Background Note put forward a simple, two-dimensional model for mapping OER initiatives, as shown below in Figure 1. The model locates providers along two axes based on the scale of their operation (from small to large) and the style of organization (from bottom-up and community-organized, to top-down institution-led).

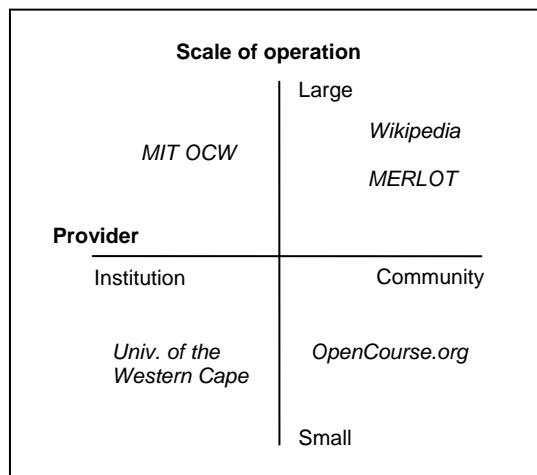


Figure 1: Categories of OER providers

Some participants questioned the need for mapping OER, as the movement is growing and changing so rapidly that any exercise undertaken at this present time must be quickly out of date. Mapping, however, can be a useful exercise in that it identifies a variety of approaches to making educational resources openly available. This can provide inspiration for institutions and planners looking to transfer and replicate or adapt methodologies in new contexts.

⁴ All of the links shared during the forum can be found in the weekly discussion logs, which can be accessed at <http://oerwiki.iiep-unesco.org/index.php?title=OER: Findings from an OECD study>.

During the discussion, participants explored two different approaches to mapping OER:

- mapping OER initiatives;
- mapping individual resources.

MAPPING OER INITIATIVES

Peter Bateman shared the African Virtual University matrix for mapping the typology of OER projects (shown in Figure 2 below). AVU started by identifying the basic ‘elements’ of participating in creating and using OER, which they listed down the side of the matrix. They then identified the key pieces of ‘scaffolding’ needed to support those elements – the headings along the top. This relatively simple structure (which they have since elaborated) enabled the AVU to map out who in the OER community was doing what. This information helped the AVU in its own strategic thinking on OER.

Figure 2: African Virtual University matrix of OER initiatives

	Collaborations	Sensitization	Capacity enhancement	Technological infrastructure	Policy development	Research
Organization	OCW Consortium Website	Development Gateway		Open University OpenLearn portal		OECD
Dissemination	SAIDE (Thuthong)	Development Gateway		Partnership for Higher Education (bandwidth)	Creative Commons (licensing)	IDRC
Utilization	MIT/OCW (Africa pilot)		COSL	UWC (KEWL)		OECD
Creation	AVU/OU TESSA project	Hewlett Foundation	Commonwealth of Learning	Open University OpenLearn portal	UWC	

Some participants pointed out a number of limitations in the initial matrix, in particular noting that there are many other dimensions to consider when dealing with OER projects. Paul Stacey responded by suggesting a new, five-dimensional model of the key attributes, or structural components, used to define OER: policy, legal, business, technology and academic/socio-cultural (Figure 3). He then elaborated the model by identifying the issues that constitute decision-making points for an institution, organization or individual getting involved in OER provision (Figure 4).



