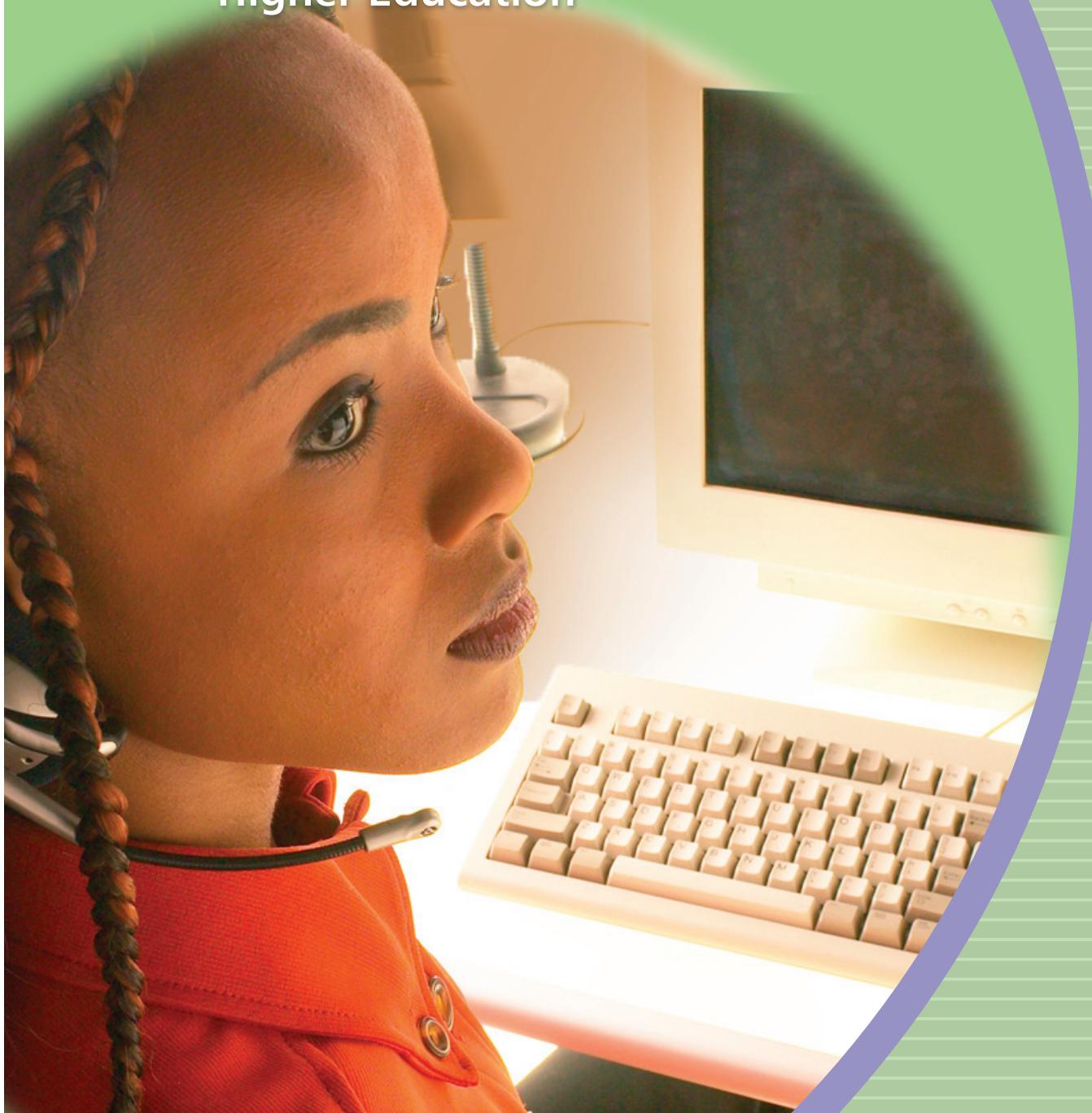


OER Dossier:

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Open Educational Resources and Higher Education



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Neil Butcher



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Introduction

The concept of Open Educational Resources (OER) was originally coined during a UNESCO Forum on Open Courseware held in 2002. During a follow-up, online discussion, also hosted by UNESCO, the initial concept was further developed as follows:

Open Educational Resources are defined as ‘technology-enabled, open provision of educational resources for consultation, use and adaptation by a community of users for non-commercial purposes.’ They are typically made freely available over the Web or the Internet. Their principle use is by teachers and educational institutions to support course development, but they can also be used directly by students. Open Educational Resources include learning objects such as lecture material, references and readings, simulations, experiments and demonstrations, as well as syllabuses, curricula, and teachers’ guides.¹

Since this time, the term has gained significant currency around the world and become the subject of heightened interest in policy-making and institutional circles, as many people and institutions explore the concept and its potential to contribute to improved delivery of higher education around the world. This paper examines the concept of OER in more detail, offering a simple, clear definition, explaining the economic and educational potential behind that definition, introducing examples of OER practices around the world, exploring legal considerations, and highlighting some of the challenges to releasing the transformative potential of OER.

Defining the Concept

At its core, OER denotes a very simple concept, first legal, but then largely economic, in concept: it describes educational resources that are freely available for use by educators and learners, without an accompanying need to pay royalties or licence fees. A broad spectrum of frameworks is emerging to govern how OERs are licensed for use, some of which simply allow copying and others that make provision for users to adapt the resources that they use. The most well known of these are the Creative Commons licences, which provide legal mechanisms to ensure that people can retain acknowledgement for their work while allowing it to be shared, seek to restrict commercial activity if they so wish, and aim to prevent people adapting work if appropriate (although this may be legally difficult to enforce at the margins). A more detailed discussion of licensing options is presented in Appendix One.

¹ <http://opencontent.org/blog/archives/247>.

Importantly, OER is not explicitly about e-learning. Many people erroneously conclude that – because it is the digital architecture of the Internet that has facilitated sharing of content – this means that OER is about sharing content for e-learning, but there is no logic to this. Printable materials are now generally stored in a digital format and can be just as easily shared online as any form of multimedia. In many developing country contexts, where access to ICT is limited, the potential for OER to improve the quality of education is likely to depend on growth in sharing of printable materials, as many students will not – at least for the next few years – have reliable, regular access to computers and the Internet.

Exploring the educational potential of OER is best commenced by review of a limited sample of examples that highlight some emerging best practices in harnessing the concept to improve higher education.

