GIVING KNOWLEDGE FOR FREE

THE EMERGENCE OF OPEN EDUCATIONAL RESOURCES

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THE 2007 REPORT OF THE ORGANISATION FOR ECONOMIC Co-operation and Development (OECD) Centre for Educational Research and Innovation (CERI) offers a comprehensive overview of the rapidly changing phenomenon of Open Educational Resources (OER) and the challenges it poses for higher education.

The project was led by OECD analyst Jan Hylén who is also the main author of the report. Francesc Pedró and Tom Schuller were closely involved in the design and execution of the project.

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We are glad to offer here some extracts of the Report to our readers.

→| ALTERNATIVES

"If a little knowledge is dangerous, where is the man who has so much as to be out of danger?"

T.H. HUXLEY

An apparently extraordinary trend is emerging. Although learning resources are often considered as key intellectual property in a competitive higher education world, more and more institutions and individuals are sharing digital learning resources over the Internet openly and without cost, as open educational resources (OER).

Higher education is facing a number of challenges: globalisation, an aging society, growing competition between higher educational institutions both nationally and internationally, and rapid technological development. OER is itself one of these challenges, but may also be a sound strategy for individual institutions to meet them. The trend towards sharing software programmes (open source software) and research outcomes (open access publishing) is already so strong that it is generally thought of as a movement. It is now complemented by the trend towards sharing learning resources – the open educational resources movement.

OER is not only a fascinating technological development and potentially a major educational tool. It accelerates the blurring of formal and informal learning, and of educational and broader cultural activities. It raises basic philosophical issues to do with the nature of ownership, with the validation of knowledge and with concepts such as altruism and collective goods. It reaches into issues of property and its distribution across the globe. It offers the prospect of a radically new approach to the sharing of knowledge, at a time when effective use of knowledge is seen more and more as the key to economic success, for both individuals and nations. How paradoxical this may turn out to be, and the form it will eventually take are entirely unforeseeable.

OER projects can expand access to learning for everyone, but most of all for non-traditional groups of students, and thus widen participation in higher education. They can be an efficient way of promoting lifelong learning, both for individuals and for government, and can bridge the gap between non-formal, informal and formal learning.

WHAT ARE OPEN EDUCATIONAL RESOURCES?

The definition of OER currently most often used is «digitised materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research». OER includes learning content, software tools to develop, use and distribute content, and implementation resources such as open licences. «Oeducational resources» refers to accumulated digital assets that can be adjusted and which provide benefits without restricting the possibilities for others to enjoy them.

WHO IS USING AND PRODUCING OER AND HOW MUCH?

The learning content at issue is open courseware, *i.e.* educational material organised as courses and typically distributed as PDF files, as well as smaller chunks of learning,

often referred to as learning objects. The content may involve websites, simulations, text files, images, sound or videos in digital format, some only for use and others open also for adaptation and reuse. Although no definite statistics are available, there is a rapid expansion in the number of OER projects, as well as the number of people involved and the number of resources available. In January 2007 the OECD identified over 3.000 open courseware courses available from over 300 universities worldwide. In repositories such as MERLOT, Connexions, OpenLearn and others, there are hundreds of thousands of pieces of content or materials representing thousands of freely available learning hours. Although the dominant language so far is English, translation of resources combined with a growing number of non-English OER projects cater for greater language diversity and increased global use. The potential number of users is enormous.

With the scattered data available, only a general picture can be given of the users and producers of OER. The majority of producers of resources and OER projects are located in English-speaking countries in the developed world. The movement grows both top-down and bottom-up: new projects are started at institutional level and individual teachers and researchers also use and produce OER on their own initiative. The institutions involved so far seem to be well-reputed internationally or in their countries, rather than institutions that are unknown or have low status.

WHY ARE PEOPLE SHARING FOR FREE?