Figure 3. OER attributes model

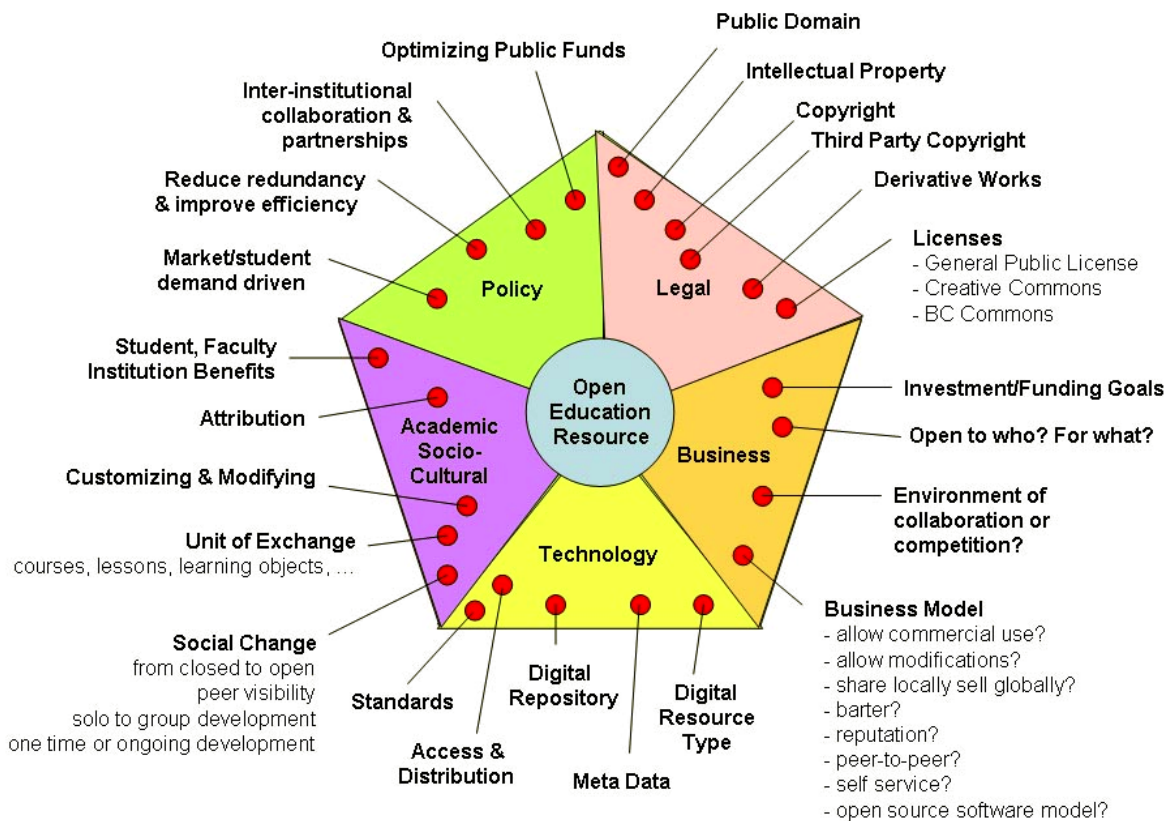


Figure 4. OER attributes and decision points

In general, it was agreed among participants that the number and type of dimensions for mapping OER should be extended. Participants proposed a number of dimensions that should be added to the initial, two-dimensional model, most of which are captured in the OER attributes model above, but that are important descriptors of a project:

- *Scope*: how focused is the OER project in terms of disciplines covered, levels of education catered for and intended audience? For instance, a narrow OER project might focus only on providing physics materials to support in-class, tertiary-level teaching, while a broad OER project may aim to share teaching and learning materials for a variety of levels and subjects with both educators and students.
- *Authorship*: are the resources the product of one content creator working alone, or are they the result of a collaborative community effort?
- *Licensing*: there are many licensing options for OER projects and not all are equally free and open. Since the choice of license will affect the degree to which materials can be mixed with other OER or reused in other contexts, it is an important piece of information to capture in any mapping exercise.
- *Granularity*: this refers to the size of the educational resources produced. The more granular a resource, the smaller the chunk of information it contains. However, this dimension has limitations as a mapping element for OER initiatives as it is feasible for a project to propose both highly granular content (i.e. learning objects or individual learning assets) but low granularity (i.e. providing a whole course module) at the same time.
- *Teaching duration*: in some ways this is similar to granularity, but it also captures information about the actual teaching time needed for use of the materials (i.e. from a full course that may take a whole semester or term at one extreme, to a learning object for use in a single class at the other).