OER Initiatives From Around the World

Much work on OER in higher education has taken place in the United States of America (USA), but practices are growing rapidly internationally. One of the major approaches to promoting OER globally is through OpenCourseWare (OCW), where the focus is on developing and sharing freely available, stand-alone, online course, and teaching materials. OCW usually includes items such as lecture notes, reading lists, course assignments, syllabi, study materials, tests, samples and simulations. Much work in this regard has been done by the OpenCourseWare Consortium (<http://www.ocwconsortium.org>):

The OpenCourseWare Consortium is a collaboration of more than 200 higher education institutions and associated organizations from around the world creating a broad and deep body of open educational content using a shared model. The mission of the OpenCourseWare Consortium is to advance education and empower people worldwide through opencourseware.²

² <http://www.ocwconsortium.org/about-us/about-us.html>

Figure 1 OCWC Interface

The screenshot shows the OCWC homepage with a header navigation bar including links for HOME, ABOUT US, MEMBERS, HOW TO JOIN, NEWS, CONTACT US, BLOG, and HELP. A search bar at the top right allows users to "find courses about..." and includes a "FIND COURSES" button. Below the header, there are three main sections: "USE" (Find Course Materials), "SHARE" (Share Your University's Courses), and "SUPPORT" (Support the OCW Movement). The "USE" section features an image of a person sitting in a colorful chair in a library, with the text "OPEN SHARING, GLOBAL BENEFITS". The "SHARE" section shows books and a notebook with mathematical equations. The "SUPPORT" section shows a large building and includes a "JOIN NOW" button. At the bottom, there are three calls-to-action: "PARTICIPATE IN OUR BUSINESS PLAN DISCUSSION MARCH 22 - APRIL 16 CLICK HERE TO JOIN THIS DISCUSSION LIST", "PARTICIPATE IN OUR STRATEGIC PLAN DISCUSSION APRIL 5 - APRIL 30 CLICK HERE TO JOIN THIS DISCUSSION LIST", and "OCWC Global 2010 Hanoi, Vietnam May 5-7, 2010 Registration NOW OPEN! click here for more information". The "NEWS" section contains two news items: "Wed 31 Mar 2010 // As Colleges Make Courses Available Free Online, Others Cash In New York Times" and "Mon 29 Mar 2010 // Educational sources: changing landscape". The "NEWSLETTER SIGNUP" section includes a note that an asterisk (*) indicates required fields.

The consortium has members across the globe, from countries as varied as Saudi Arabia, Spain, Taiwan, China, France, India, Mexico, Portugal, and Japan³. Materials are available in several languages, including Chinese, Dutch, and Spanish, although most are in English. There are currently over 2,500 open courses available from over 200 universities. Users can find course materials by browsing individual university OpenCourseWare websites or by searching across all courses in the OCW Consortium's website.

Similarly, the Multimedia Educational Resource for Learning and Teaching Online (MERLOT) provides free and open resources designed primarily for faculty and students of higher education (<http://www.merlot.org>). MERLOT allows users to find peer reviewed online teaching and learning materials, and share advice and expertise about education with expert colleagues. The site is organized by discipline and anyone can use it for free. At the moment, it has more than 22,500 resources.

As indicated above, there is growing interest in and development of OER initiatives in other parts of the world. For example, in China, 451 courses have been made available by 176

³ See <http://www.ocwconsortium.org/members/consortium-members.html> for a full list of members.

university members of the China Open Resources for Education (CORE) consortium. CORE is also involved in translating these courses into English as part of its Chinese Quality Open Courseware (CQOCW) project (see <http://ocw.core.org.cn/CORE>).

In Japan 1,500 courses have been made available by universities participating in the Japanese OCW Consortium (<http://www.jocw.jp>) of which 1,285 are in Japanese and 212 are in English. In France, over 2,000 educational resources from around 200 teaching units have been made available by twelve member universities of the ParisTech OCW project (<http://www.paristech.fr/en/index.html>)

There are also numerous HE OER initiatives based in the United Kingdom (UK). One such example is JORUM (<http://www.jorum.ac.uk>), which is a free online repository service for teaching and support staff in UK Further and Higher Education Institutions. The JorumOpen collection contains a variety of resources, including OER that are freely available to all. The focus is on helping to build a community for the sharing, reuse and repurposing of learning and teaching materials.

There are also projects underway to make OCW materials available in multiple languages, including Universia's Spanish and Portuguese translations (<http://ocw.universia.net/en>). This site contains Spanish and Portuguese OCW from over 90 participating institutions. CORE is also involved in providing simplified Chinese translations. In addition, some OCW institutions such as John Hopkins Bloomberg School of Public Health are using Opensource Opencourseware Prototype System (OOPS), a program that translates educational resources into Chinese. OOPS has replicated the School's OCW site in simplified Chinese (the language of mainland China) and in traditional Chinese (spoken in Hong Kong, Singapore and Taiwan).

Massachusetts Institute of Technology (MIT) has perhaps the most well known OCW project and is responsible for pulling many colleges from all over the world into the OER initiative. In 1999, Provost Robert A. Brown asked a committee of MIT faculty, students, and administrators to provide strategic guidance on how MIT could advance knowledge and education to students in science, technology, and other scholarship areas. This mission was to literally fulfil MIT's mission statement about how to best serve 'the nation and the world in the 21st century.' Based on that premise, MIT's OCW began to provide users with open access to class syllabi, lecture notes, course calendars, problem sets and solutions, examinations, reading lists, and even a selection of video lectures in 2003.

MIT Open Courseware (<http://ocw.mit.edu>) currently makes available 1,900 courses on the Internet at no cost for non-commercial purposes. Importantly, MIT reports that it is finding clear evidence that this process of sharing materials has led to significant increases in shared use of content within its own institution, with departments increasingly sourcing materials from each other rather than developing their own from scratch.

Figure 2 MIT OpenCourseWare Initiative

The screenshot shows the MIT OpenCourseWare homepage. The top navigation bar includes links for Home, Courses, Donate, About OCW, Help, Contact Us, a search bar, and a 'SIGN UP FOR OCW NEWS' button. The main content area features a banner with a student and text about unlocking knowledge and empowering minds. Below the banner is a 'FEATURED COURSE' section for 'Understanding Lasers and Fiberoptics'. To the right is a 'SUPPORT OCW' section and a 'DONATE NOW' button. At the bottom is a 'MIT NOTICE' section for the 'LINC 2010 Conference'.

Yet another well-known institutional source of HE OER is OpenLearn (<http://openlearn.open.ac.uk>). The Open University is one of the world's most successful distance education universities. Through academic research, pedagogic innovation and collaborative partnership it seeks to be a world leader in the design, content and delivery of supported open and distance learning. The OpenLearn website gives free access to Open University course materials. Users can find hundreds of free study units across twelve topic areas, each with a discussion forum. Director of OpenLearn, Prof. Andy Lane, stated the following as motivations for OpenLearn:

'OpenLearn gives us an exciting opportunity to see what happens when we release many of the restrictions that we are used to; copyright, fees, and geography. We see Open Educational Resources as having revolutionary potential that we must study but also as a basis for further innovation. Freely accessible and changeable high quality content can underpin experiments in widening participation, use of mobile devices, development of tools for accessibility, geographically distributed experiments and community building. As a catalyst for further research Open Educational Resources have a significant part to play, as a possible indication of how people will learn in the future they are a vital move away from rigid structures that are causing their own pressures. We want to understand this future.'

