

Open Courseware Futures: Creating a Parallel Universe

Professor James C Taylor,
Deputy Vice-Chancellor (Global Learning Services) and Chief Information Officer
University of Southern Queensland, Australia

Introduction: From Elite to Mass Higher Education

A recent special edition of *International Higher Education* focused on the demographic trends associated with the emerging universal aspiration for access to higher education, and associated projections that global student numbers will almost double to reach 160 million by 2025 (Klemencic, M. & Fried, J 2007). In a similar vein, Alex Usher (2007) of the Educational Policy Institute predicted that at current rates of world wide growth, the number of students in post-secondary education will more than double in less than ten years. The fact that the present conventional classroom-based approaches to teaching and learning will not be capable of meeting the escalating demand for higher education in the knowledge society represents a major leadership challenge. As Daniel, Kanwar and Uvalić-Trumbić recently highlighted, it is not economically viable to continue to build more universities: “India alone would need nearly 2,400 additional universities in the next 25 years - or roughly two new universities per week” (2007). It is yet to be widely acknowledged that in both developed and developing countries, the Internet will provide the only viable cost-effective means to provide sustainable access to education and training opportunities. In many countries, the present lack of infrastructure embodied in discussions of the “Digital Divide” is of course a complex mediating factor, but even where potential students have access to the Internet, the vast majority cannot afford the high fees necessary to gain access to courses, assessment and accreditation. In effect, there exists not only a digital divide, but also a financial exclusion divide.

The Open Educational Resources (OER) Movement

To overcome such monumental problems, there is a clear need for innovation – for thinking outside the box – indeed, for thinking a long way outside the box. The Open Educational Resources (OER) movement, which has been embraced by a number of significant international organisations including UNESCO, The World Bank, OECD, The Commonwealth of Learning and The European Union, is becoming increasingly significant in the global higher education arena and offers some promise. OER include full courses, course materials, learning objects, text books, videos, tests, research papers, software and any other materials, tools or techniques used to support access to knowledge that reside in the public domain or have been released under an intellectual property license that permits their free use or re-purposing by others. The central tenet of the OER movement is the simple and powerful idea that the world’s knowledge is a public good and that technology, especially the Internet, provides an unparalleled opportunity to increase access to knowledge and to share it, use it and reuse it.

OpenCourseWare Consortium

Since 2002, with the support of the William and Flora Hewlett Foundation and the Andrew W. Mellon Foundation, Massachusetts Institute of Technology (MIT) has published over 1,700 courses from 35 academic departments (<http://ocw.mit.edu/index.html>). MIT has also been instrumental in the establishment of the OpenCourseWare Consortium (<http://www.ocwconsortium.org/about/members.shtml>) which now boasts 128 member institutions.

Useful sources covering recent developments and trends in the field of open educational resources include:

- The role and leadership of the William and Flora Hewlett Foundation in the OER movement: <http://www.hewlett.org/Programs/Education/OER/>
- A comprehensive introduction to OER by Marshall Smith (who directs the OER program at the William and Flora Hewlett Foundation) and his colleague Catherine Casserly:
- <http://www.hewlett.org/NR/rdonlyres/4DEF17E2-4578-4453-BA9C-CA9813762971/0/ChangeArticle.pdf>
- A brief history and current status of OER by David Wiley: (<http://opencontent.org/blog/archives/247>)
- Peter Suber provides an introduction to Open Access (OA) focussing on open access to peer reviewed research articles:
- <http://www.earlham.edu/~peters/fos/overview.htm>
- A vision of the emerging global meta-university by Charles M.Vest, former President of MIT: <http://www.educause.edu/ir/library/pdf/erm0630.pdf>

In the latter article, Emeritus Professor Charles Vest (former President of MIT) expressed the view that: “In the open access movement, we are seeing the early emergence of a *meta-university* – a transcendent, accessible, empowering, dynamic, communally constructed framework of open materials and platforms on which much of higher education worldwide can be constructed or enhanced” (p.30). While a great deal has been achieved in a relatively short time, there is a great deal more to be done. To achieve the aspirational goal of establishing a global meta-university, it will be necessary to concentrate the focus on learners and to extend and enhance the open courseware movement to incorporate innovations including open academic support, open assessment and open accreditation.