The reasons for individuals and institutions to use, produce and share OER can be divided into basic technological, economic, social and legal drivers:

✓ The technological and economic drivers include improved, less costly and more user-friendly information technology infrastructure (such as broadband), hardware and software. Content is cheaper and easier to produce and costs can be further reduced by sharing. New economic models are emerging around the distribution of free content. Legal drivers are new licensing schemes that facilitate free sharing and reuse of content. Social drivers include increased willingness to share.

✓ A technical barrier is lack of broadband availability. Lack of resources to invest in hardware and software for developing and sharing OER is an economic barrier. Barriers such as these are often mentioned as significant obstacles in developing countries. Social barriers include lack of skills to use the technical innovations and cultural obstacles against sharing or using resources developed by other teachers or institutions.

There are three arguments for governments to support OER projects:

✓ They expand access to learning for everyone but most of all for non-traditional groups of students and thus widen participation in higher education.

✓ They can be an efficient way of promoting lifelong learning for both the individual and the government.

✓ They can bridge the gap between non-formal, informal and formal learning.

Institutions mention six types of reasons for being involved in OER projects:

✓ The altruistic argument that sharing knowledge is in line with academic traditions and a good thing to do.

✓ Educational institutions (particularly those publicly financed) should leverage taxpayers' money by allowing free sharing and reuse of resources.

✓ Quality can be improved and the cost of content development reduced by sharing and reusing.

✓ It is good for the institution's public relations to have an OER project as a showcase for attracting new students.

✓ There is a need to look for new cost recovery models as institutions experience growing competition.

✓ 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.

A further motivation, mentioned by some major distance teaching institutions, is the risk of doing nothing in a rapidly changing environment.

Incentives for individual teachers and researchers can be summarized under four headings:

✓ The altruistic motivation of sharing (as for institutions), which again is supported by traditional academic values.

✓ Personal non-monetary gain, such as publicity, reputation within the open community or «egoboo» as it is sometimes called.

✓ Free sharing can be good for economic or commercial reasons, as a way of getting publicity, reaching the market more quickly, gaining the first-mover advantage etc.

✓ Sometimes it is not worth the effort to keep the resource closed. If it can be of value to other people one might just as well share it for free.

Independently of whether institutions are engaged in OER projects or not, OER can be expected to affect curriculum, pedagogy and assessment.

With thousands of (opencourseware) courses from internationally reputed higher education institutions available for free, teachers will need to consider that students compare their curriculum with others. Since the teacher's role as supplier of reading lists and teaching materials is diminishing, OER is likely to accelerate changes in the traditional teaching role and the evolution of more independent learners. An increase in nonformal and informal learning can be expected to enhance the demand for assessment and recognition of competences gained outside formal learning settings.

COPYRIGHT AND OPEN LICENCES

Copyright law takes its definition from international conventions and is similar in most countries. Copyright primarily serves an economic function by granting creators monopoly rights in their creations for a limited time. While information technology makes it possible to multiply and distribute content worldwide and almost at no cost, legal restrictions on the reuse of copyright material hamper its negotiability in the digital environment. Frustrated by this

obstacle, academics worldwide have started to use open licences to create a space in the Internet world – a creative commons – where people can share and reuse copyright material without fear of being sued. To do this, copyright owners have to agree or give permission for their material to be shared through a generic licence that gives permission in advance. The Creative Commons licence is by far the best-known licence for such content, the use of which is growing exponentially.

HOW CAN OER PROJECTS BE SUSTAINED IN THE LONG RUN?

The actual costs of an OER project vary considerably. Some initiatives have institutional backing involving professional staff, others build on communities of practitioners and rely on their voluntary work. There are all sorts of in-between models as well. Repositories can be organised as a place to share and exchange resources, which means that people are either users or producers, or they can promote the collaborative production of common resources. The first model is called the *user-producer* model and the second the *co-production* model, although again there are intermediate positions.

The first model is more likely to be centralised than the latter. Although real costs can be met with resources other than money, most initiatives need to raise some capital. To this end a number of models for cost recovery are identified: the *replacement* model, in which open content replaces other uses and benefits from cost savings; the foundation, donation or *endowment* model in which funding for the project is provided by an external actor; the *segmentation* model, in which the provider offers «valueadded» services to user segments and charges them for these services; the *conversion* model, in which «you give something away for free and then convert the consumer to a paying customer»; as well as the voluntary support model or *membership* model, which is based on fund-raising campaigns or paying members.