Figure 3 OpenLearn LearningSpace

The screenshot shows the OpenLearn LearningSpace website interface. At the top, there's a header with the Open University logo, navigation links for 'Listen to this page', 'Accessibility', 'Sign in', and 'Contact us', and site links for 'The Open University', 'Study at the OU', 'About the OU', 'Research at the OU', and 'Search the OU'. Below the header is a stylized graphic of green silhouettes of people. The main title 'OpenLearn LearningSpace' is displayed prominently. A message 'You are not logged in. ([Log in](#))' is shown. On the left, a sidebar titled 'LearningSpace' shows a breadcrumb trail 'Home > LearningSpace'. Below this are two columns: 'Topics' (listing Arts and History, Business and Management, Education, Health and Lifestyle, IT and Computing, Law, Mathematics and Statistics, Modern Languages, Science and Nature, Society, Study Skills, and Technology) and 'Discuss' (listing forums for each topic). At the bottom of this section are links for 'Using Learning Tools' and 'Learning Clubs'. To the right are three expandable boxes: 'Log In' (with options for Log in, Register, Why register?, and Where is the log in form?), 'Browse' (with links for Get started, View all units, LearningSpace forum, Help and Support forum, Frequently asked questions, Glossary, About us, and LabSpace), and 'Tags' (listing All tags, AA100 Learning Club Arrivals, lounge Learning Club Art, Audiovisual Production Learning Club, creative writers, Learning Club, Creative writing Education, First Class Learning Club, History Languages Literature, Mathematics Mind Matters, Learning Club music, Philosophy Photography).

Whilst there is only one African OCW initiative (University of Western Cape – <http://freecourseware.uwc.ac.za>), there are other African OER initiatives, such as the recently established UCT Open Content (<http://opencontent.uct.ac.za>) which allows users to accessing open teaching and learning content from the University of Cape Town (UCT).

Figure 4 UCT's OpenContent Interface

The screenshot shows the UCT OpenContent website. At the top, there is a navigation bar with icons for Contribute, Feedback, Help, and Login. Below the navigation bar, the title "UCT OpenContent" is displayed, followed by a subtitle: "Sharing online resources for teaching and learning • Deelbare onderrig en leer bronne • Ukwabelana ngezixhobo zokufundisa nokufunda".

On the left, a sidebar titled "Recent posts" lists several items:

- GIPCA Great Texts / Big Questions Public Lectures 2009 Various Speakers
- Introduction to Microsoft Access 2007 Desirée McGe & Jane Nash
- Faculty of Humanities: Handbook on Citation and Related Matters Karin de Jager
- eMarketing: The Essential Guide to Online Marketing Rob Stokes
- Introduction to Microsoft PowerPoint 2007 Adapted from Wikibooks

Below this sidebar is a link "All recent posts" with an RSS icon.

The main content area features three main sections:

- Popular resources:** Includes links to "Open Teaching in a Digital NGO ICT and e-Readiness Assessment Tool", "Building a global teaching profile: OER at UCT", "A Manual of Online Molecular Biology Techniques", and "Facilitating Online".
- Faculties:** Lists "Centre for Higher Education Development", "Commerce", "Engineering and the Built Environment", "Health Sciences", "Humanities", "Law", and "Science".
- Tags:** A collection of tags including "biology", "OER", "cell", "open", "national resources", "soft Office", "microbiology", "surgery", "academic", "obstetrics", "pathology", and "occupational". A link "more tags" is also present.

At the bottom of the main content area, there are three small thumbnail images with titles: "Ear, Nose and Throat Tutorial (Video)" by Dr Graeme Copley, "Procedures in Obstetrics and Gynaecology" by Dr Stephen Jeffery (ed), and "Faculty of Humanities: Handbook on..." by Karin de Jager.

At the very bottom of the page, there are links to "About Us | Blog | Terms & Conditions".

Besides OCW initiatives, there are other initiatives focused on creating learning resources that can be used to form courses or stimulate discussion and share advice around using OER. Connexions (<http://cnx.org>), founded by Rice University, currently hosts over 16,000 open learning objects available for mixing and matching into study units or full courses. The site allows users to view and share educational material made of small knowledge chunks called modules that can be organized as courses, books, reports, and so on. Anyone may view or contribute.

Figure 5 Connexions Content Interface

In Africa, OER Africa (<http://www.oerafrica.org>), an initiative of the South African Institute for Distance Education (SAIDE), is involved in promoting the use of OER in Africa and supporting individuals and organizations in creating OER:

OER Africa's mission is to establish dynamic networks of African OER practitioners by connecting like-minded educators – teachers, academics, and trainers – to develop, share, and adapt OER to meet the education needs of African societies. By creating and sustaining human networks of collaboration – face-to-face and online – OER Africa will enable African educators and students to harness the power of OER, develop their capacity, and become integrated into the emerging global OER networks as active participants rather than passive consumers.⁴

OER Africa is also involved in numerous projects supporting the adoption of OER in a number of HEI across Africa. The site not only allows access to African-developed resources, but also allows users to follow a documented process of how the materials were created. The website provides a space for various OER projects in Africa, for example, the SAIDE ACEMaths project, which piloted a collaborative process for the selection, adaptation and use of OER materials on the teaching and learning of mathematics for teacher education.

⁴ <http://www.oerafrica.org/Default.aspx?alias=www.oerafrica.org/aboutoer>

Figure 6 Sample Unit Interface for the ACEMaths Project

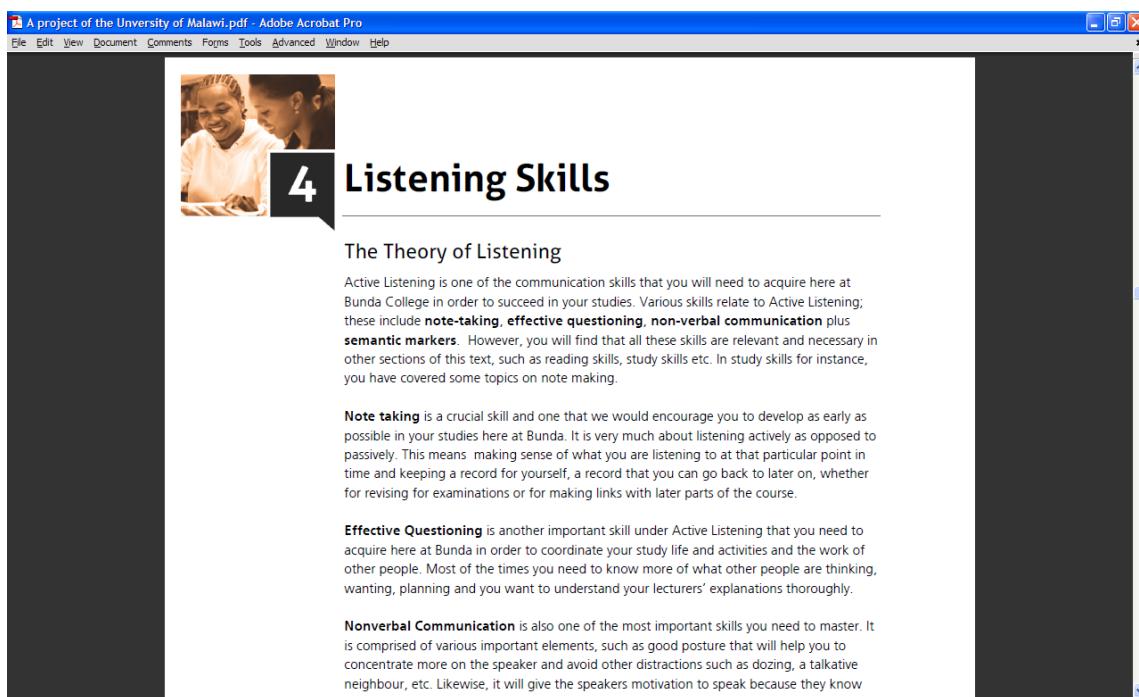
The screenshot shows the ACEMaths Project interface on the OER Africa website. At the top, there's a navigation bar with links for HOME, BLOGS, FORUMS, NEWS, EVENTS, SIGN IN, and JOIN. A search bar is also present. The main content area features a banner for the Teacher Education Project showing three people in a classroom setting. Below the banner, there's a section titled "UNIT SIX: TEACHING ALL CHILDREN MATHEMATICS". This section contains three items: "Unit Six: Teaching All Children Mathematics" (with WORD and PDF links), "Reading 1" (with WORD and PDF links), and "Reading 2" (with WORD and PDF links). To the right, there's a sidebar with a list of links under "ACEMaths Project Home" and "ACEMaths Materials", which includes "Unit 1: Exploring what it means to 'do' mathematics", "Unit 2: Developing understanding in mathematics", "Unit 3: Teaching through problem solving", "Unit 4: Planning in the problem-based classroom", "Unit 5: Building assessment into teaching and learning", and "Unit 6: Teaching all children mathematics".

