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Section 3.

A second forum: discussing the OECD study of OER

A major study of OER was undertaken by the Centre for Educational Research and Innovation (CERI) of the Organisation for Economic Co-operation and Development (OECD). From the planning stages of both the UNESCO and OECD activities, it was foreseen that there would be fruitful collaboration between the two organizations. This was indeed the case. As the CERI study was being prepared for publication, some of the findings were shared with the International Institute for Educational Planning (IIEP) community, both for their information and to get their reaction. For this discussion, the community was joined by members of the OECD expert group on OER and others interested in the study.

The forum was organized in three week-long sessions on the following topics:

- *What do we know about users and producers of Open Educational Resources?*
- *What are the incentives for individuals and institutions to use, produce and share OER, and what are the barriers to their doing so?*
- *What are the policy implications and the most-pressing policy issues – on institutional, regional and national levels – emerging from this study?*

The community engaged in a thoughtful discussion of the findings of the CERI study, exploring issues and providing commentary that was useful in the finalization of the eventual publication, Giving Knowledge for Free *(OECD, 2007).*

Chapter 8

MAPPING PRODUCERS AND USERS

Jan Hylén

One of the important exercises undertaken as part of the CERI study was the effort to identify and map OER initiatives, largely in OECD countries. The OER movement has been gaining ground, and this overview of the nature and scale of the initiatives constitutes a valuable snapshot of the shape of the movement in 2006. The findings were presented to the community in a background note, and members were invited to identify studies and research, as well as additional OER activities.

1. BACKGROUND

There are many critical issues concerning the access, quality and cost of information and knowledge available on the internet, as well as the provision of content and learning material. As it becomes clearer that the growth of the internet offers real opportunities for improving access and transfer of knowledge and information from universities and colleges to a wide range of users, there is an urgent need to clarify these issues with a special focus on Open Educational Resource (OER) initiatives. There is also a need to define technical and legal frameworks, as well as business models, to sustain these initiatives. That is the background to the OECD-CERI study, which has aimed to map the scale and scope of OER initiatives in terms of their purpose, content and funding, and to clarify and analyse four main questions:

- How can sustainable cost/benefit models for OER initiatives be developed?
- What are the intellectual property rights issues connected with OER initiatives?
- What are the incentives for universities and faculty staff to deliver material to OER initiatives, and what are the barriers to their doing so?
- How can access and usefulness for the users of OER initiatives be improved?

The study combined desk research, commissioning of expert papers, and expert meetings, with surveys and a series of site visits. A final report –

presenting the main findings, the expert papers, and recommendations to policy-makers – was published in early 2007 (OECD, 2007).

2. MAPPING OER INITIATIVES

Although we are still in the 'early days' of the OER movement, the number of initiatives seems to be growing fast. Side by side with large institution-based or institution-supported initiatives, numerous small-scale activities have been initiated. Building on Wiley (2006), the following brief overview can be given of the OER movement in post-secondary education.

In late 2006, there were over 2,500 open access (or open courseware) courses available, from over 200 universities.

- In the United States, 1,700 courses had been made available, by 7 university-based projects.[68]
- In China, 451 courses had been made available, by 176 university members of the China Open Resources for Education (CORE) consortium.[69]
- In Japan, 350 courses had been made available, by 10 universities participating in the Japanese Opencourseware Consortium.[70]
- In France, 178 courses had been made available, by 11 member universities of the ParisTech open courseware (OCW) project.[71]

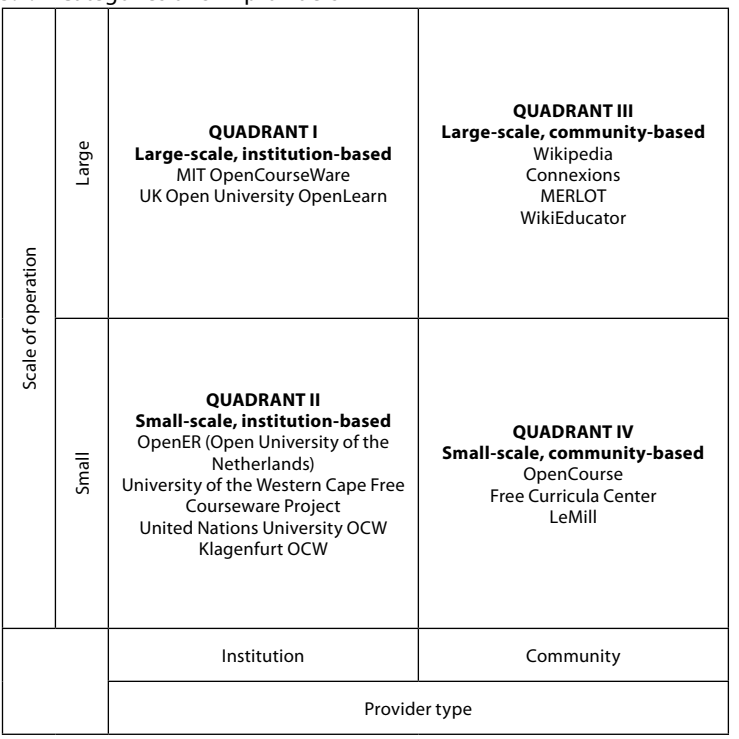
More OER projects are emerging at educational institutions in: Australia, Brazil, Canada, Cuba, Denmark, Hungary, India, Iran (Islamic Republic of), Ireland, the Netherlands, Portugal, the Russian Federation, South Africa, Spain, Sweden, Thailand, the United Kingdom, the United States and Viet Nam.