MAPPING INDIVIDUAL RESOURCES

A number of participants suggested an alternative approach to mapping OER initiatives, focusing on metadata for classifying the individual resources themselves. They proposed that researchers should identify a core set of OER attributes in order to survey OER provision and use. To qualify as OER, it was argued, a resource should have the following characteristics:

- *License*: the license under which an OER is released should mention precisely what is authorized in terms of adaptation and re-use.
- *File format*: OER should be published in a format that everyone can open, copy and paste from, and edit content in, without needing to install proprietary software.
- *Granularity*: to be re-usable easily, OER should be released in small chunks, or be easily separable into smaller chunks.
- *Searchability*: OER should be easy to search for and find. This means that resources should be described using standards-compliant metadata, to enable federated searching across a variety of search tools.
- *Efficiency*: OER should be efficient (i.e. well designed and of high quality) for teaching and learning.

TOOLS AND TECHNICAL ASPECTS

The discussion raised a number of issues focusing on tools for OER production and distribution, and other related technical issues. The main aspects discussed were:

- tools for customising the level of access to educational material according to user profiles;
- the relative openness of a variety of file formats;
- the difference between ‘programmatically open’ and ‘educationally open’ resources.

A need was expressed for more tools that allow educators to choose how open they make their materials, and to define different degrees of openness for different user groups. For example, both restricted copyright material and OER might be viewable by registered students at a university, while the general public would be able to view only the open parts of the educational materials. It was noted that Moodle (a commonly used open source Learning Management System) has released an additional module that allows customization of access according to varying rights.⁵

The issue of file formats also elicited debate, as outlined in the previous section, with some participants questioning whether resources in closed, proprietary file formats could really be considered as OER. For instance, many OER are released in non-editable formats, such as Flash (.swf) and Adobe Portable Document Format (.pdf). Other participants argued that if materials in such formats were discounted, it would leave very few resources in the pool of existing OER. Furthermore, even non-editable formats can be made open in educational terms: there is a difference between ‘programmatically open’ and ‘educationally open’ resources. Editable source files (i.e. programmatically open resources – for example, the editable .fla version rather than .swf version of a Flash file) are mainly of importance to programmers and other OER producers (e.g. graphic designers). Educators, on the other hand, primarily need educationally open resources – materials that can be reformatted and reused for teaching and learning. It was pointed out, however, that the extent to which resources can be reused depends on the degree of programmatic openness. For example, changing annotations on an animated diagram in Flash would require access to the original .fla file.

⁵ See http://www.metasolutions.us/resources/moodle/mods/ocw_metamod.php for more information.

In addition to file formats, OER developers should also be sensitive to the issue of file size. Participants suggested that files should be kept as small as possible so that users with limited bandwidth are not excluded from accessing and downloading materials. If OER producers do opt for rich media formats, they should endeavour to make smaller and lighter alternatives available.

MOTIVES FOR OER PRODUCTION

INDIVIDUAL

Individuals are motivated to make teaching and learning resources available as OER, with varying degrees of self-interest, and for a wide variety of academic, pedagogical, ethical, philosophical and economic reasons. It was noted in the Background Note to the second week's session⁶ that teachers and researchers questioned for the OECD study indicated that one of their major motivations was to "gain access to the best possible materials and have more flexible materials". Other, less important motivations cited included outreach to disadvantaged communities or bringing down costs for students.

Participants proposed many reasons for individual production and dissemination of OER, including widening access, keeping students up to date, collaborating with a wider group, showcasing and self-promotion, and a self-driven interest in OER.

Some academics and others producing OER believe that they have an ethical or moral obligation to share their work and knowledge as widely as possible. OER enables them to make their teaching materials available to individuals and institutions that would not otherwise have access. Others may be motivated by the opportunity to reach out specifically to new learners – or by the prospect of continuing to serve former students, since OER enables graduates and other alumni to stay up to date in their fields on a self-study basis, whether for ongoing professional development or their own interest.

Individuals may be drawn by the improved opportunities for exchange and collaboration with others, whether academics, students or other interested parties, through communal development projects and the sharing of materials. There are also other non-financial benefits for individual academics, such as the chance to make their teaching and expertise known on a wider stage: OER can play a role in the promotion and dissemination of personal achievements and skills.

Finally, participants proposed that some individuals produce openly licensed materials primarily for their own work; sharing with others is simply a side effect.