These initiatives are having practical effects on the quality of education in programmes on the ground. The University of Malawi also embarked on an OER project at the Bunda College of Agriculture, which led to compilation of a first year communication skills textbook⁵. The project was conceived in a context of insufficient numbers of relevant textbooks at the college, and involved the creation of a paper-based textbook from freely available OER. The team members have written new materials but have also used and adapted material from all around the English speaking world to suit the specific needs of this course. The following is an example of a chapter on listening skills from the textbook, Communication Skills, developed by the Language Communication for Development Department at the Bunda College of Agriculture, University of Malawi.

⁵ The textbook can be retrieved at:

<http://www.oerafrica.org/foundation/FoundationOERHome/BundaCollegeofAgriculture/tabid/878/Default.aspx>

Figure 7 Sample Page from Bunda's 'Communication' Skills Textbook – an OER



Another African initiative is the Teacher Education in Sub-Saharan Africa (TESSA) initiative, (<http://www.tessafrica.net>) which brings together teachers and teacher educators from across Africa. It offers course design guidance for teachers and teacher educators working in Sub-Saharan African countries, and has produced a range of OER in four languages to support school-based teacher education and training. These materials focus on classroom practice in the key areas of literacy, numeracy, science, social studies and the arts and life skills. In addition, members of the TESSA community are encouraged to explore, share, adapt and add their own resources for teacher education.

The TESSA initiative aims to achieve the MDGs and EFA goals and ensure that by the year 2015, every African child should have access to Primary education. In order to achieve these stated goals, Sub-Saharan African countries need 4 million trained teachers which cannot be achieved with the present conventional ways of teacher training. The TESSA initiative therefore stands on three pillars:

- Affordability and accessibility of ICT
- Open Educational Resources (OER) philosophy which allows materials to be put the net and accessible to all for free;
- Research studies in cognitive science which gives current information on how learning takes place.

The screenshot below provides an example of a Life Skills module, focusing on 'Planning physical growth and development sessions'.

Figure 8 Sample TESSA Life Skills Module

The screenshot shows the TESSA Life Skills Module website. At the top, there's a green header with the TESSA logo (a stylized orange and green shape) and the text 'TESSA TEACHER EDUCATION IN SUB SAHARAN AFRICA OPEN EDUCATIONAL RESOURCES FOR TEACHER EDUCATION IN AFRICA'. Below the header, a banner says 'Module 1 >> Section 2'. On the left, there's a small map of Africa with the text 'Pan Africa'. The main content area has a yellow background. At the top of this area, it says 'Planning physical growth and development sessions'. Below this, there's a navigation bar with tabs: 'Introduction' (which is highlighted in orange), 'Page 1', 'Page 2', 'Page 3', 'Resources', 'Print Section', and 'Adapt Section'. Under the 'Introduction' tab, there's a section titled 'Learning Outcomes' with the subtext 'By the end of this section, you will have:' followed by a bulleted list: 'planned lessons that are focused on clear learning outcomes to investigate growth and development;', 'explored ways to include games and exercises into your lessons;', and 'used problem solving in whole-school activities.' At the bottom of the page, there's another navigation bar with the same tabs as above, and a Creative Commons BY-SA license logo.

In addition to courses, the number of available non-course OER such as articles, Open Access Journals and books are also growing at a fast rate. For example Textbook Revolution, a student-run site, contains links to a number of freely available (mostly undergraduate) textbooks. Users are able to search for textbooks by licensing (and can therefore access OER textbooks).

iTunes U is another important content-sharing initiative which has gained immense popularity. Launched in 2007, Apple's iTunes University allows Higher Education institutions to make audio and visual content freely available for download (as well as making provision for subscriptions for those wishing to sell content). A year after its introduction, iTunes U logged over 4 million downloads and two years since its introduction, iTunes U reached a new milestone with more than 100 million downloads. According to Apple, one of the most popular areas of iTunes U has been that of the United Kingdom-based Open University (iTunes link), whose learning categories include Arts and Humanities, Business and Management, Childhood and Youth, Health and Social Care, Law, Psychology, and Science.

The academic institution says it caters to at least 150,000 undergraduate and 30,000 postgraduate students, more than 25,000 of whom live outside the U.K.

More than 175 higher-education organizations currently provide content to iTunes U, including Princeton University, University of California at Los Angeles, Harvard University, the Massachusetts Institute of Technology, Oxford University, Norwegian University of Science and Technology, and Yale University.

Figure 9 iTunesU

The screenshot shows the iTunes U website. At the top, there's a navigation bar with links for Store, Mac, iPod, iPhone, iPad, iTunes, Support, and a search bar. Below the navigation, the page title 'iTunes U' is displayed, along with links for 'What is iTunes U', 'What's on iTunes U', 'Profiles', and 'How to Apply'. The main headline reads 'Learn anything, anytime, anywhere.' A central image features an iPhone displaying the iTunes U app interface, which shows various course thumbnails like 'Darwin Evolving' and 'Legal Writing Tips'. Below the phone, a pair of white headphones is shown. The bottom section of the page is divided into three columns: 'What is iTunes U' (describing it as a distribution system for educational content), 'What's on iTunes U' (mentioning over 250,000 free lectures and videos), and 'Profiles' (listing institutions like Stanford, Brown University, and the American Public Media). Each column has a 'Learn more' link.

There are also various subject-specific OER initiatives in Higher Education. One such example is the Health Education Assets Library (HEAL), <http://www.healcentral.org>, which is a digital library that provides freely accessible digital teaching resources.

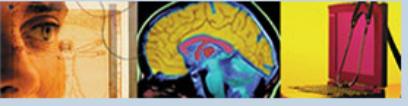
Figure 10 HEAL Digital Repository

[Home](#) | [Contact](#) | [Feedback](#)

[Register](#) | [Sign In](#) | [Submit Resources](#) | [Download Folder](#)



Free, high-quality digital materials for health sciences education.