There are also a number of projects underway to make these higher education-based materials available in multiple languages, including Universia's Spanish and Portuguese translations,[72] CORE's simplified Chinese translations,[73] Opensource Opencourseware Prototype System's (OOPS) traditional Chinese translations,[74] and Chulalongkorn University's

68 http://ocw.mit.edu/, http://cnx.rice.edu/, http://ocw.jhsph.edu/, http://ocw.tufts.edu/, http://www.cmu.edu/oli/, http://ocw.nd.edu/, http://ocw.usu.edu/
69 http://www.core.org.cn/cn/jpkc/index_en.html
70 http://www.jocw.jp/
71 http://graduateschool.paristech.org/
72 http://mit.ocw.universia.net/, http://www.universiabrasil.net/mit/index.jsp
73 http://www.core.org.cn/OcwWeb/Global/all-courses.htm
74 http://www.myoops.org

Thai translations.[75] In October 2006, these translation projects represented approximately 52 per cent of all open courseware-style courses.

Figure 8.1. Categories of OER providers



Source: Adapted from OECD, 2007, p. 45.

The number of available non-course Open Educational Resources – such as articles, individual curriculum units, modules, and simulations – is also growing at a terrific rate. By October 2006: the English-language Wikipedia[76] contained over 1,300,000 articles; Math World[77] contained 12,632 entries; Rice's Connexions project hosted 3,461 open learning objects available for mixing and matching into study units or full courses; Textbook Revolution[78] contained links to 260 freely available, copyright-clean textbooks; MERLOT[79]

75 http://mit-ocw-thai.eng.chula.ac.th/
76 http://wikipedia.org/
77 http://mathworld.wolfram.com/
78 http://textbookrevolution.org/
79 http://www.merlot.org/

offered almost 15,000 resources; and European based ARIADNE[80] offered links and federated searches in several networks and repositories. UNESCO-IIEP created a wiki containing a listing of 'OER useful resources' with links to portals, repositories and open content projects.[81] Even more difficult than to list the number of initiatives would be to estimate the quantity of available resources, even with a narrow definition of OER. On top of the resources accessible through initiatives like those listed above, many more can be found by using search engines like Google or Yahoo.

At the moment it is impossible to give an accurate estimate of the number of ongoing OER initiatives. What can be offered is a draft typology of different repositories. As already mentioned, there are both large-scale operations and small-scale activities. It is also possible to distinguish between different providers – institution-based programmes and community-based, bottom-up activities. In both cases, there are all kinds of in-between models forming a continuum, as shown in Figure 8.1.

In the upper left corner of Figure 8.1, large-scale and institution-based or -supported initiatives would be placed. A good example is the Massachusetts Institute of Technology (MIT) OCW programme. It is large scale in the number of resources provided and the number of people involved. It is completely institution-based, in the sense that all materials originate from MIT staff. In the upper right corner, large-scale, non-institution-based operations would be placed. Perhaps the best example of such an operation would be Wikipedia – one of the internet's real success stories. Another example would be MERLOT. In the bottom left corner of the figure, an example of a small-scale but institution-based initiative is given: the University of the Western Cape, South Africa, which announced in October 2005 that they would launch a 'free content and free open courseware strategy' (Grant, 2006). Finally, in the bottom right corner, we have an example of a small-scale, community-based initiative: OpenCourse. OpenCourse[82] is 'a collaboration of teachers, researchers and students with the common purpose of developing open, reusable learning assets (e.g. animations, simulations, models, case studies)' (OpenCourse, 2006).