INSTITUTIONAL

The Background Note identified six key arguments in favour of institutional OER production:

- Sharing knowledge is generally a good thing to do and is in line with the academic tradition of a collegial sharing of information.
- OER better leverages public funding by allowing free sharing and re-use of resources, which in turn minimises duplication of both effort and results.
- Sharing and reusing resources reduces the cost of content development and production.
- OER is good publicity for institutions. It improves public relations and showcases the teaching on offer, which may in turn attract new students.

⁶ Available at http://www.unesco.org/iiep/virtualuniversity/forumsfiche.php?queryforumspages_id=27.

- OER may offer a new business model and method for generating revenue, as institutions face growing competition in a global marketplace.
- A policy of open sharing challenges institutions to put their houses in order – to better manage and archive materials, for example – which in turn will stimulate internal improvement, innovation and re-use.

Participants reflected on these and suggested a number of reasons for engaging in OER production at the institutional level, based upon issues such as continuing education for alumni, student course selection, attracting future students, cost reduction, alternatives to commercial materials, quality enhancement, interaction with a wider public, encouraging innovation, moral and ethical concerns, and legal requirements.

Institutions may be motivated to provide OER primarily for their own audience of prospective, current and former students. OER give alumni the opportunity to continue to access resources as their careers and current thinking in their field of study change and develop. Current students can use OER to preview and select modules and courses of study. They can also go back and revise materials as needed. Finally, OER can be used to attract future students and academics by showcasing the learning experience and approach employed by the institution.

It was suggested that cost reduction was a motivating factor for some institutions as, over time, in-house academics generate a corpus of appropriate OER materials for use in teaching and learning, rather than relying on purchasing commercially produced content. Costs are reduced for the institution itself, but also for its students, who do not need to purchase their own materials. In some cases, institutions encourage OER production to avoid an over-reliance on commercial products (e.g. textbooks) and to ensure a wider variety of academic perspectives. Related to this point is also the desire to experiment with new business models by using OER approaches; some universities feel that the traditional model is failing to generate sufficient financial resources.

The OER publication process provides an opportunity to assess and improve the quality of individual teaching and learning resources, and the overall course structure. For instance, increased content visibility could make it easier for academic staff to organise different parts of a course, as well as courses themselves.

Pedagogical benefits may also be accrued by sharing OER with individuals outside institutions, e.g. by engaging researchers in industry or other sectors who can contribute to academic development and thinking, or offer an outsider's view of pedagogical activities. The wider sharing of OER encourages the exchange of new ideas and innovation that would not occur in the traditional closed, proprietary context.

Some participants argued that publicly funded institutions have a moral and ethical obligation to maintain and promote social and academic freedom. OER production should be a natural choice for such institutions. Finally, some organizations, especially governmental agencies (e.g. in the USA) are required to produce make their resources openly available by law.

BARRIERS TO OER PRODUCTION

INDIVIDUAL

The following barriers and obstacles facing individuals were identified in the Background Note:

- lack of time and skill.;
- a rigid pedagogical culture, with little innovation;
- lack of a reward system for OER production.

Participants elaborated further on these points, focusing specifically on lack of time, lack of incentives, lack of capacity, and fear of loss of control.

The commitments of many academics are already extensive. It can be difficult for them to find time for additional tasks that fall outside their teaching and research obligations, such as producing OER. Furthermore, OER development does not fit into the traditional academic reward system, so there may be little incentive. Academics gain credibility and advance in their careers through publication of research, preferably in prestigious international journals, rather than publication of teaching and learning materials openly on the Internet.

Even where there is awareness of and interest in OER, individuals may be put off by their own lack of technical capacity. Many academics have not been trained to produce digital course materials and, perhaps more importantly, lack knowledge and capacity with regards to licensing and copyright issues. In many cases, a lack of institutional policy on OER means that there is little support or guidance. Finally, academics may be concerned that OER implies a loss of control over the materials they have created – resources could be taken out of context and misunderstood by users, or others may try to profit from their own hard work.

INSTITUTIONAL

During the discussion, participants stressed that there are many potential areas of risk for institutions engaging in OER production, covering virtually all aspects of their operations: administrative, procedural, financial, contractual/legal, technical, cultural, academic and pedagogical. More specifically, participants suggested the following barriers to OER production at the institutional level: lack of policy, lack of capacity, lack of financial and human resources, fear of competitors, difficulty of acquiring OER production resources and the constraints of the academic culture.