OpenCourseWare Futures

To make a sustainable significant contribution towards meeting the exponential demand for higher education, not all of which can be met by conventional higher education systems, the OCW movement has the opportunity to expand its vision and operations to enable the OCW learners to have access to academic support, to have the opportunity to be assessed and to have the potential to gain credit towards recognized qualifications awarded by a credible accreditation agency. In effect, such innovation is not intended to threaten existing models of higher education provision, but to create a “*parallel universe*” capable of ameliorating the apparently insurmountable problem of meeting the worldwide demand for higher education. Further, such innovations will of course not simply materialize in the higher education arena, but will need concerted resource allocation, research and development, planning, and effective management to achieve a sustainable outcome. To enhance its potential to make a contribution to such activities, the University of Southern Queensland (USQ) has recently established the Learning Futures Innovation Institute (LFII) which incorporates two components: the Software Development Laboratory and the Technology Enhanced Learning Laboratory. The LFII aims to capitalize on the substantive expertise and collaborative network developed through USQ being the lead institution in the Managed Environments for Research Repository Infrastructure (MERRI) projects with funding of almost \$6 million provided by the Australian Federal Government through its Department of Education Science and Training (DEST).

Current Managed Environments for Research Repository Infrastructure Projects include:

e-Framework for Education & Research

The [e-framework for Education & Research](#) is an international collaboration focused on achieving broad and flexible technical interoperability in the development of IT infrastructure needed to support education and research. The e-Framework is guided by the following principles: a service-oriented approach to system and process integration; commitment to open standards; recognition of the central importance of community involvement; the need for open and collaborative development activities; and, deployment of these approaches in a flexible and incremental way.

Regional Universities Building Research Infrastructure Collaboratively (RUBRIC) Toolkit

The [RUBRIC Toolkit](#) is a premier output of the DEST funded [RUBRIC Project](#). The RUBRIC Toolkit was recently launched at IDEA 2007 <http://www.linkaffiliates.net.au/idea2007/>. It provides best practice guidelines for the establishment and management of institutional digital repositories. The RUBRIC Toolkit is the fruition of the collaborative work of 8 universities (seven in Australia and one in New Zealand).

PILIN

USQ manages the Persistent Identifier Linking Infrastructure ([PILIN](#)) project on behalf of its partners in the ARROW2 project <http://arrow.edu.au/>. The objective of the PILIN project is to strengthen Australia's ability to use global identifier infrastructure. PILIN is developing guidance documents and best practice advice on identifiers, building

software tools that will allow applications to use persistent identifiers more easily and to maintain the identifiers over time, and is tasked with making recommendation to DEST on options for sustaining, supporting and governing identifier management infrastructure.

Integrated Content Environment – Research & Scholarship (ICE-RS)

ICE-RS is creating software, manuals and training packages that allow and encourage efficient creation of flexible documents in the process of conducting and reporting on research, with benefits in improved efficiency, greater usability of research outputs and more sustainable research repositories. ICE-RS allows groups of authors to collaborate on long and short documents, and publish them automatically to the web and print formats from a single source. ICE-RS is also used for the development of courseware, for producing web sites, preparing academic journals and managing project documentation. ICE-RS is managed by USQ as an open source project.

Learning Futures Innovation Institute: What's it all about?

Mission: The primary mission of LFII will be to advance the science, technology and practice of advanced distributed learning systems, both academic and administrative.

Objectives: The objectives of LFII are to

- foster innovative student learning approaches through research and development into new technologies and their learning applications;
- develop innovative systems and pedagogical approaches to assist the University in meeting the individual needs of students in an increasingly diverse range of locations and personal circumstances;
- increase the University's capacity to produce high quality research outputs within LFII's focus areas;
- develop the business case and associated business models to guide the sustainable implementation of new technologies and their learning applications;
- expand commercial research opportunities through partnerships with industry;
- provide a forum for sharing knowledge, skills and resources within the University and at national and international levels.

Initiatives Associated with OpenCourseWare Futures

Open Academic Support for Learners: The provision of open courseware does not currently entail engagement between academic staff and OCW learners interested in using the freely available educational resources. To increase the potential efficacy of the OCWC movement USQ is seeking to establish *Academic Volunteers International (A Virtual Network)*. Participants (members of professional bodies, academics, teachers and current students) in the Academic Volunteers International (AVI) network will provide academic advice and support on a voluntary basis to learners studying open courseware materials. USQ has registered the relevant internet domain names for Academic Volunteers International, and is

working to develop an extensible web architecture and associated software as an open source initiative. Further, USQ is devising a strategy for recruiting appropriately qualified and trustworthy volunteers, through working with a variety of professional bodies and a number of organizations established primarily to engender volunteering. These latter organizations include: Volunteering Queensland (<http://www.volunteeringqueensland.org.au>) Volunteering Australia (<http://volunteeringaustralia.org>) and Volunteer Match (<http://www.volunteermatch.com.au>).