A third factor to consider is whether the repository provides resources in a single discipline, or whether it is multidisciplinary. While

80 The Alliance of Remote Instructional Authoring and Distribution Networks for Europe (http://www.ariadne-eu.org/)

81 http://oerwiki.iiep-unesco.org/index.php?title=OER_useful_resources

82 http://opencourse.org/

single-disciplinary programmes do exist (e.g. the Stanford Encyclopedia of Philosophy[83] and Planet Math[84]), the multidisciplinary approach remains the most common.

3. USERS AND PRODUCERS OF OER

Not much is known about who is actually producing and using all of the available OER. Of course, institution-based initiatives, like the OCW programmes at different universities, use their own staff to produce their material; and some of them, such as MIT, try to continuously evaluate who their users are. But, as a whole, very little is known about the users and producers. To correct this deficiency, the OECD project launched two web-based surveys during spring 2006, one targeting institutions and one aimed at individual teachers and researchers. The first received only a very small number of answers, although over 1,800 emails were sent to universities in the 30 OECD member countries. The emails were sent to the rector or vice chancellor's office, and the poor result may be a sign that OER is still mostly a grass-roots phenomenon. Many staff at the managerial level of an institution are not involved in, nor even aware of, the activities of research groups or individual faculty members.

The survey for individuals was answered by 193 people, from 49 different countries, covering all parts of the world. Although the geographical spread is interesting, there was a clear bias towards teachers from English-speaking countries (perhaps due to the fact that the questionnaire was only available in English). The majority of respondents work at institutions with 10,000 students or less; approximately one-third are at institutions with 11,000 to 50,000 students. More than half of the respondents work in the area of education, while two-thirds represented publicly funded institutions. A small group (twelve people) work for private for-profit universities. The small number of replies calls for caution in the interpretation of results.

A majority of the respondents said they were deeply involved in OER activities, mostly as users of open content and only slightly less as producers. About half of them experienced good support from management in their use of open content, but somewhat less support for producing content and using open source software. About one out of four experienced good support

83 http://plato.stanford.edu/
84 http://planetmath.org/

from the management level in their production of open source software. The majority of respondents said they were engaged in some sort of cooperation regarding production and exchange of resources, at the regional, national or international level. Overall there were no, or only small, differences in the replies from the respondents from OECD versus non-OECD countries.

As part of an extensive study on use and users of digital resources in California, thirteen OER providers were interviewed (Harley et al., 2006). All sites were developed for broad educational purposes – for instance, to provide supplementary materials for students, to assist instructors in teaching, or to provide general course materials to support any type of learning. All of them target post-secondary instructors as their primary audience, together with students and the general public. Although most interviewees claimed that their resources are intended to reach a broad audience, even those sites with broad outreach missions recognized that their materials are often most useful for faculty preparing new courses. Although good usage data are rare, anecdotal evidence suggested that the actual audience varied significantly from the target audience in only a few cases.

Other findings regarding OER users result from individual projects. In 2005, some 8.5 million visits were recorded to MIT OCW content, an annual increase of 56 per cent (MIT, 2006). The traffic seems to be increasingly global: 57 per cent of visitors came from outside the United States. Twenty-one per cent came from Western Europe, 15 per cent from East Asia, and 6 per cent from South Asia. The remaining 15 per cent of the traffic originated in Eastern Europe, the Middle East, Africa, the Pacific, Central Asia and the Caribbean combined. In 2004, the bulk of MIT's traffic was made up of self-learners, typically with a bachelor's or master's degree (47 per cent), followed by students (32 per cent) and educators (16 per cent) (MIT, 2005). Higher percentages of educators used the site in developing and transition regions, such as East Asia, Latin America, Eastern Europe, and the Middle East and North Africa. Self-learner percentages continued to be highest in North America, East Asia and Western Europe.

In their user survey, Tufts OCW reported that half of the respondents identified themselves as self-learners, while 43 per cent were faculty members or students. Over half had master's degrees or higher (Tufts OCW, 2006).

Johns Hopkins University's Bloomberg School of Public Health started an OCW initiative in 2005 and reported a growth in the number of visitors by 111 per cent during the first year. Nineteen per cent of the visitors indicated

their status as health-care professionals, 23 per cent as self-learners, and 7 per cent as educators. A total of 13 per cent reported that they were students, 3 per cent of whom were Hopkins students. Sixty-four per cent of the visits came from the United States (Phelps, 2006).

An increase of resources in different languages seems to result in an increase in the number of visitors to a site; it also has an impact on where the visitors come from. MIT OCW-affiliated translation sites accounted for the most dramatic increase in traffic during 2005: 3.4 million visits were recorded to their four translation sites. ParisTech OCW, offering resources mostly in French, reported 30,000 to 35,000 unique visitors per month. Two-thirds came from Europe (predominately France), about 10 per cent from Africa, and 5 to 6 per cent from North America.