Firstly, most institutions have not developed a clear policy on OER production. Individual academics may become interested in creating OER, but find that their institutions have no guidelines on, for example, legal questions such as what sort of licence they should adopt – questions that demand decisions at the institutional level. The lack of policy is in many cases related to a lack of knowledge and capacity among administrators and academics in terms of OER and, with regard to copyright and IP implications, a reluctance to address legal issues.

Without an institutional OER policy, there may be little reason to consecrate existing funds to OER production. Furthermore, many academic institutions currently face budget restrictions and an uncertain financial future. They may lack the financial resources to employ the additional staff needed for an institution-wide OER initiative. Obtaining copyright clearance for third-party content, and eliminating or replacing copyrighted elements, for example, demands a considerable amount of staff time. Time and resources are also needed to develop capacity among teaching staff, so that they are more aware of copyright restrictions when developing course material. Related to this, institutions face difficulties in acquiring OER production resources, resulting in slow or inefficient production processes. Some existing open source systems, for example, may be too dependent on specific workflows to be appropriate for institutional adoption.

Another considerable disincentive in a climate of increased competition and reduced funding is the fear that another institution could take openly available materials and use them to gain a competitive advantage, especially if commercial use and use by private for-profit institutions is allowed.

Finally, the prevailing culture in higher education places the responsibility for innovation in the hands of academics, rather than students who may have stronger incentives to experiment with and advance teaching and learning methods.

LEGAL AND LICENSING ISSUES

Legal issues were raised and discussed throughout the three-week forum and, as indicated above, were seen as a major barrier to OER production for both individuals and institutions. In addition to the issues outlined in previous sections, a number of observations were made relating to the particular challenges of understanding law in cyberspace and the implications of choosing different open licenses.

Firstly, it was asserted that the legal situation in many countries and regions is unclear, and that this lack of clarity is a major barrier to use of web-based materials. The onus is on the user to understand what is or is not permitted under a particular license or copyright notice. Users may have some familiarity with the rules of their own country. However, in cyberspace, international and national law, ethical values and legal principles come together to form an intricate and confusing web. Principles such as ‘fair use’, for example, do not mean the same thing – or even exist – in all countries. Clear and accessible international overviews are hard to find, with the result that fear of contravening the law may inhibit the production and use of OER.

Even those that are open publishing enthusiasts may be hindered by the relative lack of clarity. Many content developers do not fully understand the legal implications of the license they choose. For example, the Creative Commons ‘non-commercial’ option generated a great deal of debate. For many academics and institutions, a restriction on commercial use of their materials is a very important right to retain. Yet, to many open content proponents it represents an unacceptable restriction on the sharing of knowledge through the considerable limitations it places on adaptation and re-use. Materials carrying the non-commercial restriction cannot be remixed with materials with truly open licenses, for example. There is a clear need for a more focused debate on these issues and IIEP agreed to organize a subsequent forum on the topic.

ACCESS ISSUES

Lack of access, whether for technical, cultural or capacity development reasons, was also repeatedly highlighted as a significant barrier to participation in the OER movement, especially in developing countries. In the discussion, it was noted that the World Wide Web Consortium’s Web Accessibility Initiative (WAI) is not geared towards the particular access issues connected with OER. This is due to the fact that the WAI focuses specifically on developing “strategies, guidelines, and resources to help make the Web accessible to people with disabilities”, rather than seeking to address the problems associated with access in developing countries.⁷ It was argued that similar standards should be developed to maximise the accessibility of OER in developing countries. However, others pointed out that locally created OER, which builds on local knowledge and approaches, may be more relevant for developing countries than OER produced in more developed countries. Promoting the creation of original OER might be an area to be explored further by UNESCO and OECD in the future.

POLICY ISSUES

Susan D’Antoni proposed a grid with a draft classification of policy issues – and the levels at which responses could be developed – to focus and structure the discussion in the final week. The grid (Figure 5) was modified slightly during the discussion and the issues raised by participants have been captured within it.