IAMSE and HEAL: Building a Digital Repository Together

For more than two years, members of The [International Association of Medical Science Educators \(IAMSE\)](#) and the co-directors of the Health Education Assets Library (HEAL) have been working together to further the development of HEAL. HEAL is a digital repository that allows medical educators to discover, download, and re-use over 22,000 medical education resources. Through generous funding by IAMSE, HEAL is becoming a dynamic, user-centered digital environment to allow medical educators to share and discuss teaching resources and methods. This is being accomplished through the incorporation of key characteristics of Web 2.0 technologies into HEAL including user reviews of resources and user tagging (searchable keywords) of resources.

We know you have many questions, so we have compiled answers to your commonly asked questions:

I am ready to submit a resource today. Where should I send it? What is the difference between the types of resources published on HEAL and MedEdPortal?

HEAL publishes images, videoclips, animations, presentations, and audio files that support healthcare education. These are typically objects that can be used in a variety of presentations across multiple disciplines. MedEdPortal typically publishes more complete, stand-alone, resources such as tutorials, virtual patients, simulation cases, lab guides, videos, podcasts, and assessment tools.

How do I submit a resource to HEAL?

Click on "Submitting to HEAL" in the left hand menu. After your resource is accepted, it will be sent to the IAMSE mailing list to encourage members to review the resource using the HEAL user review system.

In addition to submitting resources, what else can I do in HEAL?

You can submit reviews of existing HEAL resources as well as adding keywords, or "tags," to existing resources. Both features require that you be logged into HEAL.

SEARCH for resources:

Include Consumer Health material

[Advanced Search](#)

[More Resources](#)
(experimental)

BROWSE resources:

[Browse by Subject](#)

[Browse by Collection](#)

[Top 10 Resources](#)

[Top User Tags](#)

SUBMIT your resources for publication in HEAL:

[Submitting to HEAL](#)

Current holdings:
22,427 resources

Active registered users:
7000+

Finally, there are various search facilities, allowing users to search for relevant HE OER. For example, the Commonwealth of Learning (COL), <http://www.col.org/resources/crsMaterials/Pages/OCW-OER.aspx>, provides a Google Custom search, which will initially return all OCW and OER results from the higher-education institutions and OER repositories that have been selected. Once on the results page, users can refine their search further by selecting only OCWs or only OER or only OCWs from certain regions. Another example of a search facility is Folksemantic: <http://www.folksemantic.com>. This facility allows users to browse and search over 110,000 OER (although this is not specific to HE resources). The system provides access to, among others, Johns Hopkins, MERLOT and MIT-OCW resources. The developers have also made the code available for others to use.

Figure 11 Folksemantic Search Facility



The above is just a small sample of emerging OER initiatives in the higher education space. They illustrate that there is a burgeoning interest in OER, as well as a fast-emerging web infrastructure to support further growth, sharing and discovery of OER online. Institutional participants include mainstream, highly respected higher education institutions from around the world. While several of the initiatives outlined above were initiated with donor funding, there is growing evidence that their activities are being integrated into mainstream institutional budgets and that diversification of income streams is taking place rapidly. Most importantly, the above snapshot of examples demonstrates clearly that OER can no longer be considered a peripheral 'movement' – it is something with which all higher education planners and policy makers need to engage.

An Economic Value Proposition with Potential for Educational Transformation

While the concept of OER is denotatively a legal one, its implications are first and foremost economic. Open licensing frameworks pose two primary economic propositions. The first is

that the sale of educational content is an industry in decline, at least as far as universities and academics are concerned. The wave of free sharing of content is building, and really the key question for higher education is: 'how do we ride it rather than being drowned by it?' There is a direct comparison to be made between what is happening in the music, film, and newspaper industries – amongst others – and the future of content in education. For example, file-sharing software applications, such as BitTorrent clients, have led to an explosion in the free transfer of music and video files, creating an apparent crisis of business models in the music and film industries. But, for example, running a search on the right Torrent websites will generate, in a few seconds, an extensive list of key medical textbooks freely (if illegally) available for download, together with passwords to access password-restricted journals. This does not mean that the market for educational content will disappear altogether, but it will be comprehensively transformed and different services will need to be created within those transformed markets. The niches for sale of generic educational content will likely become more specialized, while previously saleable content will lose its economic value.

By way of example, the University of Michigan's on-campus bookshop closed in June, 2009 because it could no longer generate sufficient sales. Likewise an article from Tim Barton of Oxford University Press, published in 2009 in the Chronicle of Higher Education, relates an example of students from Columbia University who cited a book published in 1900 rather than the many up-to-date books on the reading list, primarily because its full text was online. Of this, he opined 'if it's not online, it's invisible'. Bandwidth constraints may make this kind of downloading difficult for some students today (although the costs already make sense if one compares price of bandwidth with the price of some of the more expensive textbooks required in higher education studies), but the trend towards cheaper bandwidth is clear and will be used by the students to access materials, whether this is legal or not.

Consequently, academics who ask 'why should I share my educational content?' should be aware that the real question is 'how can I stay in control of the process of my educational content being shared?' And, the more useful the content is to students, the more likely it is to be shared, with or without the author's permission. Those academics and publishers who seek to fight against this trend have been likened to the Spanish army fighting the Apaches or the music industry fighting music pirates (as described in a book called *The Starfish and the Spider: The Unstoppable Power of Leaderless Organization*) – the harder one tries to destroy the leaders of these decentralized movements, the more one ends up strengthening them.

Consequently, on the teaching and learning side, universities that succeed economically will do so predominantly by understanding that their real potential educational value lies in their ability to provide effective support to students (whether that be in practical sessions, tutorials, individual counselling sessions, or online) and in their ability to provide intelligent assessment and critical feedback to students on their performance (ultimately leading to some form of accreditation). The market has not shifted fully yet, but it will. The efforts of universities like the Massachusetts Institute of Technology and the Open University, UK (described in more detail below), to release their content as OER reflects an understanding of this shift, as well as an effort to lead it and benefit from the publicity that such leadership generates. In such an environment, it is foreseeable that reputation will grow by making

content available as a way of publicizing competence in providing support, assessment, and accreditation. Increasingly, people who seek to ring-fence, protect, and hide their educational content and research will most likely place limits on their academic careers. They will also increasingly be excluded from opportunities to improve their teaching practice and domain-specific knowledge by sharing and collaborating with growing networks of academics around the world.

The second economic proposition posed by OER is a more risky challenge to abandon the pervasive economic logic that education should be treated as a business, governed by the same rules and incentives as the commercial and retail sector. This notion of education as a free market has had many negative consequences. For the past few decades, educators and educational institutions have been rewarded for competing with each other and withholding their intellectual property from others. This seems antithetical to the notions of building and sharing knowledge which are central, at least in principle, to the core function of universities (at least, public ones). Over the past few decades, higher education has increasingly come to be understood as a business and a cost centre, the objective of which is to drive costs down – whether it be the cost of running universities or the price of producing graduates.

Although the concept of OER itself will do nothing to change these realities, it offers an opportunity to re-consider the economic value proposition of education. It provides a reason to change institutional and national policies and budgetary frameworks so that they reward collaboration and open sharing of knowledge, rather than either penalizing it (by removing possible streams of income when knowledge is shared openly) or ignoring it (as so many universities do by rewarding research publication over other pursuits such as time spent in designing educational programmes, participating in collaborative materials development processes, and making produced materials freely available for others to use). This suggests a need to place strong emphasis on institutional policy engagement, because, until rewards systems are restructured, there is little prospect for persuading people to change their behaviour. No matter what technologies or methodologies may be used, the simple reality is that good education cannot be created or sustained without spending properly on it. Investment in education can only ever be meaningfully justified in terms of the long-term social and economic benefits that it will bring societies, not in terms of how those investments will help to enrol more students at progressively declining unit costs.