IMPROVING ACCESS TO AND USEFULNESS OF OER

Advocates of the open movement should consider actions for improving access to and usefulness of existing resources. The rapidly growing number of learning materials and repositories makes it important to find the most relevant and highest quality resources. *Metadata* (descriptive information about the resources) may improve the function of search engines, but adding good quality metadata to resources is difficult and time consuming. Alternative approaches such as automatically generated metadata and folksonomies are being tested, but whether these are scaleable solutions remains to be seen. *Quality* can be improved in many ways. There is a troublesome imbalance between the *provision* of OER and its *utilisation*. The vast majority of OER is in English and based on Western culture, and this limits their relevance and risks consigning less developed countries to playing the role of consumers. However, a number of projects now exist in developing countries to develop OER based on their own languages and cultures.

Since the concept of OER builds on the idea of reusing and repurposing materials, *interoperability* is a key issue. Learning resources need to be searchable across repositories and possible to download, integrate and adapt across platforms. Software applications developed at different points in time and by different developers should be able to operate together. Open standards makes this possible. The development of new standards is a specialised task which requires financial support.

POLICY IMPLICATIONS AND RECOMMENDATIONS

The OER movement has implications at many policy levels. *Interoperability* issues, such as harmonisation of copyright legislation and agreements on standards, are dealt with at the international level. A good *knowledge base* regarding the OER movement needs to be developed internationally, with *awareness raising* activities to make the concept of OER better known. Funding bodies on all levels are recommended to support these activities.

At a national level OER represents a further *blurring of the borders* between formal and informal learning, and countries are recommended to study how OER can be efficiently used to meet some of the demand for increased lifelong learning. OER can make an important contribution to a diversified supply of learning resources. A plethora of digital learning resources supports methodological diversity, which again is a pre-requisite for promoting individualisation of the learning process. Governments are advised to take a *holistic approach* towards digital learning resources, of which OER is but one part.

A *review of the existing copyright regime* in order to promote further use of information technology in education should consider actions to create at least a neutral policy regarding commercial actors and OER. Governments willing to promote OER should earmark a small proportion of funds made available for education for openly publishing education materials developed within publicly funded institutions, as well as open up national digital archives and museum collections to the education sector. *Public-private partnerships* should be used more as a way to combine know-how and resources from both sectors. Wherever possible and reasonable *open standards* should be used and *open source software licensing* employed.

The rapid pace of development of the OER movement means that it will soon have an impact on all higher education institutions. This calls for management of institutions to consider *the risk of doing nothing*. Higher education institutions are advised to have an *information technology strategy* which includes, among other things, how the institution should deal with the opportunities and threats posed by the OER movement. Institutions willing to embrace the opportunities offered by OER should create *incentives* for faculty members to participate in the initiative, such as implementing teaching portfolios with at least one OER element, as part of the tenure process. The use of OER in teaching should also be encouraged and training offered. ▣

✓ CREDITS Executive Summary, Giving Knowledge for Free: The Emergence of Open Educational Resources, © OECD 2007. www.oecd.org/bookshop?926403174X

THE AFRICAN VIRTUAL UNIVERSITY

Acknowledging the concept of OER as one of the most promising developments in education and training today, the African Virtual University (AVU) has developed a collaborative and co-ordinated strategy for the creation, organisation, dissemination and utilisation of OER in Africa. The AVU initiative was inspired by the belief that knowledge and education are for the common good, and not owned, that OER will significantly contribute to the advancement of human knowledge, creativity and welfare and that by sharing it is possible to avoid needless duplication of limited resources. The AVU has developed a conceptual framework and architecture to join the needs of learners, teachers and researchers in Africa to the OER movement worldwide.