Work on the development of an intelligent tutoring database for academic purposes is continuing at the USQ LFII. It is proposed that the academic volunteers will be supported via the process illustrated in Figure 1 with volunteers sharing the role of duty tutor according to a 24 x 7 schedule. This academic support initiative is based on the extension of the 5th generation intelligent databases currently used primarily for administrative purposes under the auspices of USQ's student relationship management system (*USQAssist*), which will be expanded to encompass a range of learning and teaching support activities for courses offered via USQ's Open Courseware Initiative. Like *USQAssist* the academic support for OCW learners will ultimately become a web self-service option, whereby the institutional variable costs will tend towards zero (Taylor, 2001).

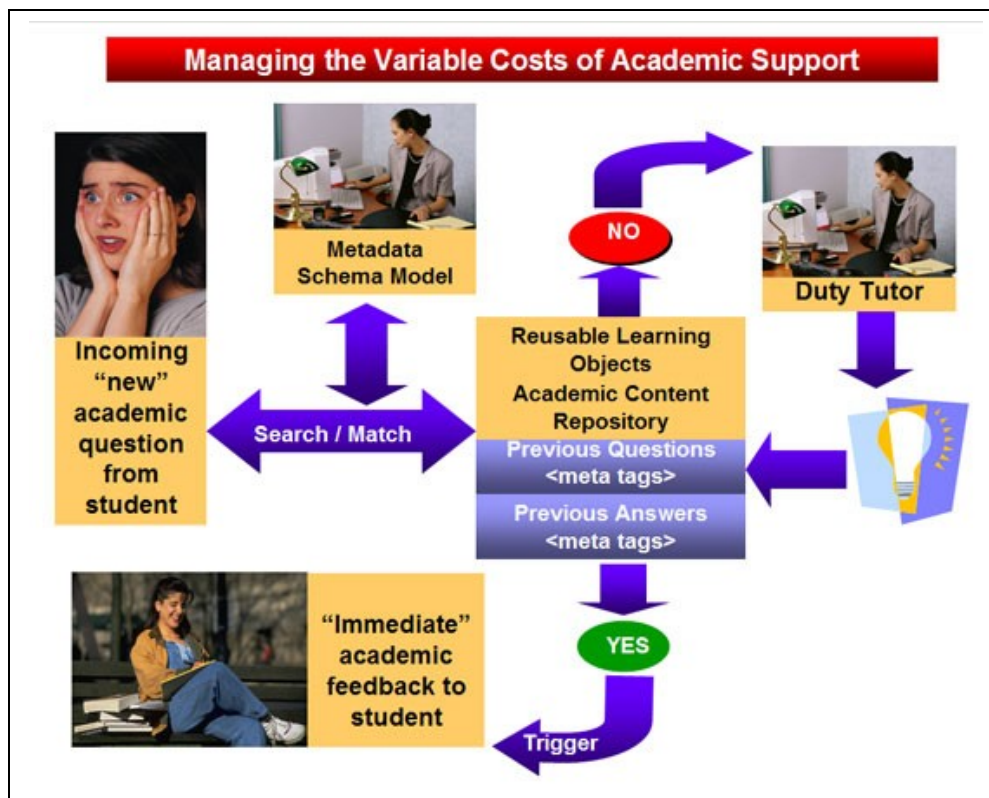


Figure 1: Overview of 5th Generation Intelligent Database for the Provision of Academic Support

Through this provision of cost-effective academic support, provided by academic volunteers supported by the academic content repository with intelligent access to reusable learning objects, it is expected that many OCW learners will have the opportunity to achieve a level of expertise worthy of assessment and, where successful, of ultimately being granted accreditation from a recognized agency as illustrated in OpenCourseWare Futures (Figure 2).