About two-thirds of the respondents to the OECD questionnaire said they were involved in the production of open content, either to a large or a small extent. When asked to rank nine possible barriers to involving other colleagues, lack of time ranked highest, followed by the lack of a reward system to encourage staff members to devote time and energy to producing open content, and a lack of skills. The lack of a business model for open content initiatives was also perceived as an important factor with negative impact. The least significant barriers were felt to be lack of access to computers and other kinds of hardware, and lack of software.

When asked what license they use on resources they have produced, more than half of the respondents said that they did not use any license at all. Twenty-five per cent used some kind of Creative Commons license, while the rest used other open licenses. Although the use of Creative Commons licenses is growing, this finding indicates a need for even more awareness-raising activities regarding copyright and the need for open licenses – a conclusion strengthened by several observations during the series of site visits carried out as a part of the OECD study. Furthermore, results from the survey suggest that instructors use open content as a complement to other learning resources. Two-thirds of respondents said they used open content to some or a limited extent in their teaching. Also, it seems as if smaller chunks of learning material are used more frequently than larger ones: almost 80 per cent reported they used learning objects or parts of courses rather than full courses in their teaching. More than half of respondents said they used content they produced themselves. Forty per cent used content produced within their own institution, 30 per cent used resources originating from cooperation with other institutions and about 25 per cent used content produced by publishers.

To sum up, the typical OER user seems to be a well-educated self-learner, likely to live in North America, or a faculty member. But this picture would probably be nuanced if more data were available from repositories, rather than OCW initiatives, and from more language areas. OER users typically use these resources to complement other kinds of learning materials. OER producers often seem to be enthusiasts, working with some support from the institution management. Most of them also seem to be involved in the exchange of resources with other institutions.

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Chapter 9

WHY INDIVIDUALS AND INSTITUTIONS SHARE AND USE OER

Jan Hylén

Having considered the mapping of OER initiatives, the community turned its attention to a second background note and explored the rationale for individuals and institutions to use, produce and share OER. The discussion focused on incentives for, and barriers to, becoming involved in the creation or use of OER, for both institutions and individuals.

1. BACKGROUND

The first and most fundamental question that anyone arguing for the free and open sharing of software or content has to answer is: 'Why?'. Why should anyone give away anything for free? What are the possible gains in doing that? Advocates for the Free and Open Source Software (FOSS), Open Access (OA) and Open Educational Resources movements all have arguments in favour of their specific cause. But there are also general arguments that apply to all three. These can be divided into 'pull' arguments, which list the gains that can be made by open sharing of software, scientific articles and educational materials, and 'push' arguments, which register the threats or negative effects that might appear if software developers, scientists and educationists do not share their work openly.

Starting with the push side, it is sometimes argued that if universities do not support the open sharing of research results and educational materials, traditional academic values will be increasingly marginalized by market forces. The risk of a software monopoly if everyone is using Microsoft programs, or a combined hardware and software monopoly by too many using Apple's iPod music player and iTunes software, is often used as a reason to support the FOSS movement. The same is true regarding the risk of monopoly ownership and control of scientific literature, according to opponents of the large-scale, commercial scientific publishing model. The possibility for future researchers to keep a seat at the table in decisions about the distribution of research results is sometimes said to be at risk. Increased costs and vulnerability, increased social inequality and slower technical and scientific development are other concerns.

On the pull side, a number of positive effects from open sharing have been put forward. For example, free sharing means broader and faster dissemination, thereby involving more people in problem-solving, which in turn means rapid quality improvement and faster technical and scientific development; decentralized development increases quality, stability and security; and free sharing of software, scientific results and educational resources reinforces societal development and diminishes social inequality. From a more individual standpoint, in addition to invoking the pleasure of sharing with peers, open sharing is claimed to increase publicity and reputation.

2. ARGUMENTS FOR INSTITUTIONAL INVOLVEMENT IN OER

From an institutional point of view, there are numerous reasons for OER involvement. Charles Vest, former president of MIT, has given five reasons for MIT's decision to 'give away all its course materials via the internet' (Vest, 2004). The overall intention of the initiative was said to be to advance education and widen access, but other benefits included greater opportunity for MIT faculty to see and reuse each others' work, a good record of materials, increased contact with alumni, and a way to help MIT's own students become better prepared.