Of course, if OER is understood as just another mechanism to cut costs, this time by providing free content, its potential to contribute to improving education will be lost and it will be consigned to the long list of faddish jargon and buzzwords that have plagued higher education for so many years. If this path is pursued, then OER may well flood higher education systems with cheaply available content – some good, some relevant, but much not – without doing anything to developing institutional capacity to deliver cost-effective, high quality higher education programmes.

Harnessed thoughtfully, the concept of OER has tremendous potential to contribute to improving the quality and effectiveness of higher education. This transformative educational potential revolves around three linked possibilities:

1. Increased availability of high quality, relevant, need-targeted learning materials can contribute to more productive learners and faculty members. Because OER removes restrictions around copying resources, it holds potential for reducing the cost of accessing educational materials. In many systems, royalty payments for text books and other educational materials constitute a significant proportion of the overall cost, while processes of procuring permission to use copyrighted material can also be very time-consuming and expensive (although some commentators have tended to overestimate the extent to which content is a cost driver in education by assuming that free content is almost synonymous with free education).
2. The principle of allowing adaptation of materials provides one mechanism amongst many for constructing roles for learners as active participants in educational processes, who learn best by doing and creating, not by passively reading and absorbing. Content licences that encourage activity and creation by learners through re-use and adaptation of that content can make a significant contribution to creating more effective learning environments.
3. OER has potential to build capacity by providing institutions and academics with access, at low or no cost, to the means of production to develop their competence in producing educational materials and completing the necessary instructional design to integrate such materials into high quality programmes of learning. Many educational systems are foundering because their employees have become so overwhelmed by administrative tasks that they have lost the time and space to exercise this critical creative capacity, and it will take time and investment to rebuild it. The concept of OER has potential to facilitate this if the process of developing educational materials is seen as being just as important as – maybe more important than – the final product.

Problems, though, many people in the ‘OER movement’ seem to assume that simply making content freely available for use and adaptation will improve higher education delivery. This simplistic position ignores the obvious reality that content is only one piece of the educational puzzle, and that effective use of educational content demands, amongst other requirements, good educators to facilitate the process. Importantly, OER provides a structured opportunity to engage higher education faculties and academics in structured processes that build capacity to design and deliver high quality higher education programmes without increasing cost. Without this growing institutional capacity, OER will not be able to fulfil its transformative potential.

Thus, the challenge is to persuade people that making openness work productively requires investment, time, and energy, but that this is justified by the significant richness that it can generate. This is because deliberate openness acknowledges that: investment in designing effective educational environments is critically important to good education; a key to productive systems is to build on common intellectual capital, rather than duplicating similar efforts; all things being equal, collaboration will improve quality; and, as education is a contextualized practice, it is important to make it easy to adapt materials imported from different settings where this is required and this should be encouraged rather than restricted.

It is unclear which direction higher education systems will take – whether OER will be coopted as another in a long line of ultimately failed cost-cutting exercises or whether it is

harnessed as part of a strategy to invest more wisely and effectively in higher education, in the belief that producing intellectual leadership through free and open development and sharing of common intellectual capital is a worthwhile and socially essential activity for a healthy society.

Emerging Challenges

As one would expect, the concept of OER is the subject of significant resistance from organizations whose business models are based on ring-fencing and selling content. This struggle is playing itself out in many industries, not just in education, and is to be expected when new technologies make it possible to do business in new ways. Although some people confidently predict the demise of all old forms of information production because of short-lived social trends, it is more likely there will be winners and losers, with many publishers and other similar agencies reinventing themselves, continuing to provide valuable products and services, and running successful businesses. Chris Andersen's analysis of the potential of exploiting the 'long tail' of consumption demands provides good examples of new business models emerging that reflect this reality.⁶

However, the transformative potential of the concept is also under attack on other, less obvious fronts. The first of these is the tendency, repeated so often throughout history, of actors based in the developed world to adopt powerful concepts and preach their power on behalf of the developing world. So, several accounts describe how OERs will act as the 'saviour' of education by producing masses of free education content (usually in the developed world) and then making it available for use in the developing world. Like many well intentioned 'movements' that have preceded the OER movement, the history of development suggests that this is likely to have marginal educational impact in the developing world. More problematically, it undermines the potential to build the capacity of developing world education systems because it focuses spending of money to produce OERs in the developed world. This has the effect of developing capacity and systems there rather than in the developing world. As long as financial resources of this kind are expended predominantly in the developed world, there is likely to little progress in developing the capacity of developing world education systems to meet the needs of their learners.

Another key issue undermining the transformative potential of OERs has been an increasingly heated debate around commercialization of 'free content'. This debate most often finds practical expression in arguments about the Creative Commons licensing framework, and whether or not it is a good idea to impose what is described as a 'non-commercial' restriction within the licence. The reason that this argument has emerged is that, to many people, the concept of creating a non-commercial restriction seems intuitive in order to prevent unfair exploitation of 'free' content. However, as many commentators have eloquently and passionately argued, it turns out that such a restriction can have several unintended consequences in the long term, preventing the 'mixing' of content with different licence conditions and creating unforeseen inflexibilities. These commentators go on to observe that the Share-Alike licensing condition in the Creative Commons licensing framework serves effectively the same purpose as a Non-Commercial restriction by

⁶ Chris Anderson, *The Long Tail : Why the Future of Business Is Selling Less of More*, 1st ed. (New York: Hyperion, 2006).

requiring derivative works to be released under identical licensing conditions as the original content on which the derivation was based. They also point out that closing down the possibilities for commercial exploitation of derived works may lead to long term problems in sustainability of the emerging educational commons.

It seems that many of these proponents are driven by a well-intentioned desire to see content made 'free' (i.e. both costing nothing and freely available for re-use and adaptation without restrictions), mirroring similar debates that have unfolded around Open Source Software. This is a worthwhile cause to a certain extent, but often leads to logical leaps of faith that are not yet sustained by meaningful evidence and that can be educationally problematic. Most notable amongst these is the conviction that making content free to copy, adapt, and exploit commercially in and of itself will lead to better education delivery, particularly in the developing world. Linked to this is another untested assertion that 'free' content equates with good educational content. It is certainly possible that free content will make a contribution to improving education; however, this thesis needs to be proven through demonstration and good practice, not claimed as fact without evidence. Those who claim educational benefit and quality of OER as fact without providing supporting evidence undermine the credence of their own argument amongst sceptics of the OER movement (and a significant proportion of writing in this area is based on hypothetical examples, not actual experience of better learning taking place).

Many powerful educational concepts (amongst them, open learning, distance education, and e-learning) have lost their transformative potential because they became associated with wild claims about the educational impact they would have that were not borne out in practice. Protagonists of the concept of OERs and associated removal of 'unnecessary' licensing restrictions that might govern them could usefully seek to prove this potential through demonstration and good practice not rhetoric. More importantly, though, it is critical to acknowledge that making content free is only one aspect of many required to ensure that the quality of education is systematically transformed and improved. This obvious fact is often lost in the debates that have emerged, thus diverting attention away from the critical broader debate about educational transformation that can be catalysed through discussions on OERs.