⁷ <http://www.w3.org/WAI/>

Figure 5: Policy issues by level

<i>Level</i> <i>Issues</i>	Institutional	Local	Provincial/State	National	International
Promotion/ awareness	<ul style="list-style-type: none"> ▪ Target traditionally neglected groups ▪ Offer training for academics ▪ Open OER collections to the general public 	<ul style="list-style-type: none"> ▪ Offer training for academics ▪ Exchange knowledge and approaches between local institutions 	<ul style="list-style-type: none"> ▪ Encourage/oblige publicly funded institutions to produce some teaching content as OER 	<ul style="list-style-type: none"> ▪ Encourage/oblige publicly funded institutions to produce some teaching content as OER ▪ Include sessions on OER in statutory training for educators ▪ Promote rigorous academic Open Access journals 	<ul style="list-style-type: none"> ▪ Promote OER to policy makers and academics via studies and research
Faculty support/ recognition	<ul style="list-style-type: none"> ▪ Credit academics for OER production ▪ Encourage use of teaching profiles in OER format 	<ul style="list-style-type: none"> ▪ Organise local competitions to reward excellent OER 	<ul style="list-style-type: none"> ▪ Encourage use of teaching profiles in OER format ▪ Organise regional competitions to reward excellent OER 	<ul style="list-style-type: none"> ▪ Encourage use of teaching profiles in OER format ▪ Organise national competitions to reward excellent OER 	<ul style="list-style-type: none"> ▪ Promote support for academics in OER production to national Ministries of Education
Localization/ adaptation/ translation	<ul style="list-style-type: none"> ▪ Offer training for academics 	<ul style="list-style-type: none"> ▪ Offer training for academics 	<ul style="list-style-type: none"> ▪ Stimulate and facilitate exchange and adaptation of OER between institutions 	<ul style="list-style-type: none"> ▪ Stimulate and facilitate exchange and adaptation of OER between institutions 	<ul style="list-style-type: none"> ▪ Offer funding for localizations etc. particularly to developing countries ▪ Stimulate OER exchange between countries
Intellectual property	<ul style="list-style-type: none"> ▪ Create or revise institutional policy on IPR and open standards 	<ul style="list-style-type: none"> ▪ Set up suitable IPR regime ▪ Coordinate work on standards and interoperability 	<ul style="list-style-type: none"> ▪ Create or revise and disseminate IPR policy and guidelines ▪ Coordinate work on open standards 	<ul style="list-style-type: none"> ▪ Create or revise and disseminate national IPR policy and guidelines 	<ul style="list-style-type: none"> ▪ Promote international debate on IPR and open standards ▪ Facilitate international agreements on IPR and open standards
Quality assurance	<ul style="list-style-type: none"> ▪ Devise quality criteria for academics ▪ Validate OER produced according to criteria ▪ Encourage submission of work to academic OER journals 	<ul style="list-style-type: none"> ▪ Promote quality criteria among academics ▪ Offer guidance to institutions on devising quality criteria 	<ul style="list-style-type: none"> ▪ Encourage uptake of a national quality standard for OER ▪ Offer guidance to institutions on devising quality criteria 	<ul style="list-style-type: none"> ▪ Stimulate research on quality in OER ▪ Develop national quality standards for OER ▪ Promote rigorous academic Open Access journals 	<ul style="list-style-type: none"> ▪ Stimulate research in quality in OER ▪ Determine commonalities between national quality approaches to enable exchange of equivalent quality materials
Technology/ infrastructure	<ul style="list-style-type: none"> ▪ Ensure easy access particularly for underserved groups ▪ Offer technical support to academics 		<ul style="list-style-type: none"> ▪ Coordinate access opportunities 	<ul style="list-style-type: none"> ▪ Provide local access opportunities ▪ Develop national technical infrastructure 	<ul style="list-style-type: none"> ▪ Encourage international agreement on standards and interoperability ▪ Lobby governments to invest in technical infrastructure