A number of OER initiatives already exist within the AVU, such as the Development Gateway OER topic page, MIT OCW materials, the WiderNeteGranary initiative, Commonwealth of Learning STAMP materials, TESSA programme materials, AVU Digital Library, and others. One purpose of the architecture is to unite all these initiatives under one strategy.

Starting with a gap analysis, the AVU outlined four prominent views among African academics regarding the promotion of open content:

- ✓ Lack of support from the relevant governing bodies would exacerbate already poor participation.
- ✓ Lack of clear quality assurance mechanisms would result in unclear standards («if it's free it must be rubbish»).
- ✓ Potential for open content to be a «white elephant» so that significant start-up costs diminish enthusiasm.
- ✓ Ambiguous intellectual property rights policies leading to lack of faculty participation.

In a pilot project local mirror sites were installed with opencourseware material from MIT, supported by workshops at each of the sites. Although the pilot resulted in strong support for the open licence concept several obstacles preventing educators and learners from accessing and using the MIT opencourseware website were identified, such as a general lack of familiarity with OER, insufficient technological resources, including access to computers and a fast Internet connection at affordable rates, and low computer literacy and a need for capacity enhancement.

The architecture is grounded in an analysis of existing theories and perspectives concerning the global OER movement and the AVU's own experience in establishing processes, systems and frameworks of design, development, managing and sharing OER on the African continent. This architecture has four parts:

- ✓ *Creation*: Developing capacity to create OER «from scratch»; structured communities of «users and producers»; interoperability and compliance; iterative processes for creation of OER; localisation and contextualisation of OER.
- ✓ *Organisation*: Governance and management schemes; storage and portal mechanisms; tagging and metadata systems; repository development; institutional development; developing a knowledge sharing culture.
- ✓ *Dissemination*: Sensitisation (awareness and responsiveness to cultural issues); delivery methods for remote and local access to OER; packaging and marketing; scalability of delivery; decentralisation vs. centralisation or a combination of both.
- ✓ *Utilisation*: Mechanisms for accessing and updating OER repositories; using and reusing content; re-authoring and re-purposing content; quality assurance mechanisms; accreditation of materials; sustainability and business modelling.

The architecture has been discussed with several organisations, and implementation is now under way. A modular approach is taken to the development and implementation, which is planned to end in September 2008. ▣

✓ INFO SOURCE: «Bateman (2006) and www.avu.org .

THE CREATIVE COMMONS LICENCES

Creative Commons licences are part of a genre of licences that are used to negotiate legal rights in digital content. Many other types of open content licences exist; however, the Creative Commons licences have gained significant attention and popularity over the last three years. The Creative Commons licences are not designed for software, but are intended for use in relation to other kinds of creative copyright material: websites, educational materials, music, film, photographs, blogs etc.

Along with the text of the various open content licences, the project has developed metadata that can be used to associate creative works with their licence status in a machine-readable way. In addition to certain 'baseline' rights and restrictions which are included in all Creative Commons licences, the copyright owner can choose among a number of licensing options, which can be used alone or in combination.

BASELINE FEATURES

The following features are common to all Creative Commons licences:

- ✓ Licensees are granted the right to copy, distribute, display, digitally perform and make verbatim copies of the work into the same or another format.

✓ The licences have worldwide application for the entire duration of copyright and are irrevocable.

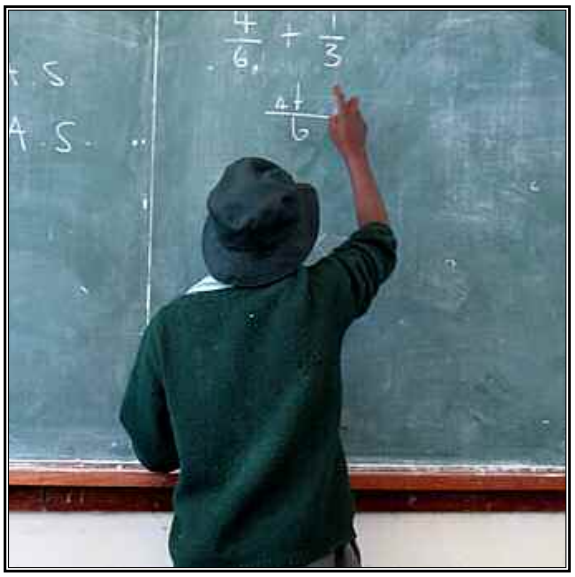
✓ Licensees cannot use technological protection measures to restrict access to the work.