Since MIT is a campus-based institution, it has been argued that its OCW initiative did not threaten its core business. It would be much riskier for a distance-teaching institution to undertake something similar. Thus, it is still more interesting to look at the reasons given by the UK Open University for choosing to launch its OpenLearn initiative.[85] McAndrew (2006) lists eight motivations, among which were that the philosophy of open content matches the Open University's mission, and that, since the OER movement is quickly developing, the Open University should join sooner rather than later. McAndrew also notes the risks for the institution in doing nothing when technology and globalization issues need to be addressed, and that the initiative could be a route for outreach beyond the existing student body. Furthermore, it is seen as a chance to learn how to draw on the world as a resource and as a testing ground for new technology and ways of working. It is also seen as a means of demonstrating the quality of Open University materials in new regions, and a way to work with external funders who share similar aims and ideals.

85 http://openlearn.open.ac.uk/

The province of British Columbia in Canada has launched an OER initiative as a part of their BCcampus, which is an inter-institutional collaboration between twenty-six public post-secondary education institutions.[86] At the time of writing, this is a unique initiative, in so far as it has governmental support, both politically and financially. Stacey (2007) describes the benefits and value propositions associated with its approach:

- allowing intellectual property and copyright to be held by the developer;
- leveraging an initial investment of public taxpayers' dollars many times over by allowing for free sharing and reuse among public post-secondary educators in British Columbia;
- establishing a policy for online learning resource development that supports free sharing of content within the public post-secondary system, while still retaining commercialization potential outside (developers are offered two license options, Creative Commons or BC Commons, giving them the choice of sharing their resources globally or locally);
- eliminating the weeks and months it can take to seek permission to use existing digital materials by tagging the asset with explicit terms defining rights to use (educators can use the asset immediately, without having to go through a permission-seeking process);
- allowing others to reuse and modify original work, providing a means for continuous improvement of online learning resources by a collective of professional peers;
- optimizing learner experiences by generating high-quality online learning resources over time;
- tracking use and reuse, which creates a form of market research (significant reuse of a resource signals its potential value in other academic domains or jurisdictions; high use data is invaluable for launching commercialization scenarios requiring investment based on the demonstrated market potential of a resource);
- moving development of educational content from being closed and exclusively in the control of a single educator to open and shared with others (when professional peers can see and contribute to a work there is increased pressure to develop quality work in the first place and the means to improve it quickly if needed);

86 http://www.bccampus.ca/

- leveraging a unique aspect of digital assets – the marginal cost and effort of making copies and distributing online learning resources over a network; and
- building the reputation of developers through attribution.

To summarize, there seem to be six main arguments for institutions to be engaged in OER projects. One is the altruistic argument that sharing knowledge is a good thing to do and also in line with academic traditions, as pointed out by the Open Access movement. Openness is the breath of life for education and research. Resources created by educators and researchers should be open for anyone to use and reuse. Ultimately this argument resonates with the Universal Declaration of Human Rights, which states: 'Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages' (United Nations, 1948, Art. 26, para. 1).

A second argument is also close to the claims of the OA movement – namely, that educational institutions should leverage taxpayers' money by allowing free sharing and reuse of resources developed by publicly funded institutions. To lock learning resources behind passwords means that people in other publicly funded institutions sometimes duplicate work and reinvent things instead of standing on the shoulders of their peers. It might be seen as a drawback for this argument that it does not distinguish between taxpayers in different countries: learning resources created in one country may be used in another, sparing taxpayers in the second country some money. But, as pointed out by Ng (2006), free-riding of this kind may not pose so much of a problem since the use of a learning resource in a foreign country does not hinder the use of the same resource by domestic teachers. Instead, 'allowing free-riding may be necessary for the growth of a good community as they help draw new members by words of mouth. Also, free-riders themselves may learn to value the community more over time, so much that some of them may share eventually' (Ng, 2006).

A third argument is taken from the FOSS movement: 'What you give, you receive back improved.' By sharing and reusing, the costs for content development can be cut, thereby making better use of available resources. Also, the overall quality should improve over time, compared to a situation where everyone always has to start from the beginning.

A fourth argument for institutions to be engaged in OER projects is that it is good for public relations and it can function as a show window, attracting new students. Institutions like MIT have received a lot of positive attention for their decision to make their resources available for free. Other

institutions could do the same. Thirty-one per cent of the freshmen at MIT in 2005 became aware of MIT OCW prior to making their decision to apply to MIT; and, of those, 35 per cent indicated that the site was a significant influence on their choice of school (MIT, 2006). Furthermore, Johns Hopkins OCW reports that, during their first year of operation, 32 per cent of visitors indicated their status as prospective students (Phelps, 2006). A variation of this argument is the wish to reach out to new groups, to people without access to, or prior knowledge of, higher education.