Figure 5: Policy issues by level

<i>Level/Issues</i>	Institutional	Local	Provincial/State	National	International
Standards	<ul style="list-style-type: none"> ▪ Devise clear and simple guidelines for OER production 	<ul style="list-style-type: none"> ▪ Devise clear and simple guidelines for OER production ▪ Sponsor institutional work on standards 	<ul style="list-style-type: none"> ▪ Monitor regional/state institutions for compliance with national standards 	<ul style="list-style-type: none"> ▪ Set national standards for OER 	<ul style="list-style-type: none"> ▪ Set international standards for OER
Financial support/sustainability	<ul style="list-style-type: none"> ▪ Research OER production and business models 	<ul style="list-style-type: none"> ▪ Research OER production and business models ▪ Public Private Partnerships (PPPs) 	<ul style="list-style-type: none"> ▪ Research OER production and business models ▪ PPPs 	<ul style="list-style-type: none"> ▪ Fund training for academics and policy makers ▪ Include provision for OER in R&D budget ▪ Use and encourage PPPs 	<ul style="list-style-type: none"> ▪ Fund training for academics and policy makers ▪ Include provision for OER in R&D budget ▪ Use and encourage PPPs

Some general points were also discussed – policy development processes, partnerships and the wider context of OER policy.

It was suggested that OER policy development should involve wide consultation with the many stakeholders, to ensure that the bottom-up activities and initiatives, which are pervasive in OER production, are brought into the mainstream. In addition, any policy finally implemented should be regularly reviewed and updated to ensure that it remains relevant to the current situation. It must also be framed within the context of improving teaching and learning, rather than “change for change’s sake”.

Working in partnership is essential for the effective uptake and dissemination of OER. An open approach across organizations will lower technical barriers and encourage collaboration. It is particularly important to facilitate participation in developing countries and among organizations with limited internal capacity.

Governments were seen to have a key role to play in ensuring that materials are open and accessible to all. And as international organizations, OECD and/or UNESCO should engage in ongoing leadership and monitoring of the nascent OER movement.

CONCLUSIONS

Although still a relatively new field, there are numerous OER projects being established throughout the world. The OECD/CERI study focused principally on the English-speaking world and on institutional initiatives. The total number and range of OER projects worldwide is likely to be much higher. The precise number and type of projects is difficult to assess, however, owing to the variety of definitions proposed for OER. Nonetheless, participants proposed and refined two effective models for mapping OER projects and individual resources, which may be used in future mapping exercises. In addition, the group found that there are many issues relating to OER that are still in need of further study and development, in particular those relating to defining educational resources, copyright and licensing, and tools and accessibility.

Incentives and barriers to OER production and use are numerous, and were considered in terms of individual and institutional perspectives. Those discussed during the forum are summarized in the table below (Figure 6).

Figure 6: Incentives and barriers for OER production

OER incentives	OER barriers
<p>Individual</p> <ul style="list-style-type: none"> ▪ Gaining access to good quality, flexible materials and enabling exchange with colleagues ▪ Reducing costs for students ▪ Keeping students/alumni up to date on self-study basis ▪ Outreach to disadvantaged groups ▪ Collaborating with a wider group ▪ Showcasing and promotion of work ▪ Ethical/moral duty 	<p>Individual</p> <ul style="list-style-type: none"> ▪ Lack of time – heavy teaching schedules ▪ Lack of innovation in pedagogy ▪ Lack of capacity and knowledge, leading to fear of loss of control ▪ Lack of reward system and incentives ▪ Little management or peer support ▪ Lack of appropriate tools
<p>Institutional</p> <ul style="list-style-type: none"> ▪ Cost reduction, leverage of public funds ▪ Experimenting with new business models ▪ Creating alternatives to commercial materials ▪ Encouraging innovation ▪ Quality enhancement and diversity ▪ Public relations/showcasing ▪ Attracting future students ▪ Continuous education of alumni/students ▪ Ethical/moral duty 	<p>Institutional</p> <ul style="list-style-type: none"> ▪ No clear OER policy ▪ Lack of capacity and financial resources ▪ Fear of competitors and loss of competitive advantage ▪ Difficulty in acquiring/implementing OER production ▪ Constraints of academic culture ▪ Constraints of existing production tools

Participants indicated that the OER movement should be further explored and championed by OECD and UNESCO/IIEP. In particular, they suggested that an ongoing monitoring project should be implemented, ensuring that a wider sample of OER projects is included, particularly paying attention to the non-English-speaking world. Another fruitful avenue would be to further develop the work on OER policy. One approach could be to identify institutional, regional and national examples of the development and introduction of policies on OER, and to investigate their effectiveness, with the aim of describing ‘best practices’ for policy makers and decision-makers.