✓ Copyright notices should not be removed from copies of the work.

✓ Every copy of the work should maintain a link to the licence.

✓ Attribution must be given to the creator of the copyright work (BY).

✓ They are «fair use/fair dealing plus» in that they grant a layer of protection on top of and in addition to the scope of activity that is permitted under existing copyright exceptions and limitations.



OPTIONAL FEATURES

Copyright owners can choose from among the following optional licence conditions:

✓ Non-commercial (NC): Others are permitted to copy, distribute, display and perform the copyright work – and any derivative works based upon it – but for non-commercial purposes only.

✓ No derivative works (ND): Others are permitted to copy, distribute, display and perform exact copies of the work only and cannot make derivative works based upon it.

✓ Share Alike (SA): Others may distribute derivative works only under a licence identical to that covering the original work.

By mixing and matching these elements, copyright owners can choose between the following six core licences:

✓ Attribution (BY): This is the most accommodating of the licences offered, in terms of what others can do with the work. It lets others copy, distribute, reuse and build upon the work, even commercially, as long as they credit the copyright owner for the original creation.

✓ Attribution-Non-commercial (BY-NC): This licence lets others copy, distribute, reuse and build upon the work, as long as it is not for commercial purposes and they credit the copyright holder as the original author.

✓ Attribution-Share Alike (BY-SA): This licence lets others reuse and build upon the work even for commercial purposes, as long as they credit the copyright holder and license any derivative works under identical terms.

✓ Attribution-Non-commercial-Share Alike (BY-NC-SA): This licence lets others reuse and build upon the work, as long as it is for non-commercial purposes, they credit the copyright holder and they license their new creations under identical terms.

✓ Attribution-No Derivatives (BY-ND): This licence allows use of a work in its current form for both commercial and non-commercial purposes, as long as it is not changed in any way or used to make derivative works, and credit is given to the original author.

✓ Attribution-Non-commercial-No Derivatives (BY-NC-ND): This is the most restrictive of the six core licences. It is often called the «advertising» licence because it only allows a work to be copied and shared with others in its original form, and only for non-commercial purposes and where credit is given to the original author. This licence does not allow the creation of derivative works or the use of the work for commercial purposes.

The licences come in three layers:

1 – A «human-readable» Commons Deed, (a simple summary of the licence) which describes the freedoms associated with the content in terms anyone should be able to understand.

2 – A «lawyer-readable» Legal Code – a (dense legal «fine print») licence – that makes enforceable the freedoms associated with the content.

3 – Machine-readable metadata that makes the freedoms associated with the content understandable by computers.

Both the first and the second layer are 'ported' (linguistically translated and legally adapted) into other languages.

The Creative Commons licences were launched in December 2002. One year later there were about 1 million linkbacks to the Creative Commons licence. In December 2004 there were 6 million linkbacks and, in December 2005, 45 million. In June 2006 there were 145 million linkbacks, a clear sign that the use of Creative Commons licences is growing exponentially.

As of June 2006, the use of the different licence options had the following distribution:

✓ Attribution (BY) is used by 96,6% of all licensors.

✓ Non-commercial option (NC) 67,5%.

✓ Share Alike (SA) 45,4%.

✓ No derivatives (ND) 24,3%.

There seems to be a tendency over time towards people choosing more flexible licences. The use of the NC option has decreased from 74% in February 2005, and the same trend is visible for the ND and SA options (down from 33% and 49% respectively in February 2005). It also worth noting that two-thirds of all licensors permit derivative works. ▣

✓ INFO SOURCE: «*Creative Commons,* Fitzgerald (2006).»