A fifth argument is that many institutions face growing competition as a consequence of the increasing globalization of higher education and the rising supply of free educational resources on the internet. In this situation, there is a need to look for new business models, new ways of making revenue, such as offering content for free, both as an advertisement for the institution, and as a way of lowering the threshold for new students, who may be more likely to enrol – and in many cases pay for tutoring and accreditation – having had a taste of the learning on offer through open content.

Finally, a sixth argument is that open sharing will speed up the development of new learning resources, stimulate internal improvement, innovation and reuse, and help the institution to keep good records of materials and their internal and external use. These records can be used as a form of market research if one is interested in the commercial potential of individual resources.

It is hard to say to what extent these incentives function as driving forces behind OER initiatives, other than those mentioned above. More research is needed. It should also be emphasized that several of the motives listed here are likely to be in play simultaneously, both altruistic motives and economic incentives.

3. MOTIVES FOR INDIVIDUALS

So far, the incentives for individual researchers, teachers and instructors to share learning resources are less comprehensively mapped and less well known than the motives for OA publishing or participation in FOSS projects. The motives for individuals to become engaged in OER, however, are probably similarly complex. Building on Fitzgerald et al. (2006), we can make a list of motivating reasons for people to share digital content, similar to that for institutions:

- altruism;
- a desire to sponsor or stimulate innovation;

- a wish to share with others for creative, educational, scientific or research purposes; the pleasure of being involved in peer production;
- creating an open content version of material (e.g. a draft or a chapter) may be a strategy for enhancing a final, commercial version of the content;
- a desire for publicity, 'egoboo' or an enhanced reputation within the open community;
- 'What is junk to one may be gold to another': the offcuts or digital junk of one person may be the building blocks of knowledge and creative genius for another.

This list takes in reasons both from the FOSS and OA movements. As far as we know, no study has yet been published on why people develop and share Open Educational Resources. Findings from the OECD questionnaire to teachers and researchers involved in OER activities suggest that, when presented with a list of potential benefits of using OER, the most commonly reported motive was to gain access to the best possible resources and to have more flexible materials. More altruistic ambitions, such as assisting developing countries, outreach to disadvantaged communities, or bringing down costs for students, seem to be somewhat less important. At the same time, however, the least important factor for respondents was personal financial reward.

When asked about the most significant perceived barriers to colleagues using OER in their teaching, respondents identified lack of time and skills, together with the absence of a reward system. A perceived lack of interest in pedagogical innovation among colleagues was also mentioned. The barriers described correspond with lessons learned from an Australian evaluation of an institutional learning environment, which included a learning resource catalogue (Koppi and Lavitt, 2003). The authors concluded that: 'The issue of reward for publicising teaching and learning materials is of paramount importance to the success of a sustainable learning resource catalogue where the teaching staff themselves take ownership of the system.' To establish a credible academic reward system that includes the production and use of OER might, therefore, be the single most important policy issue for a large-scale deployment of OER in teaching and learning.

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Chapter 10

DISCUSSION HIGHLIGHTS

Alexa Joyce

The discussion in the second forum was extremely active; and it easily broke the record of the highest number of messages per day, with 62 messages being passed in a single day during the first week. In all, more than 400 messages were exchanged, many of which were long and substantive. This level of engagement was indicative of the importance of, and interest in, the information conveyed and the issues raised by the Centre for Educational Research and Innovation (CERI) study.

Any reporting of such intense activity can convey but the gist of the discussions, and only hint at the energy of the dialogue and contributions of the group. Nonetheless, the discussion highlights capture the main threads of the conversation and include the models for mapping initiatives put forward by the group.

The OER community and those who joined it for the forum were able to contribute to the finalization of the OECD publication, making the format an excellent model for sharing advance findings with an international group.

1. INTRODUCTION

In late 2006, the International Institute for Educational Planning's (IIEP) international Community of Interest on OER was joined by members of the OECD expert group on OER and other interested individuals to discuss the initial findings of OECD-CERI's twenty-month investigation into Open Educational Resource initiatives in tertiary education. The specific aims of the forum were to:

- identify additional OER studies and research activities, as well as 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 removing barriers to OER production and use;
- identify and classify responses to policy issues by level – from the institutional to the international level.