Linked to this concern is the point, noted even by several proponents of the argument against non-commercial restrictions, that the emerging dogmatism being exhibited by opponents of non-commercial restrictions serves only to alienate those who are taking the first tentative steps towards freeing up restrictive licences governing their educational content. This line of thinking holds that a spectrum of licences is necessary to allow people and organizations choice in deciding how best to begin contributing to the growing pool of available OER. Pragmatically, this seems to make sense. If a person or institution is designing a course, and can distribute to learners a specific journal article free of charge, but is not permitted to modify its text, this seems preferable than not being able to use it at all. Likewise, there may also be compelling cases for ensuring that, in certain instances, content that is made available for use should not open for modification, for example journal articles or treatises which report on specific research endeavours or capture a particular perspective in time.

However, a degree of ideological determinism seems to have gripped some members of the OER movement, who argue that any restrictions bar those that their community have defined as ‘legitimate’ should be resisted. Apart from the obvious pragmatic problems associated with such extreme positions, the additional problem is that they lead to extended, highly technical debates about fine points of detail in increasingly complex licensing regimes. These often confuse and alienate many otherwise powerful allies. Thus, it is not only the dogmatism of the position that alienates many people, but also the banality of the arguments that are being waged. A more pragmatic approach may be to create a spectrum of licensing options and then engage constructively to try to persuade those with more conservative approaches to freeing up content about the educational and business merits of less restrictive approaches, rather than rejecting all options bar the ‘right’ one out of hand.

Thus, the value of OER projects and initiatives should be measured, in practical terms, against the extent to which they advance core educational objectives and the principles of operation that govern OER communities should be driven by this imperative, rather than by dogma. Education is a social investment, and should be protected as such if it is truly to fulfil its potential in creating a more equal world. This makes it critical to find practical ways to build business models that will ensure the success of the online educational commons. Critically, we would do well to accept that – until this new model is established – it is likely that we will need to retain open minds and a spirit of compromise in engaging the interests of different parties seeking to open access to educational content.

Importantly, to be successful and sustainable, development of OER cannot be a sideline activity within a university. It must be integrated into institutional processes in order to both leverage its potential and provide for its sustainability. Likewise, institutional policies, particularly around intellectual property rights, remuneration, and promotion, need to be adapted to support and sustain development and use of OER, to systematically and consistently improve and update curricula and teaching materials, reduce operating costs, develop institutional capacity, and manage growing student cohorts more effectively.

The potential of OER includes bringing transparency to educational processes, facilitating collaborations between faculty members and students at different institutions, and establishing a new economic model for procuring and publishing learning materials. Ultimately, a key to its success will be to demonstrate that, in the medium- to long-term it will help over-stretched faculty members to manage their work more effectively, rather than adding new work requirements to their job description. However, successful OER initiatives will be those that can work immediately and add educational value within the current ICT infrastructure constraints of any participating institutions (including those from the developing world). Proving the potential of a concept that will only have an impact when these infrastructural constraints are removed is of little value to higher education institutions in the short to medium term.

Conclusion

This paper has provided a simple and practical definition of OER as describing educational resources that are freely available for use by educators and learners, without an accompanying need to pay royalties or licence fees. It has, however, attempted to highlight that there is significant danger that the transformative potential of this powerful concept can easily be lost if this interpreted to mean either that OER will make content cheaper or that providing free content will, by itself, improve education.

To be effective, creating and sharing OER is essentially about working together towards a common cause, whether this be within a single faculty or across a global network. Sharing materials that others can adapt and use recognizes the value inherent in team work and the improvements in thinking that will emerge from such collaboration. Doing this openly, using the already proven innovations of the Internet to facilitate sharing of content, presents a practical way to use cooperation to find simple solutions to pressing problems we face in higher education. If educators start doing this in large numbers, the values of the systems for which they work *will* catch up, as all systems ultimately are just a codification of how people have agreed to work and interact with each other. Consequently, rewards and incentives will shift to reflect appreciation for sharing and communal building at the expense of individualism and unhealthy competition. Conversely, if we wait for systemic policies to change before we start collaborating, then we have only ourselves to blame if the system's values are never shifted.

Thus OER encapsulates a potential vision for higher education systems globally wherein individual academics, and then increasingly entire faculties and institutions, come together in common online spaces (which, like the most successful Internet phenomena, is not 'owned' by any one institutional or corporate interest) to start sharing the materials they have produced in an effort ultimately to ensure all the material that students in universities will need to complete their studies successfully can be accessed – legally – without any costs of licensing. There are vast quantities of such material already available in universities across the world, from which no-one is generating any meaningful commercial return – and many more being produced every week. These represent a common intellectual capital that should be unlocked to drive and support education rather than kept hidden away from sight.

As with all such communal processes, the initial results will be messy – and there will be many problems to solve, such as how to create appropriate curriculum frameworks for storing content and mechanisms to help with assessing quality. But online communities have demonstrated the now indisputable power and value of lots of people working collaboratively towards a common cause. And doing this in education has the potential to re-focus education systems, restoring the core values of building and sharing knowledge that underpin good education, and systematically encouraging us to work with and learn from each other.

Appendix One: Overview of Open Licences⁷

Introduction

When considering open licences, it is useful to remember that these are legal tools that make use of existing copyright laws. In particular the exclusive right copyright law that allows a copyright holder to license material with the licence of their choice (Hofman & West, 2008). Liang (2004) notes that

While phrases such as 'free software' and 'copyleft' conjure up an image of alternatives to copyright, it is relevant to note that it is not a model that abandons copyright. In fact quite the opposite, it relies on copyright law, but uses it creatively to articulate a positive, rather than a negative rights discourse (Liang, 2004, p. 24).

Open licences for content developed out of the success of the licensing approach being used for open source software. One of the earliest open licences for non-software material was published in 1998 by David Wiley. This licence is no longer used, since newer alternatives are now more appropriate and adaptable to different conditions. In 2000, the Free Software Foundation released its first version of an open licence for non-software materials. Essentially this licence was to allow open-source software developers to produce open manuals and support materials, free of standard copyright restrictions. This licence is known as the GNU FDL (Free Documentation Licence). Although it was used by the popular site Wikipedia until recently (having been replaced by the Creative commons licence), this licence is not widely used within the OER movement partly because it is technically confusing and cumbersome in terms of procedural requirements (Liang, 2004). In some cases, authors also create their own copyright conditions, although this is noted to be legally challenging in many instances and so tends not to be recommended for OER materials (Hofman & West, 2008). Instead the focus has turned to the Creative Commons (CC) set of licence options. Since CC licences are most commonly used, they are described in greater detail in this paper.