In conclusion, it should be noted that the engagement of the expanded OER Community in a discussion of a major study proved to be an effective means of sharing preliminary research findings on an important emerging development in higher education. The community of over 600 individuals from almost 100 countries worldwide made a valuable contribution to the finalization of the OECD report (scheduled for release in mid 2007) through providing intelligence on OER initiatives and offering new perspectives on issues of critical importance.

Both IIEP and OECD found this method of sharing research results and soliciting input from an informed group to be a very successful exercise and thank all those involved for their contributions.

APPENDIX: OER research and studies

Participants proposed the following research articles as being of relevance when discussing producers and users of OER.

Atwell, G. 2006. "The new pedagogy of open content: bringing together production, knowledge and learning."

Available at http://www.knownet.com/writing/weblogs/Graham_Atwell/entries/beijing_paper.

Baldi, S., Heier, H. & Stanzick, F. 2002. "Open Courseware vs. Open Source Software – a critical comparison." In: *ECIS 2002* (pp. 1375-1383).

Available at: <http://csrc.lse.ac.uk/asp/aspecis/20020137.pdf>.

Benkler, Y. 2006. *The wealth of networks: how social production transforms markets and freedom*. New Haven: Yale University Press.

Available at http://www.benkler.org/wealth_of_networks/index.php?title=Download_PDFs_of_the_book.

Downes, S. 2005. "E-learning 2.0." In: *eLearn Magazine*.

Available at: <http://www.elearnmag.org/subpage.cfm?section=articles&article=29-1>.

Draxler, A., Haddad, W.D. (Eds.). 2002. *Technologies for education: potential, pre-requisites, constraints and prospects*. Washington, DC: UNESCO and Academy for Educational Development.

Available at <http://www.aed.org/ToolsandPublications/upload/TechEdBook.pdf>.

Keats, D. 2006. Implications of the NonCommercial (NC) restriction for educational content licensed under a Creative Commons licence.

Available at: http://ics.uwc.ac.za/usrfiles/content/execdir/documents/nc_restrict_cc_0.4.pdf.

Keats, D. 2006. *The genesis and emergence of education 3.0 in higher education and its potential for Africa*. Not yet published.

Hart, J., Albrecht, B. 2004. *Instructional repositories and referatories*. ECAR Research Bulletin, Volume 2004(5), 2 March 2004.

Available at <http://www.educause.edu/ir/library/pdf/ERB0405.pdf>.

Pfeffer, T. 2006. "Content management and blended learning: beyond the borders of the classroom." In: *Zeitschrift für Hochschulentwicklung*, 1(3).

Available at http://www.zfhd.at/resources/downloads/ZFHE_1_3_01_PFEFFER_Content_management_BL_1000921.pdf.

Pfeffer, T. 2006. "Open knowledge resources for higher education: scholarly publications, course materials, academic software." In: I. Mac Labhrainn et al. (Eds.), *The challenge of ecompetence in academic staff development* (pp.1-13). Galway: CELT, NUI Galway.

Available at <http://www.ecompetence.info/uploads/media/ch1.pdf>.

Rosatelli, M., Senger, H., Silva, F., Stanzani, S., Nunes, C. 2006. "Supporting the collaborative construction of learning objects using the grid." In: *Sixth IEEE international symposium on cluster computing and the grid (CCGRID'06)* (pp.257-260).

Available at: <http://doi.ieeecomputersociety.org/10.1109/CCGRID.2006.100>.

Sarnow, K., Vuorikari, R. 2007. "European national educational school authorities' actions regarding open content and Open Source Software in education" In: *Open Source for knowledge and learning management*. Not yet published.

Wiley, D.A. 2000. *Learning object design and sequencing theory*. Dissertation for Brigham Young University.

Available at <http://opencontent.org/docs/dissertation.pdf>.