Open Assessment/Assessment on Demand

While in principle Open Assessment is a desirable option, it must maintain the validity and credibility of the mainstream institutional assessment process. It is in the interests of OCW students to gain authentic credit for the time and effort required to develop expertise, and it is essential for OCWC institutions to retain the credibility of their assessment processes. Assessment of OCW students demands the same validity and adherence to academic standards as those set for mainstream students and will therefore incur costs. Open assessment could possibly be made available as a “scholarship” option for needy students. However, should an institution offer open assessment this process would undermine the core business thereby threatening the viability and sustainability of the existing system, unless there was a return to free higher education – an unlikely scenario and a situation not seen since higher education was essentially an elite rather than a mass system with much smaller numbers of students than today.

There could be an alternative way to increase access: create an “assessment on demand” option where students have free access to OCW, free access to open academic support through AVI, and pay only for the assessment process, at an inevitably much reduced fee. Assessment on demand could be developed as a sustainable business process for those students who cannot afford full fees (the financial exclusion divide) but who could afford a much reduced fee for the assessment on demand approach. Should this innovation be successful, it has the potential to undermine/challenge the mainstream business model – since the OCW pathway would presumably also be attractive for many current students, who would like to avoid incurring debts and who battle to survive financially. Further, imagine the likely positive response of many employers to the personal initiative and persistence that OCW students would need to display to earn enough credit to earn an OCWC degree, and the proposed innovation could well be a huge success.

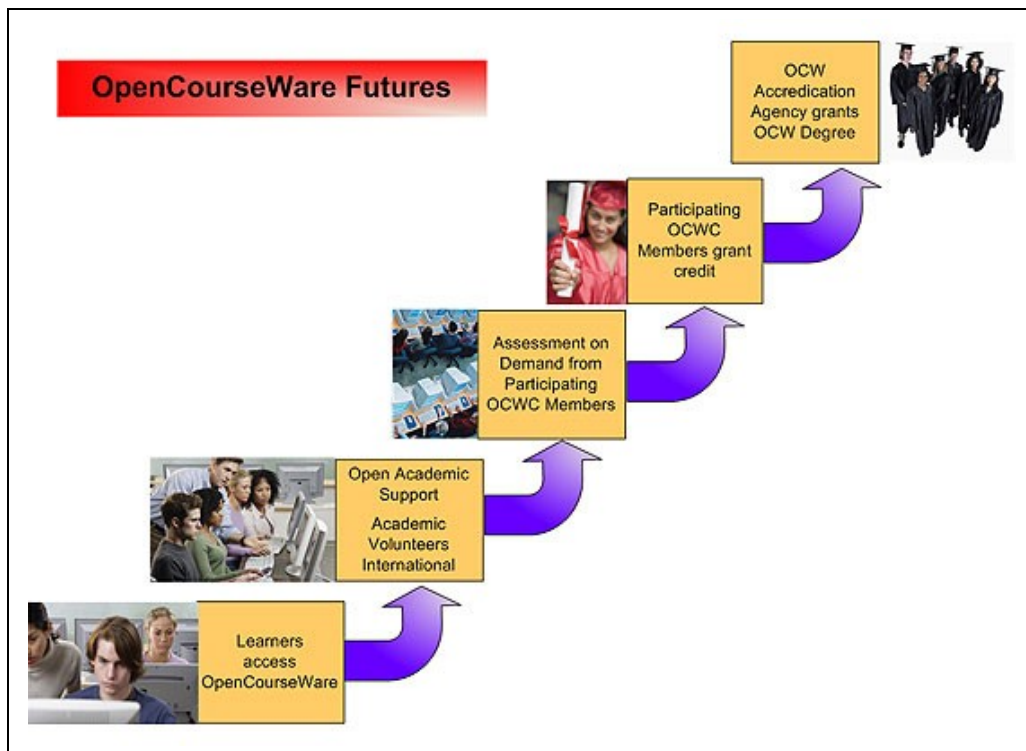


Figure 2: OpenCourseWare Futures

Assuming that governments because of economic constraints will not return to the days of providing free higher education, and assuming that institutions will not want to threaten their sustainability by providing access to OCW students to gain credit for a wide range of courses at a significantly reduced fee, is there a potentially viable and sustainable future for OCW? The answer is “Yes”! The answer is an OpenCourseWare Accreditation Agency collating and coordinating the credit gained by OCW students from those OCWC institutions, which would provide assessment on demand for a reduced fee, and would grant credit to successful OCW students in a limited number of selected courses. Member institutions of the OCWC are already subject to accreditation processes in their own country. The proposed OpenCourseWare Accreditation Agency would grant an appropriately named OCW Degree with credit accumulated through any number of participating OCWC institutions, which also provide open academic support through AVI and utilize an assessment on demand service for a reduced fee for a probably limited range of courses. Imagine an OCW degree consisting of credits gained from MIT, USQ and several other OCWC member institutions.