2. MAPPING OF OER

The background note for the first week's discussion[87] 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 'open courseware' model popularized by MIT. They include courses from seven institutions in the United States, the 176 members of the China Open Resources for Education 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.
- 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.[88] This exercise highlighted the different understandings among participants of what constitutes an Open Educational Resource. For example, some of the initiatives identified could not be accepted as truly 'open' by some in the group. The following characteristics attracted the most frequent criticism:

- *Preconditions to access*: Some projects require users to fulfil certain requirements 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, reuse and redistribution. They may be released

87 See Chapter 8, pp. 127-134.

88 All of the links to OER initiatives and research 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.

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.

One limitation of the OECD's list was the over-representation of English-language resources due, in part, to the online 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 (see Figure 8.1, page 129). 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 and institution-led). Some participants questioned the need for this sort of approach, as the movement is growing and changing so rapidly that any mapping exercise undertaken at this present time must be quickly out of date. Mapping, however, can be useful in that it identifies a variety of approaches to making educational resources openly available. This in turn can provide inspiration for institutions and planners looking to transfer and replicate or adapt methodologies to new contexts.

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

- mapping initiatives,
- mapping individual resources.

Mapping initiatives

Taking the OECD model as their point of departure, participants shared and developed more elaborated models. Peter Bateman shared the African Virtual University (AVU) matrix for mapping the typology of OER projects (shown in Table 10.1). The AVU started by identifying the basic 'elements' of 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 has since been elaborated) enabled the AVU to map who in the OER community was doing what. This information helped the AVU in its own strategic thinking on OER.

Some participants pointed out a number of limitations to the OECD model, in particular noting that there are many other dimensions to consider when dealing with OER projects. Paul Stacey responded by suggesting a five-dimensional model of the key attributes, or structural components, used to define OER: policy, legal, business, technology and academic/socio-cultural (Figure 10.1a). He then elaborated this by identifying the issues that constitute decision-making points for an institution, organization or individual getting involved in OER provision (Figure 10.1b).

Table 10.1. AVU matrix of OER initiatives

	Collaboration	Sensitization	Capacity enhancement	Technological infrastructure	Policy development	Research
Organization	OCW Consortium website	Development Gateway	–	OU OpenLearn portal	–	OECD
Dissemination	SAIDE (Thutong)	Development Gateway	–	Partnership for Higher Education (bandwidth)	Creative Commons (licensing)	IDRC
Utilization	MIT OCW (Africa pilot)	–	USU COSL	UWC (KEWL)	–	OECD
Creation	AVU/OU TESSA project	Hewlett Foundation	COL	OU OpenLearn portal	UWC	–

Notes: SAIDE = South African Institute for Distance Education; IDRC = International Development Research Centre; UWC = University of the Western Cape; USU = Utah State University.
Source: AVU, 2006.

In general, it was agreed that the number and type of elements 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, and which are important descriptors of a project:

- *Scope*: how focused the OER project is in terms of disciplines covered, levels of education catered for and intended audience. For instance, a narrow project might focus only on providing physics materials to support in-class, tertiary-level teaching, whereas a broad project may aim to share teaching and learning materials for a variety of levels and subjects with both educators and students.
- *Authorship*: whether the resources are the product of one content creator working alone, or the result of a collaborative community effort.

Figure 10.1a OER attributes model

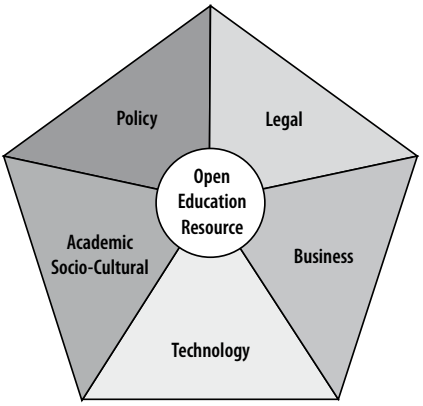
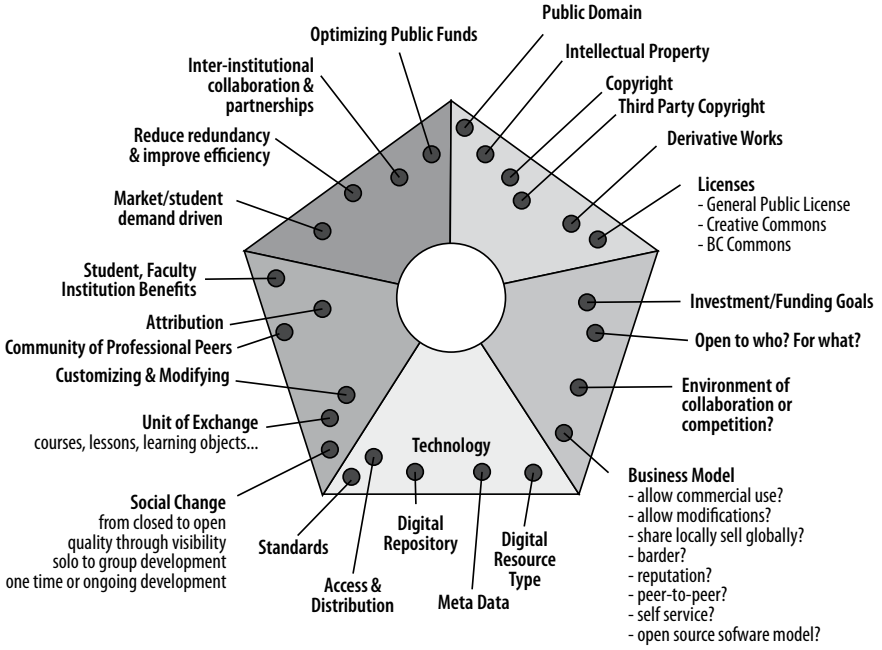