A range of other open licences exist such as licences specifically for music and art. Given the focus of this paper on OER this review has not presented details of the full range of open licences. For a comparative analysis of a wide range of open licences please see Liang (2004)

Creative Commons Licences (www.creativecommons.org)

The most developed alternative licensing approach is that developed by Larry Lessig of Stanford University in 2001, called Creative Commons (CC). The CC approach provides user-friendly open licences for digital materials and so avoids the automatically applied copyright restrictions. The popularity of CC licences has grown incrementally since its launch in 2002 and by 2006 it was estimated that 45 million web pages had been licensed with a CC licence (Smith & Casserly, 2006). Liang (2004, pg. 78) describes the philosophy of Creative Commons as follows:

Inspired by the free software movement, the Creative Commons believes that a large vibrant public domain of information and content is a pre-requisite to sustained creativity, and there

⁷ This Appendix is sourced from Wilson, M. 2009. *The Potential of Open Educational Resources*. Johannesburg. SAIDE.

is a need to proactively enrich this public domain by creating a positive rights discourse. It does this by creating a set of licenses to enable open content and collaboration, as well as acting as a database of open content. Creative Commons also serves to educate the public about issues of copyright, freedom of speech and expression and the public domain.

The CC licences take account of different copyright laws in different countries or jurisdictions and also allow for different language versions. To make the licensing process as simple as possible for users the creative commons site makes use of a licence generator that suggests the most appropriate licence based on a user's response to specific questions regarding how their work can be used. In order to facilitate searching for resources licences in a particular way, the CC licence is expressed in three versions:

- *Commons deed*: this is a plain language version of the licence, with supporting icons (see table below);
- *Legal code*: the legal fine print that ensure the licence is recognised in a court of law; and
- *Digital code*: a machine readable translation that allows search engines to identify work by its terms of use ('About - Creative Commons'; Liang, 2004).

All CC licences include 'Baseline Rights': the rights to copy, distribute, display, perform publicly or by digital performance, and to change the format of the material as a verbatim copy (Hofman & West, 2008, p. 11). In addition, all CC licences assert the author's right over copyright and the granting of copyright freedoms and require licensees to:

- Obtain permission should they wish to use the resource in a manner that has been restricted;
- Keep the copyright notice intact on all copies of the work;
- Publish the licence with the work or include a link to the licence from any copies of the work;
- Not change the licence terms in anyway;
- Not use technology or other means to restrict other licences' lawful use of the work (Liang, 2004, p. 82).

License Conditions⁸

Creators choose a set of conditions they wish to apply to their work.

 Attribution by	 Share Alike sa	 Non-Commercial nc	 No Derivative Works nd
You let others copy, distribute, display, and perform your copyrighted work — and derivative works based upon it — but only if they give credit the way you request.	You allow others to distribute derivative works only under a license identical to the license that governs your work.	You let others copy, distribute, display, and perform your work — and derivative works based upon it — but for non-commercial purposes only.	You let others copy, distribute, display, and perform only verbatim copies of your work, not derivative works based upon it.

⁸ The following two sections are copied directly from the Creative Commons website – see <http://creativecommons.org/about/licenses>.

The Licenses

The following are the key CC licences:



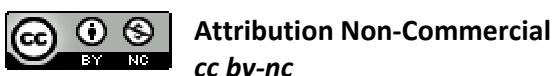
This license lets others distribute, remix, tweak, and build upon your work, even commercially, as long as they credit you for the original creation. This is the most accommodating of licenses offered, in terms of what others can do with your works licensed under Attribution.



This license lets others remix, tweak, and build upon your work even for commercial reasons, as long as they credit you and license their new creations under the identical terms. This license is often compared to open source software licenses. All new works based on yours will carry the same license, so any derivatives will also allow commercial use.



This license allows for redistribution, commercial and non-commercial, as long as it is passed along unchanged and in whole, with credit to you.



This license lets others remix, tweak, and build upon your work non-commercially, and although their new works must also acknowledge you and be non-commercial, they don't have to license their derivative works on the same terms.



This license lets others remix, tweak, and build upon your work non-commercially, as long as they credit you and license their new creations under the identical terms. Others can download and redistribute your work just like the by-nc-nd license, but they can also translate, make remixes, and produce new stories based on your work. All new work based on yours will carry the same license, so any derivatives will also be non-commercial in nature.



This license is the most restrictive of our six main licenses, allowing redistribution. This license is often called the "free advertising" license because it allows others to download your works and share them with others as long as they mention you and link back to you, but they can't change them in any way or use them commercially.

CC Licensing Considerations

The aspect of CC licensing that is most controversial is the **non-commercial** (NC) clause (Commonwealth of Learning, 2007; Hofman & West, 2008; Rutledge, 2008). There are

several reasons for this, including at the most basic level, what ‘non-commercial’ in fact means. Since CC licences are a new phenomenon within copyright law, little previous case history exists to assist in interpreting this clause. The most extreme interpretation of non-commercial is that no money should change hands as part of the process of using of the materials. However, Hofman and West (2008) note that this is not how non-commercial is usually interpreted. For example a transaction is not commonly seen as commercial when it includes refunding for expenses such as travel for example. The transaction becomes commercial when making a profit is the purpose of the transaction. Similarly, writing from the CC perspective, Rutledge notes that:

CC considers intent to be the primary test of whether a use is non-commercial. If the intent of a particular use is to generate profit, that use is commercial. Under this reasoning, cost recovery per se is not a commercial use (Rutledge, 2008).

While this approach may seem intuitive, many legal examples could be found demonstrating the complexity of defining ‘intent’. The Commonwealth of Learning (COL) Copyright Guidelines specifically address the issue of the NC clause and note that profit and cost recovery, which includes operating costs, should not be confused. This means that an organisation may still charge registration fees, recover materials duplication costs and overhead costs incurred during customisation, duplication and distribution of materials. The COL guidelines continue to note that:

If an institution declares and/or pays a net profit to shareholders, and a part of the net profit emanates from the sale of learning materials marked with the NC clause, a calculation should be done to determine the amount of net profit that has been earned by that section of the materials that has been marked with the NC clause. This is the critical point when the NC and non-NC materials differ. Organisations that provide materials without the NC clause have accepted that the materials they offer may be used to profit any other organisations' stakeholders (in addition to covering all reproduction costs) (Commonwealth of Learning, 2007, p. 2).

In working to better understand how the non-commercial clause is applied in different contexts, Creative Commons is conducting research into this issue (Rutledge, 2008). Rutledge ends her commentary by suggesting that readers should also seriously consider whether the non-commercial clause is really necessary.

Rutledge (2008) notes that some believe that any for-profit businesses should not be able to charge course fees or make use of open content, hence the NC restriction. However, this would imply that a private school may not use NC materials (Hofman & West, 2008), or potentially a for-profit organisation using materials for non-profit work such a corporate social investment project. Other arguments against using the NC restriction include that it makes the materials incompatible with materials licensed without this restriction (see for example Bissell & Boyle, 2007; Moller, 2005).

While it is understandable that an author who openly releases their materials would not want others to make a profit from them, this can be achieved in other ways. For example, it could be argued that, when materials can be freely accessible via the internet, charging for the materials themselves becomes irrelevant, and to make a profit the individual or company would need to add sufficient additional value beyond what is available for free to make it worthwhile for users to pay. For work released an attribution-share alike licence require that any work that is derived from the original work is released under the same

licence. Thus, the value added by the for-profit individual/company would itself need to be released freely under an attribution-share alike licence (Moller, 2005).

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