The credibility of the OCW degree would be based on the fact that OCWC institutions already meet accreditation standards in their own country. For example, USQ is subject to the national quality assurance and accreditation standards set by the Australian Federal Government’s Department of Education, Science and Training, whereby the Australian Universities Quality Agency (AUQA) conducts institutional audits and publishes publicly available online reports and examples of best practice. The development of the OCW degree implies support for an open curriculum where students have the flexibility to select a range of individual units/courses to suit their personal needs for the development of expertise. Imagine the potential contribution of the OCW Degree initiative to all students, but especially those in developing countries. Imagine!

A Parallel Universe

The OCW futures scenario outlined above provides a potentially pragmatic manifestation of a global meta-university - it is not purely theoretical speculation, it is entirely viable. With the effective collaboration of committed partners the OCW degree option could be fully operational within a few years. The composition of the enabling partnership group would build on the existing network of organizations involved in the establishment and operation of the OCW Consortium and would need to entail:

- a sufficient number of OCWC member institutions willing to establish open academic support through the establishment of a local academic volunteer initiative, and a willingness to embrace assessment on demand at a reduced fee for selected courses with the subsequent granting of credit to successful OCW students;
- a small number of OCWC member institutions willing to commit research and development staff to collaborate with staff of the LFII Software Development Laboratory;
- the support of global organizations such as UNESCO; and
- the support of philanthropic organizations such as the William and Flora Hewlett Foundation and the Andrew W. Mellon Foundation, which have already contributed significant funding to establish the OCWC.

The University of Southern Queensland through its LFII has committed resources to further investigate the feasibility of the proposed OCW degree. While such an initiative is highly

ambitious, there is a need for such bold innovation to have an impact on the potentially insurmountable problem of engendering universal access to higher education. We should at least approach the feasibility study with an open mind!

References

Daniel, J., Kanwar, A., and Uvalić-Trumbić, S (2007) – “*Mass Tertiary Education in the Developing World: Distant Prospect or Distinct Possibility?*”. Retrieved on 15 October 2007 from <http://www.col.org/colweb/site/pid/4605>

Klemencic, M., and Fried, J. (2007). “*Demographic Challenges and the Future of Higher Education*”, International Higher Education (No 47), Spring 2007, ISSN: 1084-0613. Retrieved on 15 October 2007 from http://www.bc.edu/bc_org/avp/soe/cihe/newsletter/Number47/p12_Klemencic_Fried.htm

Taylor, J. C. (2001). “5th Generation Distance Education”. DETYA’s Higher Education Series, Report No.40, June, ISBN 0642 77210X. Retrieved on 15 October 2007 from http://www.dest.gov.au/sectors/higher_education/publications_resources/profiles/fifth_generation_distance_education.htm#versionAvailable

Usher, A.(2007). Educational Policy Institute. Retrieved on 15 October 2007 from <http://www.educationalpolicy.org/weekreviewcommentary070105.html>

<http://arrow.edu.au/>

<http://www.arrow.edu.au/PILIN>

<http://www.earlham.edu/~peters/fos/overview.htm>

<http://www.educause.edu/ir/library/pdf/erm0630.pdf>

<http://www.e-framework.org/>

<http://www.hewlett.org/NR/rdonlyres/4DEF17E2-4578-4453-BA9C-CA9813762971/0/ChangeArticle.pdf>

<http://www.hewlett.org/Programs/Education/OER/>

<http://ice.usq.edu.au/introduction/about.htm#id1171856>

<http://www.linkaffiliates.net.au/idea2007/>

<http://ocw.mit.edu/index.html>

<http://www.ocwconsortium.org/about/members.shtml>

<http://oepencontent.org/blog/archives/247>

<http://www.rubric.edu.au/>

http://rubric.edu.au/packages/RUBRIC_Toolkit/default.htm

<http://volunteeringaustralia.org>

<http://www.volunteeringqueensland.org.au>

<http://wwwp.volunteermatch.com.au>