Figure 10.1b OER attributes and decision points



Source: P. Stacey, 2006.

- *Licensing*: there being many licensing options for OER projects, and not all 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*: What is 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*: information about the 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 reuse.
- *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 easily reusable, 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

Participants also looked at a number of issues connected to tools for OER production and distribution, and other related technical issues, including:

- tools for customizing 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 a module that allows customization of access according to varying rights.[89]

The issue of file formats also elicited debate, with some participants questioning whether resources in closed, proprietary file formats could really be considered as OER. For instance, some OER are released in non-editable formats, such as protected AAC (Advanced Audio Coding) files used by iTunes. Other participants argued that if closed-format materials 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, an editable MP3 file rather than a protected iTunes 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 or the use of specific software to decompile the completed and published .swf file into editable .fla.

In addition to the issue of file formats, OER developers should be sensitive to that 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.

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

3. MOTIVES FOR OER PRODUCTION

Individuals

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. Teachers and researchers questioned in the OECD study indicated that one of their major motivations was 'to gain access to the best possible materials and to have more flexible materials' (Hylén, this volume). Other, less important motivations 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 continuing professional development or for their own interest.

Individuals may also 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 observed that some individuals produce openly licensed materials primarily for their own work; sharing with others is simply a side effect.

Institutions

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 reuse of resources, which in turn minimizes 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.
- 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 reuse.

Participants reflected on these and suggested a number of additional reasons for institutions to engage in OER production, based upon providing resources for current students and continuing education for alumni, attracting future students, interacting with a wider public, reducing costs, enhancing quality, encouraging innovation, and addressing moral concerns and legal requirements.

Institutions may be motivated to provide OER primarily for their own audience of prospective, current and former students. Current students can use OER to preview and select modules and courses of study. They can also go back and revise topics as needed. OER also gives alumni the opportunity to continue to access learning resources as their careers – and current thinking in their field of study – change and develop. 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, academics would generate a corpus of appropriate OER for use in teaching and learning, rather than relying heavily on commercially produced content, including textbooks. Costs would be reduced for the institution itself, but also for its students, who would need to purchase less commercial material, which in turn presents another opportunity to generate good publicity.

Looking at the potential benefits from the teaching and learning side, 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 organize different parts of a course as well as entire courses.

Pedagogical benefits may also be accrued by sharing OER with individuals outside institutions, for example, 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 exposes academics and students to new perspectives, and encourages the exchange of new ideas and innovation that may not occur in the more traditional, closed context.

Finally, 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. And participants were also reminded that some organizations, especially governmental agencies (e.g. in the United States), are required by law to make their resources openly available.

4. BARRIERS TO OER PRODUCTION

Individuals

The following barriers and obstacles faced by 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 feel constrained 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 regard to licensing and copyright issues. In many cases, a lack of institutional policy on OER means there is little or no support or guidance. Finally, academics may be concerned that by making their materials openly available, they are relinquishing control over their creations: resources could be taken out of context and misunderstood by users, or others may try to profit from their own hard work.

Institutions

The potential areas of risk for institutions engaging in OER production cover virtually all aspects of their operations: administrative, procedural, financial, contractual/legal, technical, cultural, academic and pedagogical. Participants suggested the following specific 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.

Most institutions have yet to develop 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 license 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 intellectual property implications, reluctance to address legal issues.

Without an institutional OER policy, there may be little reason to consecrate existing funds to OER production, especially in the current financial climate. Many academic institutions face budget restrictions and an uncertain financial future; few have 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, demand 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, it was argued that 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 to advance, teaching and learning methods.